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Department of Agricultural and Consumer Economics, University of Illinois Urbana-Champaign

Differences in Revenue and Costs for Higher and Average Return Grain Farms

Gary Schnitkey, Nick Paulson, and Dale Lattz

Department of Agricultural and Consumer Economics
University of Illinois

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Differences in returns and costs are compared for farms of higher than average profitability to average profitability farms. This analysis was conducted in McLean County, Illinois for farms having high-productivity farmland. Farms with higher profitability tended to have lower costs, particularly in the machinery depreciation and non-land interest categories. Higher profit farms had higher revenue due to slightly higher soybean yields and slightly higher soybean prices.

Farms Analyzed

Data from Illinois Farm Business Farm Management (FBFM) were used to evaluate returns for a group of grain farms located in McLean County, Illinois with high-productivity farmland (see *farmdoc daily*, May 26, 2017 for more detail).

Farms were divided into three groups based on profitability. The measure of profitability was per acre operator and land return, the financial returns to farm before paying land costs. In this article, results are compared for two groups: 1) the high one-third of farms (the one-third of farms with the highest operator and land returns), and 2) the mid one-third group (the one-third of farms with the middle (or average) operator and land returns). These groups were formed for two time periods:

- 2010-2012. These three years were some of the highest income years in recent history (see Figure 1 in *farmdoc daily*, May 26, 2017).
- 2013-2015. These three years were much lower income years than from 2010-2012 period.

High and Mid Return Groups

Table 1 shows revenues, costs, and returns from the high one-third and mid one-third return groups. Revenue, costs, and returns are averaged over both corn and soybean acres. In McLean County, farmers in the both profitability groups had 50% of their acres devoted to corn in the 2013-2015 period. In the earlier 2010-2012 period, the high one-third group had 53% of their acres in corn.

Table 1. Revenue, Costs, and Returns for High and Average Profit Groups for McLean County Grain Farms, 2010-2012 and 2013-2015

	2010-2012 [1]			2013-2015 [1]		
	High 1/3	Mid 1/3	Diff	High 1/3	Mid 1/3	Diff
Percent corn	53%	50%		50%	50%	
Percent soybeans	46%	49%		49%	49%	
Corn price -- new	$5.93	$5.69		$3.95	$4.05	
Corn price -- old	$5.22	$5.06		$5.03	$5.02	
Soybean Price -- new	$13.13	$12.05		$11.27	$10.96	
Soybean price -- old	$12.30	$11.63		$13.40	$12.89	
Corn yield	165	168		209	209	
Soybean yield	60	58		64	63	
Gross crop revenue	**$997**	**$947**	**$50**	**$823**	**$792**	**$31**
Fertilizer	105	107	-2	116	118	-2
Pesticide	37	33	4	51	49	2
Seed	79	80	-1	95	94	1
Drying	12	13	-1	16	17	-1
Storage	7	11	-4	10	14	-4
Total direct costs	**$240**	**$244**	**-$4**	**$288**	**$292**	**-$4**
Machine hire/lease	12	13	-1	6	4	2
Utilities	7	11	-4	4	6	-2
Machine repair	6	7	-1	24	23	1
Fuel and oil	5	5	0	22	22	0
Light vehicle	21	20	1	1	2	-1
Mach. depreciation	21	22	-1	57	75	-18
Total power costs	**72**	**78**	**-6**	**114**	**132**	**-18**
Hired labor	9	11	-2	8	12	-4
Building repair and rent	5	3	2	3	6	-3
Building depreciation	6	3	3	7	9	-2
Insurance	26	23	3	26	27	-1
Misc.	6	5	1	7	8	-1
Interest non-land	10	18	-8	19	31	-12
Total overhead costs	**62**	**63**	**-1**	**70**	**93**	**-23**
Total non-land costs	**374**	**385**	**-11**	**472**	**517**	**-45**
Operator and land returr	**$623**	**$562**	**$61**	**$351**	**$275**	**$76**

[1] Profit groups were formed based on operator and land returns. The high one-third group had the highest one-third in terms of returns and the mid 1/3 the middle third in returns.

Gross crop revenue includes crop revenue, crop insurance payments, and government payments. In both periods, the high one-third farms had higher gross revenue. For the 2010-2012 period, gross revenue was $50 per acre higher for the high one-third group compared to the mid one-third group. In 2013-2015, the high one-third group had $31 per acre more in gross revenue. Differences between the groups tended to be associated with two items:

- Higher soybean prices. FBFM divides prices into old crop (produced in the previous year) and new crop (produced in the current year). For soybeans, the high one-third group had a higher average soybean prices for old and new crop than the mid one-third group.

- Higher soybean yields. The high one-third farms had higher average soybean yields. The high one-third farms averaged 60 bushels per acre compared to 58 bushels per acre for the low one-third group. For the 2013-2015 period, the high one-third group had a 64 bushel per acre soybean yield compared to a 63 bushel per acre yield for the mid one-third group.

Note that the high one-third group had a lower average corn yield in the 2010-2012 period. The high one-third group averaged 165 bushels per acre compare to 168 bushels per acre for the mid one-third group. The lower yield resulted from the 2012 drought year. Taking out the drought year results in the two groups having roughly the same corn yield. In 2012, lower yields were countered by higher crop insurance payments.

Non-land costs were lower for the high one-third group in both time periods. The high one-third group had $11 per acre lower costs in 2010-2012 period and $45 per acre lower costs in the 2013-2015 period. The non-land costs difference became larger for the later 2013-2015 period. The later time period had higher non-land costs, likely leading to the larger cost differences between return groups.

The two costs with the largest differences between the two groups are:

1. Machinery depreciation – The high one-third group had $1 per acre in lower costs than did the mid one-third group during the 2010-2012 period. This cost difference increased to 18 per acre in the 2013-2015 period.

2. Interest non-land – The high one-third group had an $8 per acre lower cost in the 2010-2012 period. This difference increased to $12 per acre in the 2013-2015 period.

Both these items are related to machinery investments as non-land interest would increase with debt-financed machinery purchases. Over half of the non-land cost differences were associated with machinery depreciation and non-land interest.

Other costs categories where noticeable differences existed include:

- Storage. The high one-third group had $4 per acre lower storage costs than the mid one-third group in both the 2010-2012 and 2013-2015 periods. Storage costs relate to charges at commercial elevators (Costs related to on-farm storage would be in other categories). Difference in costs suggest less commercial storage by the high one-third group.

- Hired labor. The high one-third group had $2 and $4 per acre lower hired labor cost than the mid one-third group during the 2010-2012 and 2013-2015 periods, respectively. Farm sizes were 200 acres more for the high one-third group, so these differences in costs are not related to farm size.

Summary

Differences in returns existed over time. For this set of farms, factors causing those differences include higher revenues related to slightly higher soybean yields and prices. Costs were lower for the high one-third farms. Much of the cost difference was related to machinery related items.

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Data used in this study comes from the local Farm Business Farm Management (FBFM) Associations across the State of Illinois. Without their cooperation, information as comprehensive and accurate as this would not be available for educational purposes. FBFM, which consists of 5,700 plus farmers and 60 professional field staff, is a not-for-profit organization available to all farm operators in Illinois. FBFM staff provide counsel along with recordkeeping, farm financial management, business entity planning and income tax management. For more information, please contact the State FBFM Office located at the University of Illinois Department of Agricultural and Consumer Economics at 217.333.5511 or visit the FBFM website at www.fbfm.org.

Reference

Schnitkey, G., N. Paulson, and D. Lattz. "How Hard is it to be Above Average in Farming?" *farmdoc daily* (7):98, Department of Agricultural and Consumer Economics, University of Illinois at Urbana-Champaign, May 26, 2017.