

# What Can USDA Data Tell Us About Dairy Competitiveness?

James M. MacDonald

USDA Economic Research Service

Southern Dairy Conference

Atlanta, Georgia

January 31, 2008

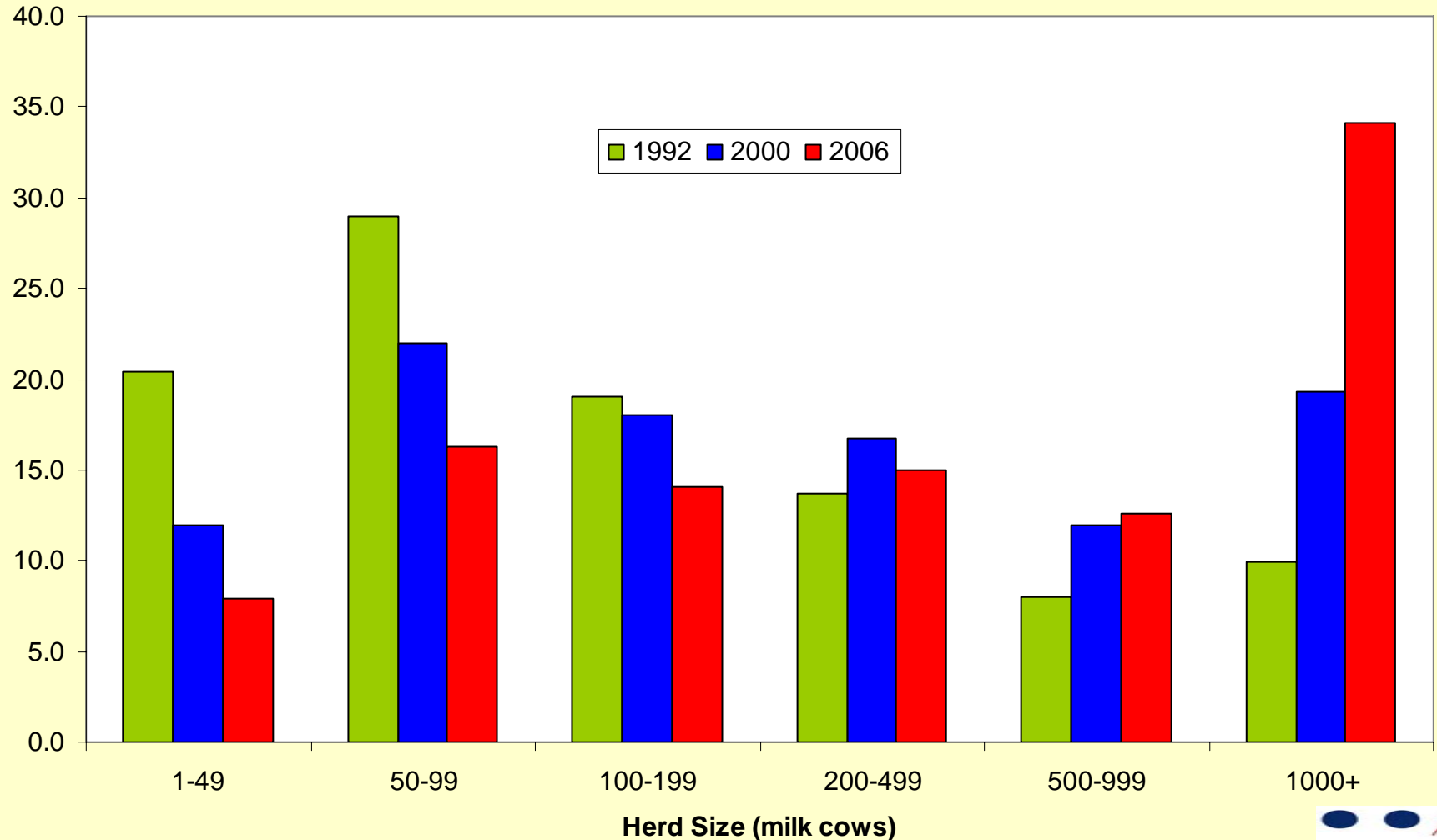


# Major, Ongoing, & Widespread Consolidation in Dairy Farming

- We detail those changes
- Look closely at the role of costs and returns
- And evaluate impacts
  
- Using a variety of evidence

# Production is Shifting to Much Larger Farms

Percent of US  
Cow Inventory



Sources: Census of Agriculture (1992)  
USDA/NASS (2000 & 2006)



# Shifts to Large Operations Are Widespread

- The West is well-known
  - Really big enterprises,
  - And 90% of production is in herds with >499 cows
- But shifts are also occurring in traditional areas
  - Consider the share of production in herds with >499 cows
  - Northeast: 10 to 21
  - Eastern Corn Belt: 13 to 31
  - Minnesota & Wisconsin: 9 to 19
  - Southeast: 32 to 36

# What's the Role of Financial Drivers in This?

- We Use the Agricultural Resource Management Survey (ARMS)
- Included a dairy version for 2005
  - 1,462 farms (conventional) in 24 states
  - Plus several hundred organic operations

# What Does ARMS Give Us?

- A representative sample
- Consistent questions and measures
- Dairy enterprise, linked to farm & household
- Production practices as well as revenues & expenses

# ERS Estimated Farm-level Costs of Dairy Production

- Operating expenses—directly
- Unpaid labor and feed—indirectly
- Capital replacement—indirectly
- Per cwt of milk produced—directly
  - Not per cow
- And gross value of production
  - Not milk revenue

# Dairy Costs of Production, by Herd Size, 2005

	Enterprise size (number of milk cows)				
	50-99	100-199	200-499	500-999	>999
	-Dollars per hundredweight-				
Total operating costs	12.94	11.51	11.31	11.07	9.74
Allocated overhead	12.56	9.31	6.61	5.00	3.85
Unpaid labor	6.10	3.13	1.34	0.54	0.17
Capital recovery	4.56	3.89	2.55	2.03	1.66
Total costs	25.50	20.82	17.92	16.07	13.59
Gross value of prod.	17.56	17.20	17.25	16.56	16.54
Net returns	-7.94	-3.62	-0.67	0.49	2.95

Source: 2005 ARMS dairy version

# Drivers of Unpaid Labor Expenses

	Enterprise size (number of milk cows)				
	50-99	100-199	200-499	500-999	>999
	Annual means, by herd size class				
Production (cwt)	11,828	24,218	57,539	138,071	420,665
Unpaid hours					
Principal Operator	3,095	3,124	3,111	3,150	2,987
All	4,190	4,372	4,111	3,742	3,450
Hours/cwt	0.35	0.18	0.07	0.03	0.008
Mean hourly wage (\$)	17.50	17.58	18.89	19.53	20.55

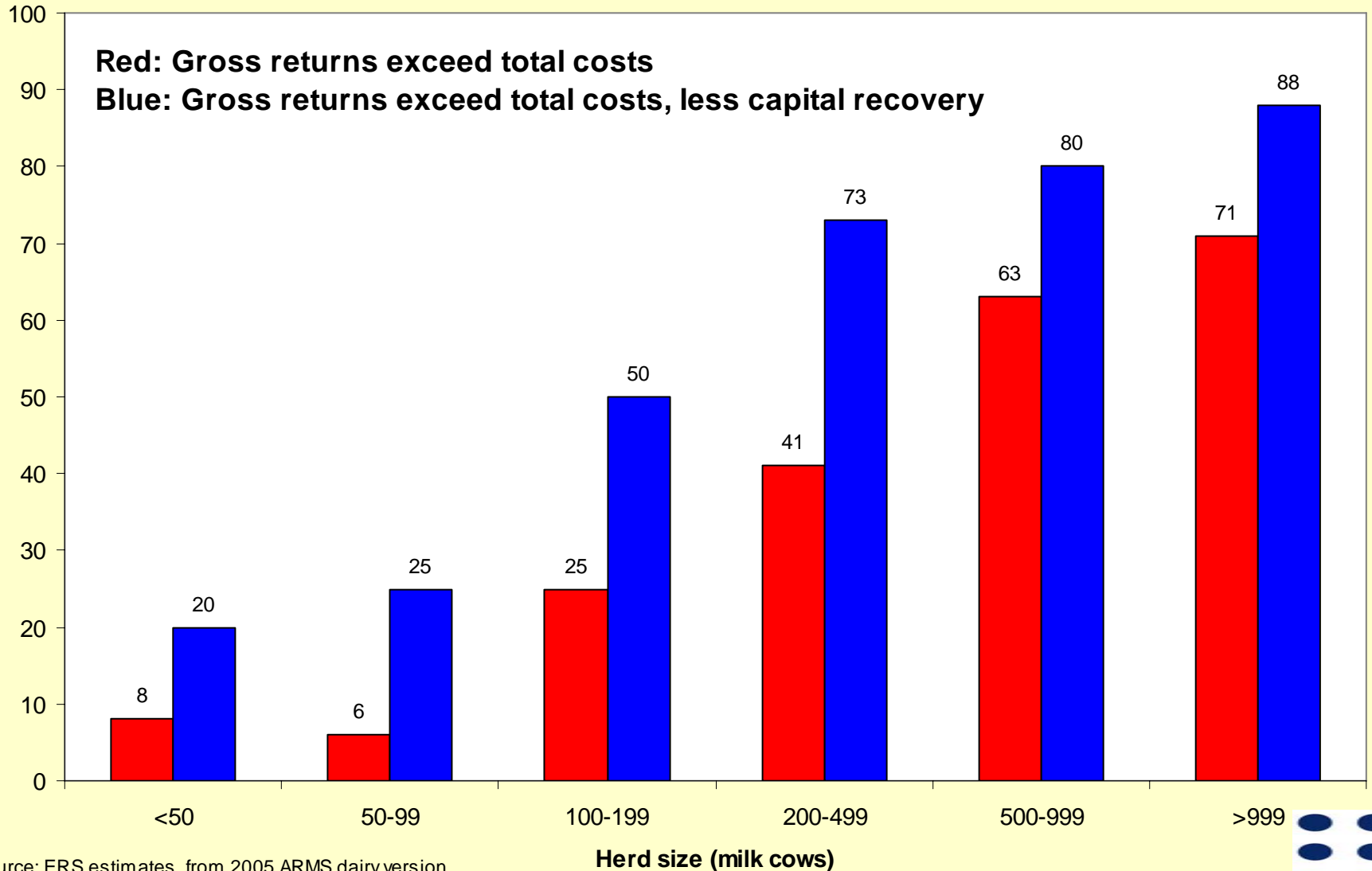
Larger farms substitute capital & hired labor for own labor, and use them more intensively

# Mean Costs and Returns Aren't the Whole Story

- There's usually a wide variation in farm financial performance
- Economic profits (P-ATC) matter for new investment...
- But returns over variable costs (P-AVC) matter for continued operation

# Some Farms Are Profitable in All Size Classes

Percent of enterprises



# Strong Implications, So Far

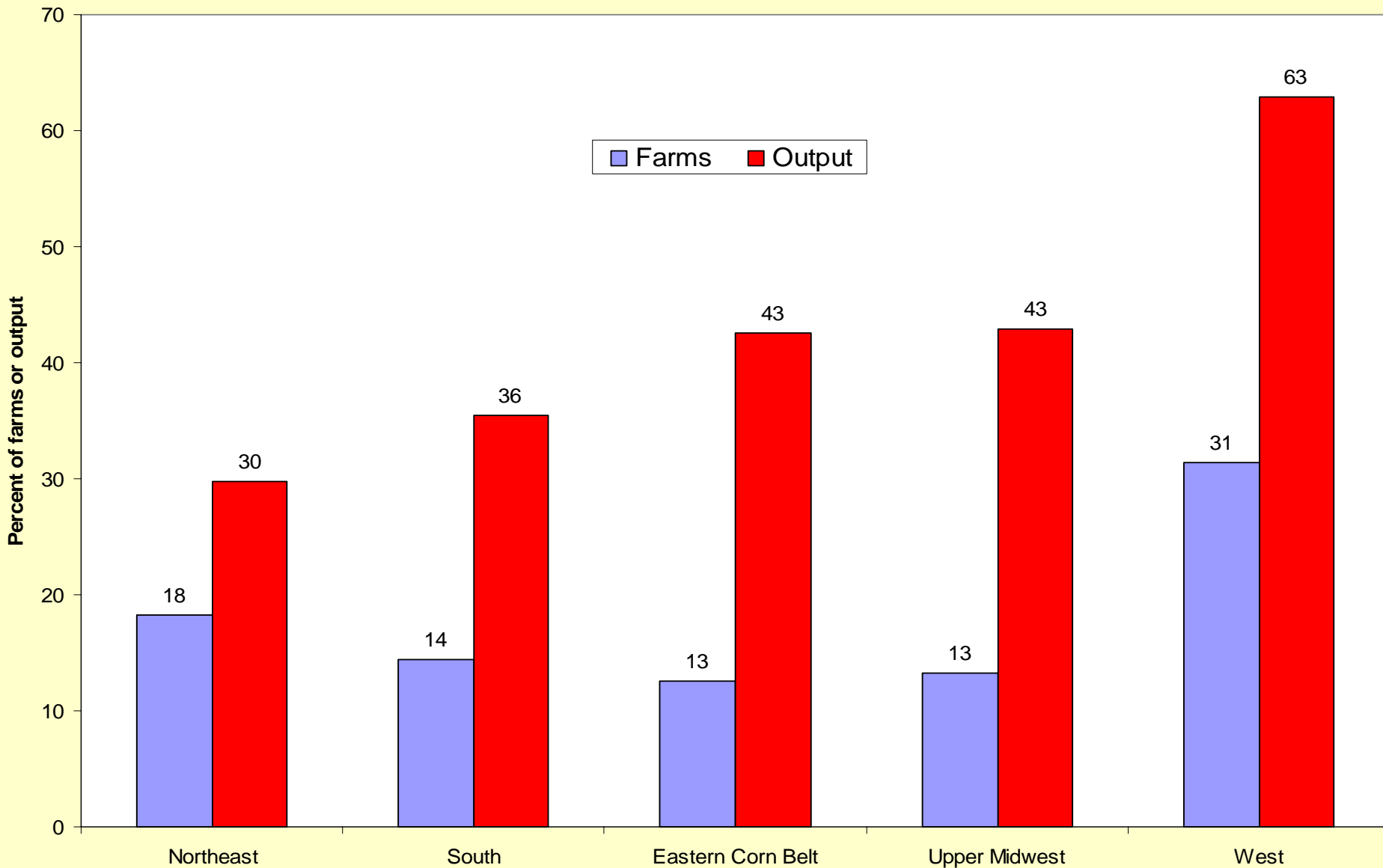
- There appear to be important scale economies...
- Most large operations were economically profitable in 2005—strong incentives to expand
- Many midsize operations covered variable costs in 2005—strong incentives to stay in business
- Implies continuing structural change

# What Can We Say About Dairying in the South?

- The survey included 5 southern states...
  - FL, GA, KY, TN, VA
- With 307 observations

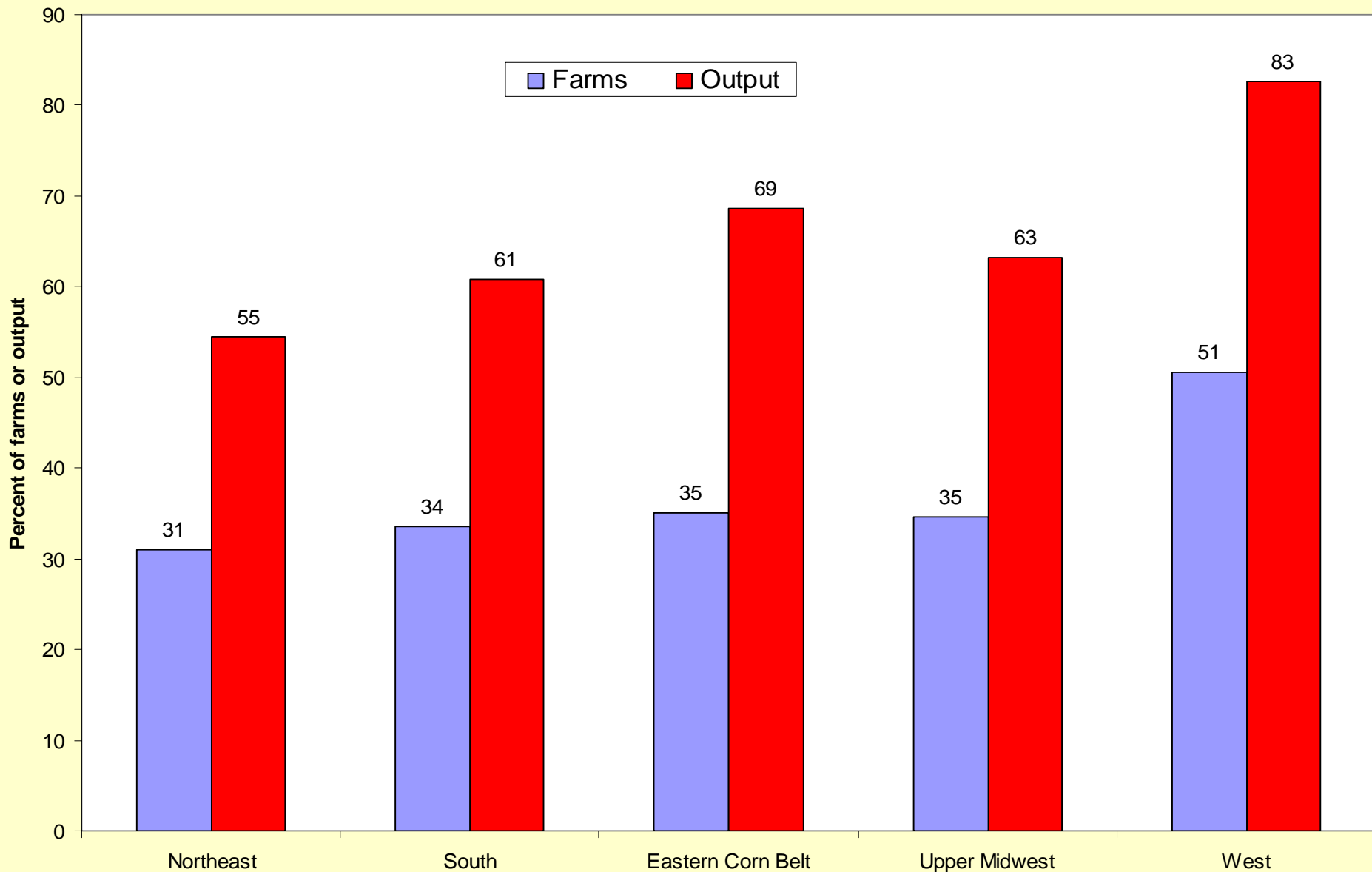
# Economically Profitable Operations in 2005, by Region

(Gross Returns Exceed Total Economic Costs)



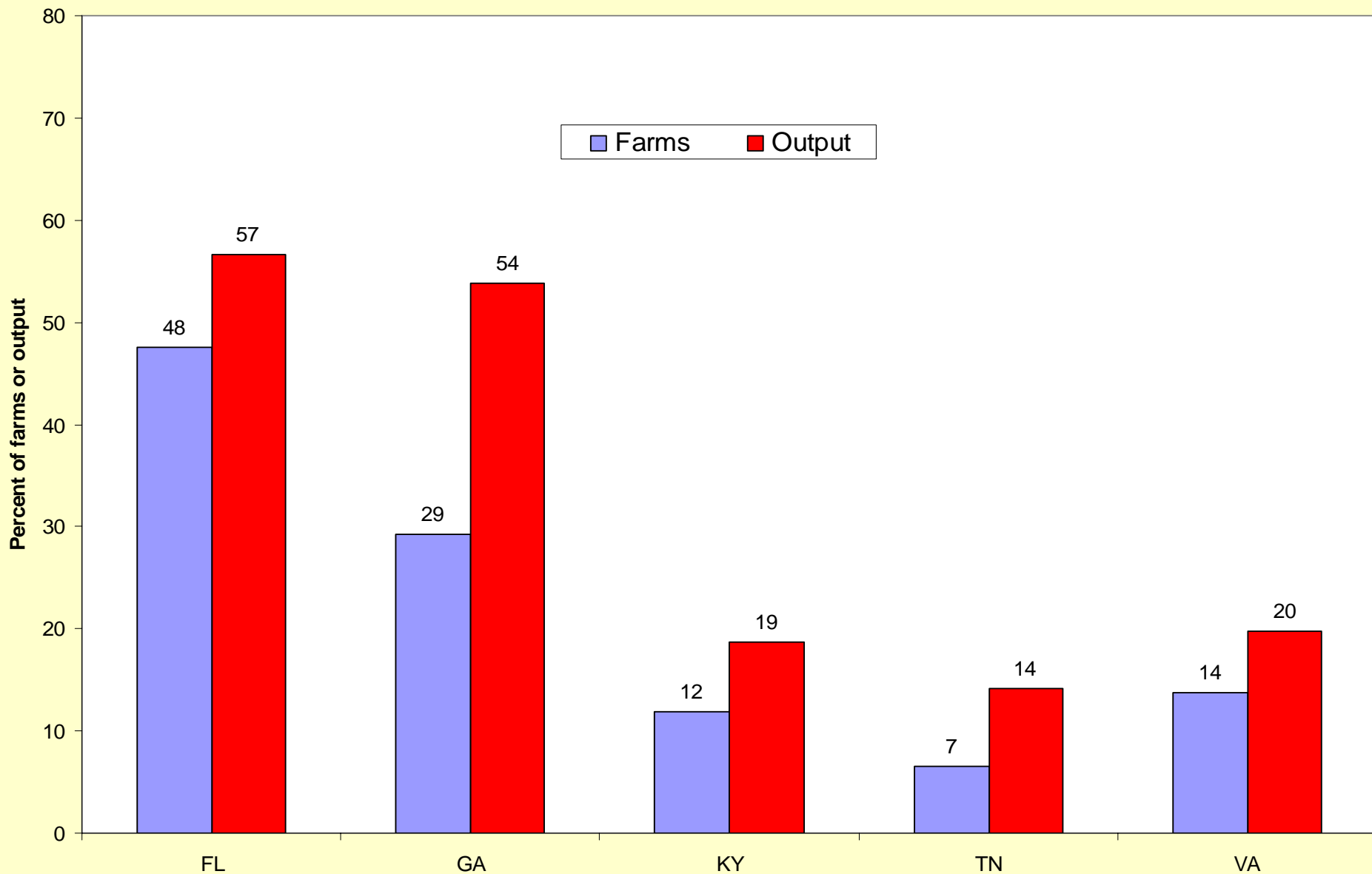
# Economically Viable Operations in 2005, by Region

(Gross Returns Exceed Total Costs, Except Capital Recovery)



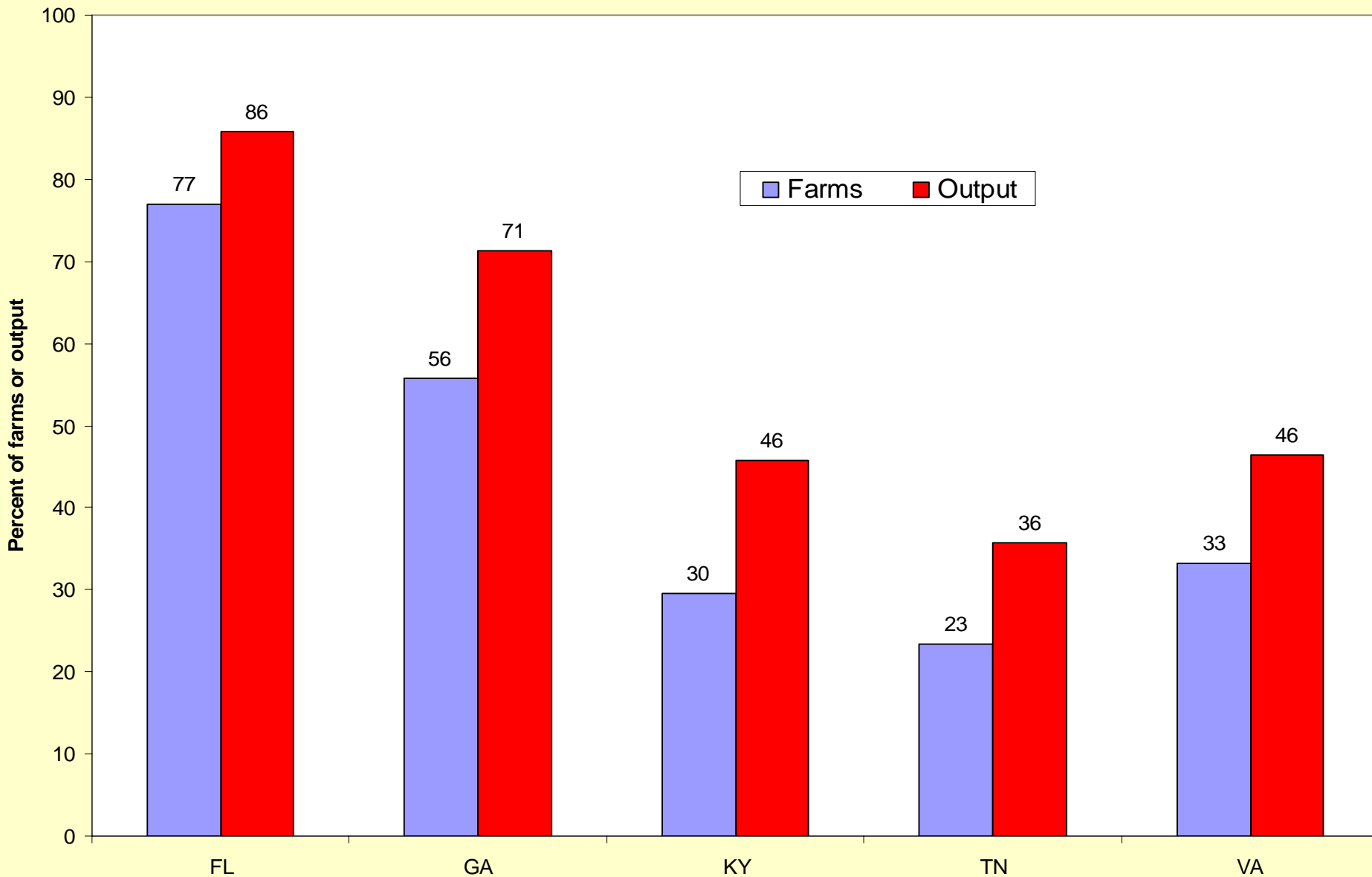
# Economically Profitable Operations in the South in 2005

(Gross Returns Exceed Total Economic Costs)



# Economically Viable Operations in the South in 2005

(Gross Returns Exceed Total Costs, Except Capital Recovery)

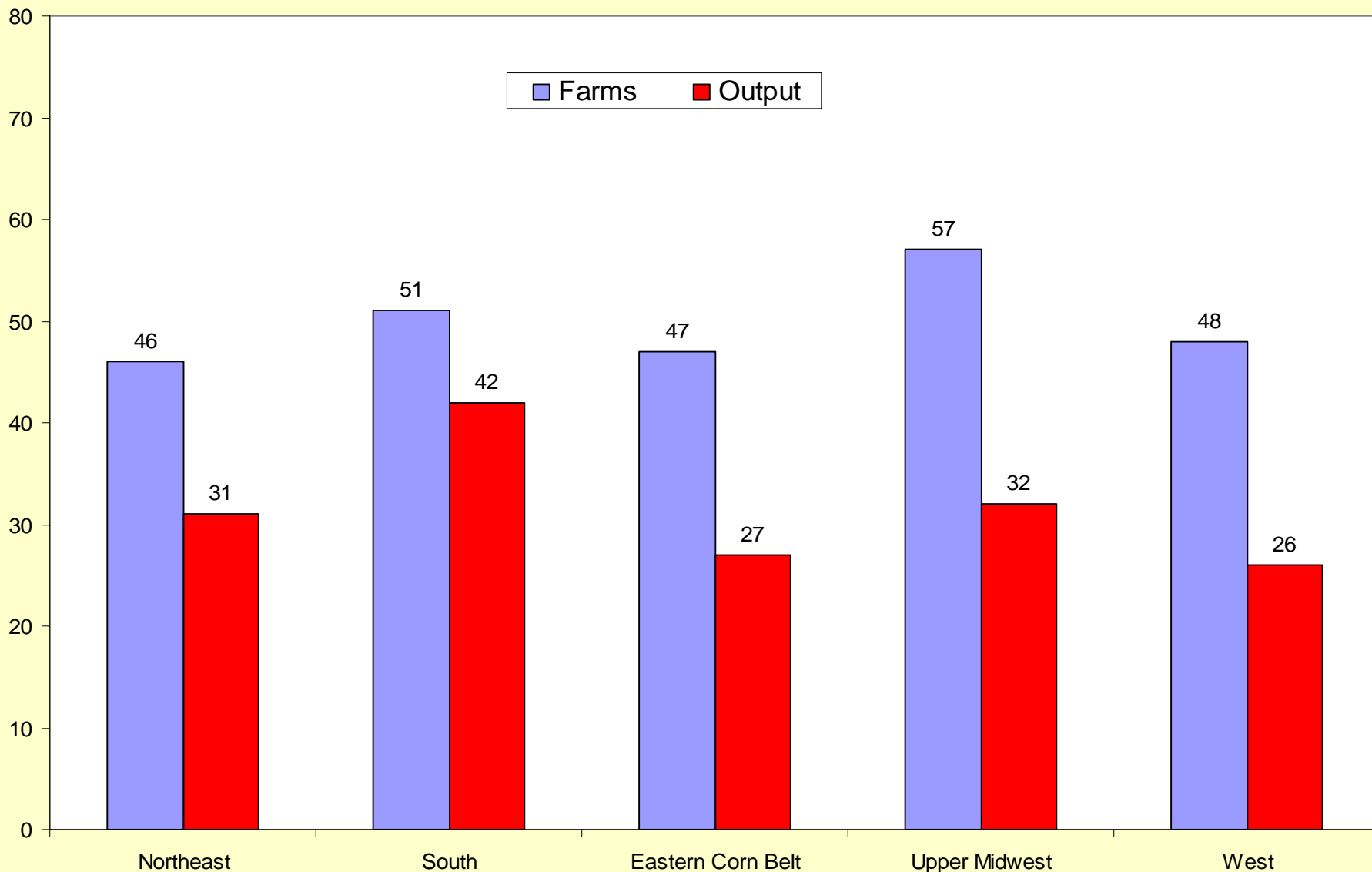


# Three Major Factors Drive Cost Differences Across Operations

- Enterprise size matters--\$6/cwt from 150 to 1500 head.
- Region matters: SE and NE operations are \$3-4/cwt above similar operations elsewhere.
- Management practices matter--up to \$4-5 per cwt.

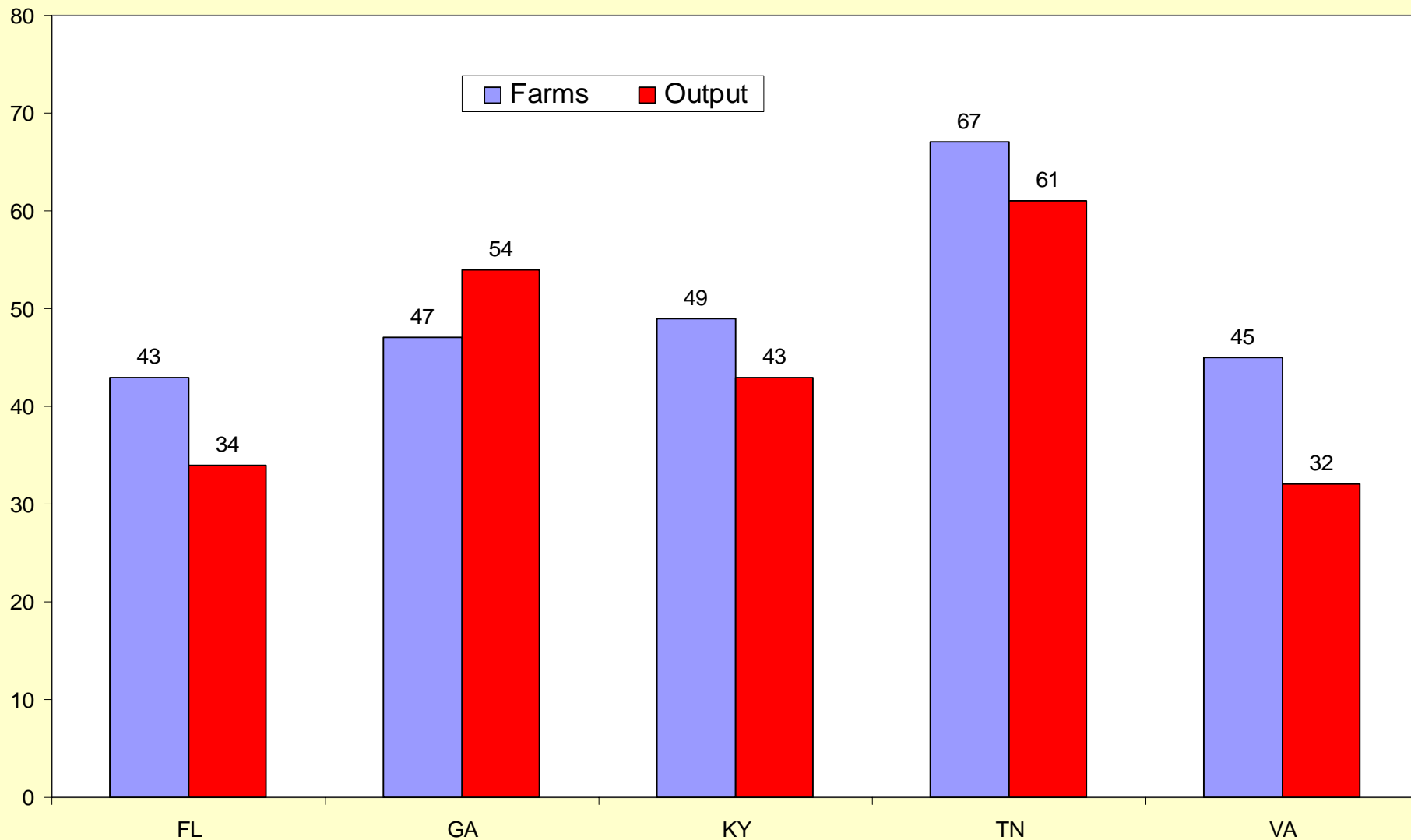
# Operations Expected to End Dairying by 2015, by Region

Percent of farms or output



# Operations Expected to End Dairying by 2015, by State

Percent of farms or output



# Conclusions

- Substantial economic profits available to large enterprises
  - Expect continued investment
  - How big is too big?
- Continued operation is profitable for many smaller farms
  - Expect long period of continued adjustment
- Operations in KY, TN, and VA face regional and size disadvantages, and growing interregional competition

# For More Information

- ERS dairy structure report:
  - <http://www.ers.usda.gov/Publications/ERR47/>
- Detailed cost analysis:
  - William D. McBride and Catherine Greene, “A Comparison of Conventional and Organic Milk Production Systems in the U.S.”, accessible at <http://www.ers.usda.gov/Data/CostsAndReturns/>
- Data Summary and Documentation:
  - <http://www.ers.usda.gov/Data/CostsAndReturns/>

# Contact

- James M. MacDonald
  - [macdonal@ers.usda.gov](mailto:macdonal@ers.usda.gov)
  - 202-694-5610
  
- USDA Agricultural Resource Management Survey (ARMS) Briefing Room
  - <http://www.ers.usda.gov/Briefing/ARMS/>