

## **16. Are the Most Profitable Farms Consistently the Most Profitable?**

**Gregg Ibendahl**

**<lbendahl@k-state.edu>**

*Greg Ibendahl joined the faculty in fall 2012 as an associate professor of agricultural economics with a major appointment in extension. Prior to joining the K-State faculty, he served as an associate extension professor at Mississippi State University. His specialty areas are farm management and agricultural finance. Ibendahl earned his Ph.D. from the University of Illinois in agricultural economics. He also has an MBA from Northern Illinois University. His undergraduate degree is from Southern Illinois University, where he majored in agricultural mechanization and earned a minor in computer science.*

### **Abstract/Summary**

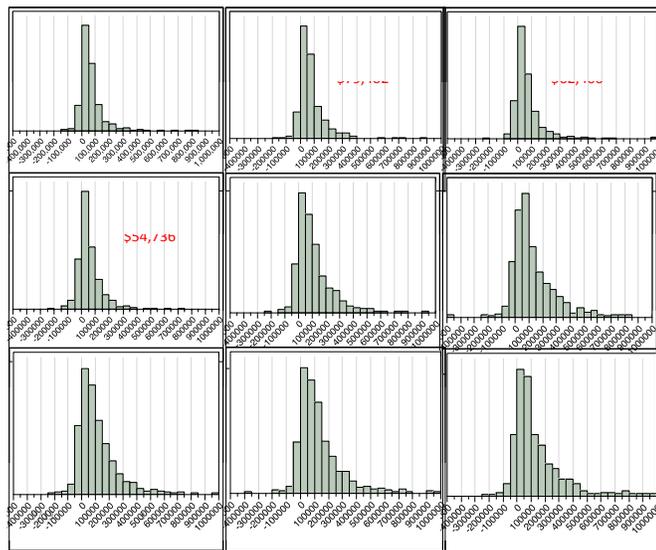
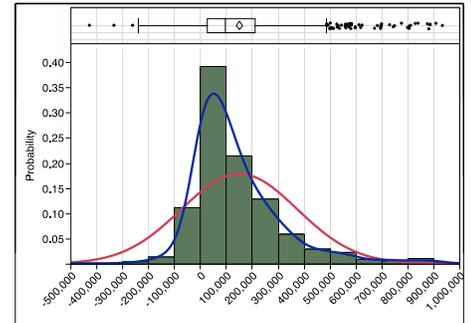
*Every year, some farmers will do better than other farmers. Whether by luck, better management, more rainfall, or a different enterprise mix, a subset of farmers will be more profitable than another subset of farmers. However, over a period of years, is there consistency among the population of farmers who are the most profitable? That is, are the most profitable farms in any given year also the most profitable farms over a long-term time horizon? This paper investigates a 15-year panel data set of similar farms from Kansas to determine if the most profitable farms are consistent across time. We accomplish this by ranking farms by decile each year and then averaging these yearly rankings. If luck and weather are the main drivers of differences in yearly net farm income, then over time, a farm's yearly ranking would vary and the overall average ranking for that farm should approach 5.5. Conversely, if management is more of a factor determining differences in net farm income, then a farm should consistently place in the same decile ranking year-in and year-out. Thus the overall 15-year average rankings of farms should be very widely distributed. That is, there would be no more farms ranked at the mean (5.5) than at the extremes. We find that both management and weather/luck contribute to overall profitability. Even though the bottom decile of farmers consistently have negative net farm income each year, the 15-year average of net farm income only has 4 percent of farms with a negative average.*

# Are the Most Profitable Farms Consistently the Most Profitable

Gregg Ibendahl  
Kansas State University

## Background

- Distribution of 2012 NFI
- Red line is normal curve
- Blue line is curve fitted to data
- Mean = \$151,226
- Median = \$95,617



## Issue to examine

- Why is there a difference in profitability among farmers?
  - This occurs even after accounting for farm type and farm size
  - Luck?
  - Better management?
  - More rainfall or other weather event?
  - Different enterprise mix?

## Problem statement

- Over a period of years is there consistency among the population of farmers for who is the most profitable?
- That is, are the most profitable farms in any given year also the most profitable farms over a long-term horizon

## Data and methods

- 15-year panel data set
  - 626 Kansas farms for the yrs 1997 though 2011
  - These were the farms with data for each year
- Farm type can be controlled
  - Examine crop vs livestock farms
    - 342 crop only farms
    - 67 livestock and crop farms
    - The other farms switched groupings over time
- Weather within a region should average out over 15 years

## Data and methods (cont.)

- For each year, the farms were divided into deciles based on accrual net farm income
  - 10 groups with either 62 or 63 farms
- Top 10% in a year were assigned a value of “1”, second 10% a value of “2”, etc.
  - Each farm for each year has a ranking
  - Years treated as independent
  - The average farm ranking in a given year is 5.5

7/13

7

## Data and methods (cont.)

- Next step – average for each farm, the yearly farm rankings
  - If weather or luck was totally accounting for the yearly variation, we would expect the farm ranking would average toward the mean (5.5)
  - If management, farm size, farm type, or soil productivity was a factor, then some farms should have a higher 15-year average ranking than other farms

7/13

8

## Data and method (cont.)

- Examining the actual distribution of 15-year farm ranking tells us the effect of management vs weather or luck
  - Flatter – the more likely management is a factor
    - i.e., farms separate themselves
  - Steeper – the more likely luck or weather is a factor
    - i.e., farms tend to average toward the mean ranking

7/13

9

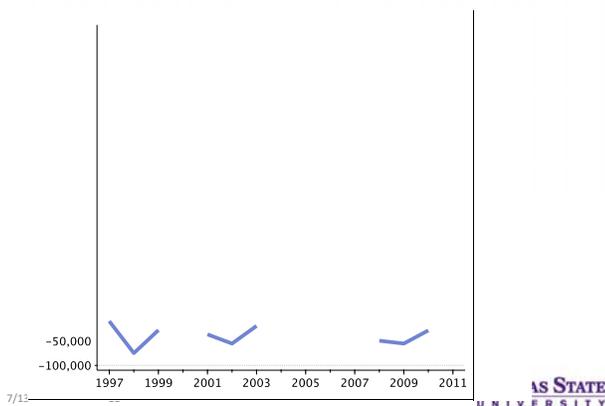
## 2<sup>nd</sup> way of looking at management

- Count the number of farms that have an average rating either one SD above or one SD below the mean of 5.5
  - A discrete uniform distribution
    - Ranking above 2.623 would be above average farm
    - Ranking below 8.372 would be considered below average farm
  - If weather or luck were the only factors
    - no farms would average above or below this
  - If management the only factor
    - 26.23% of the farms to be above average and 26.23% of the farms to be below

7/13

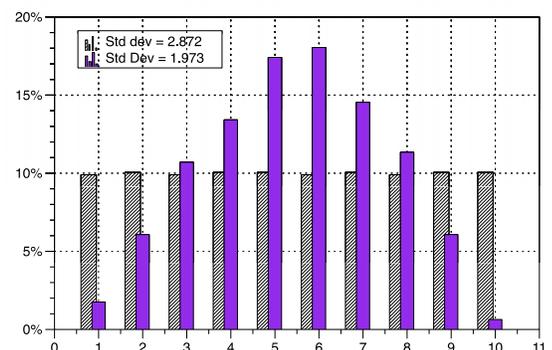
10

## Results – Average net farm income by decile per year – all farms



7/11

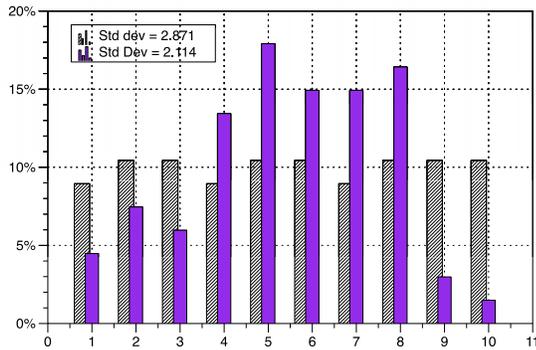
## Results – Distribution of average farm rankings – all farms



7/13

12

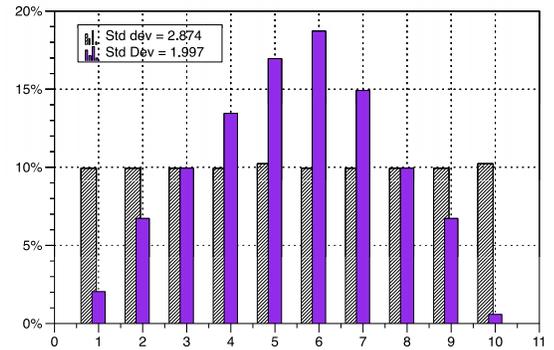
## Results – Distribution of average farm rankings – combination farms



7/13

13

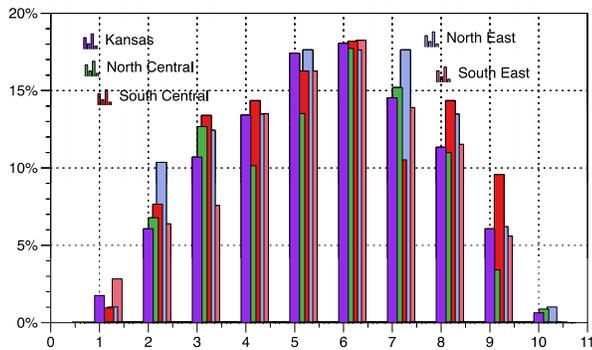
## Results – Distribution of average farm rankings – crop farms



7/13

14

## Results – Distribution of average farm rankings – regional differences



7/13

15

Number of farms above or below one standard deviation

	Actual count	Theoretical maximum	% mgmt responsibility
<b>All farms</b>			
Above average	54	164	33%
Below average	52	164	32%
<b>Non-crop</b>			
Above average	8	18	45%
Below average	4	18	23%
<b>Crop</b>			
Above average	31	90	34%
Below average	30	90	33%
<b>North Central</b>			
Above average	9	28	32%
Below average	9	28	32%
<b>South Central</b>			
Above average	11	29	38%
Below average	12	29	42%
<b>North East</b>			
Above average	14	28	50%
Below average	9	28	32%
<b>South East</b>			
Above average	25	63	39%
Below average	15	63	24%

7/13

16

## Conclusions

- Weather and luck as well as management influence a farm's year-to-year income.
- Base on the index – management might contribute to a third of the net income variation
  - Farm size would be a factor here as well
  - Northeast Kansas had a management factor of 50%

7/13

17

## Conclusions (cont.)

- 10% of farms lose money each year
  - Only 1% of farms consistently lose money
- In the top decile (10% of farms)
  - Only 2 to 3% of farms are consistently in this group
- From regional analysis
  - The southern 2 areas of KS did not have a farm average in the bottom 10% decile

7/13

18

# Number of farms with ave NFI in these ranges

