



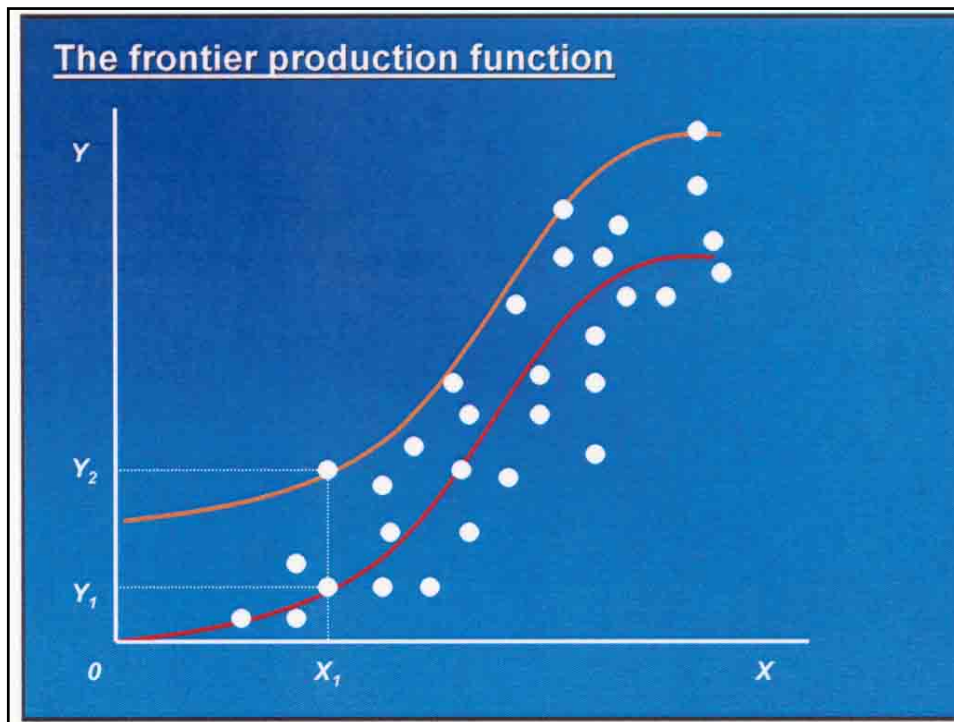
Farm Efficiency

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Farm Efficiency

- The frontier production function
- Efficiency models
- Data
- Efficiency results
- Farm size results
- Conclusions



Inefficiency Models

- Technical Efficiency
 - Transform physical inputs into outputs relative to the best practice frontier
- Allocative Efficiency
 - Input mix chosen minimizes costs
- Scale Efficiency
 - Effect of farm size on efficiency
- Overall (Cost) Efficiency
 - Economic performance of a farm

Kansas Farm Management Association Data

Average Values (1995 to 2004)

Farm Characteristics	Obs.	Mean	Std. Dev.	Min.	Max.
Gross Farm Income (\$)	6100	219,953	195,328	1,600	1,697,348
Total Acres	6100	1,766	1,228	33	9,573
Total Assets (\$)	6100	752,996	582,075	40,587	7,011,334
Total Debt (\$)	6100	218,960	257,929	0	2,447,343
Working Capital (\$)	6100	100,571	167,861	805,171	1,671,787

Input Data

- Hired and operator labor
- Feed and veterinarian
- Seed
- Crop insurance
- Fertilizer
- Herbicide and insecticide
- Repairs and machine hire
- Fuel and utilities
- Conservation, property taxes, and fees
- Rent, interest, and depreciation.

Output Data

- Small grain production
- Feed grain production
- Oilseed production
- Hay and forage production
- Beef production
- Milk production
- Miscellaneous income

Efficiency Results

Efficiency Results for all Farms over all Years

Efficiency	Average	Std. Dev.	Min.	Max.
Technical	0.940	0.109	0.340	1
Allocative	0.765	0.144	0.207	1
Scale	0.895	0.128	0.097	1
Overall	0.648	0.186	0.060	1

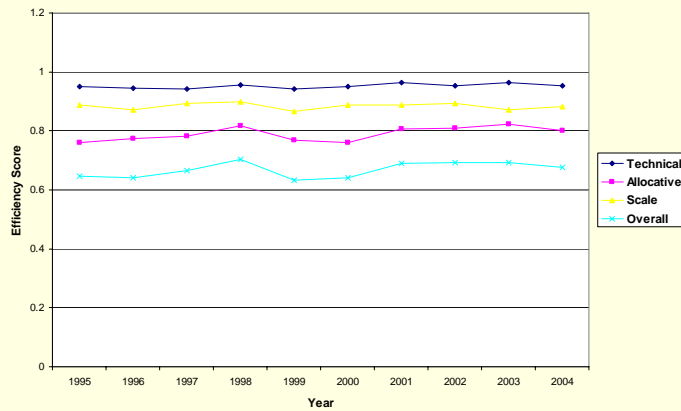
Number and Percent of Farms Achieving Overall Efficiency

Number and Percent of Farms Achieving Overall Efficiency by Year

Year	Mean	Number/%	Year	Mean	Number/%
1995	0.6463	31/5.08	2000	0.6240	21/3.44
1996	0.6401	32/5.24	2001	0.6905	32/5.24
1997	0.6647	28/4.59	2002	0.6913	25/4.09
1998	0.7032	21/3.44	2003	0.6933	18/2.95
1999	0.6317	16/2.62	2004	0.6760	22/3.60

Results: Average Annual Efficiency

Average Annual Efficiency for Kansas Farms



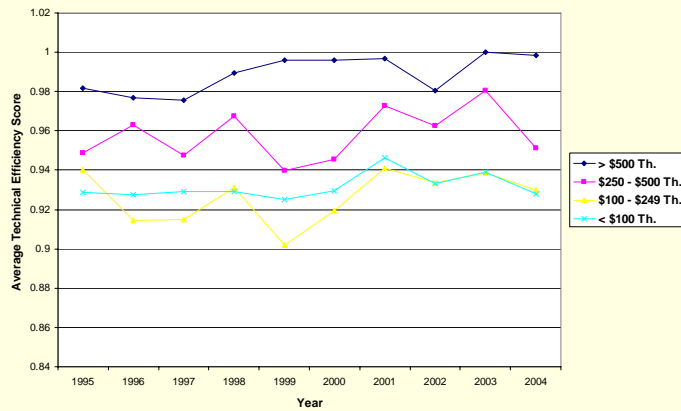
Annual Gross Income by Farm Size

1995 to 2004

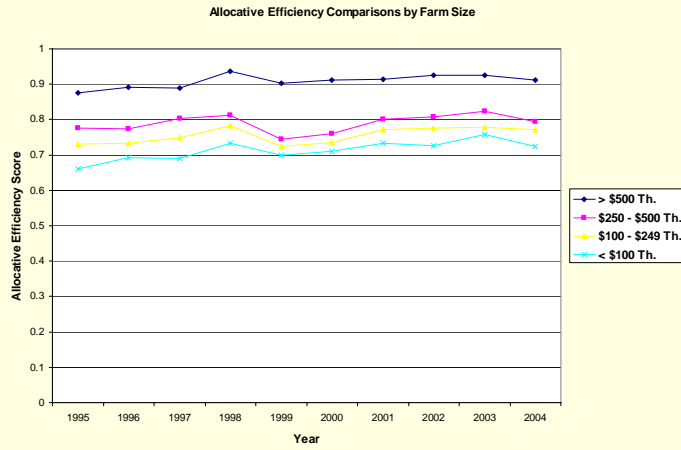
Size	Average Income	Farms
<\$100,000	\$67,005	24.5%
\$100,000-\$249,000	\$165,822	46.0%
\$250,000-\$500,000	\$345,030	23.0%
>\$500,000	\$732,182	6.5%

Technical Efficiency Comparisons by Farm Size

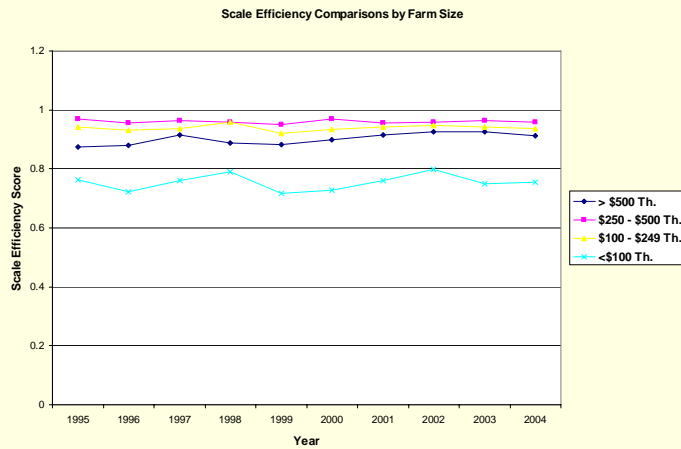
Technical Efficiency Comparisons by Farm Size



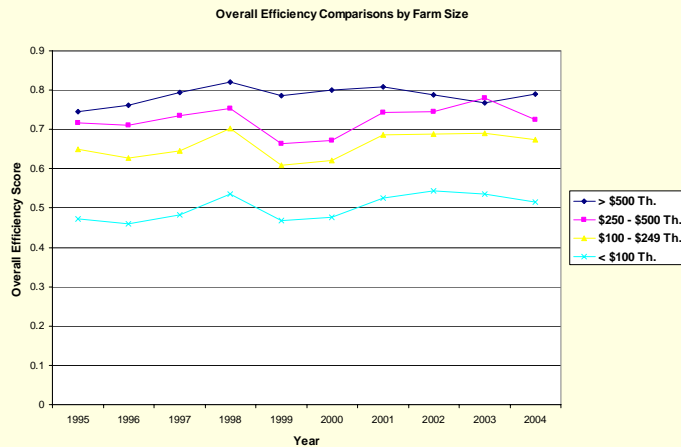
Allocative Efficiency Comparisons by Farm Size



Scale Efficiency Comparisons by Farm Size



Overall Efficiency Comparisons by Farm Size



Conclusions

- Farm efficiency has been stable from 1995 to 2004
- As farms grow larger they become:
 - More technically efficient
 - More allocative efficient
 - More overall (cost) efficient
- Except for small farms
 - Scale efficiency does not increase with farm size
 - Farms size does not generally have a large impact on efficiency

Your Move, Any Questions?

