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What are financially strong farm operations doing differently?

Alejandro Plastina
Iowa State University, plastina@iastate.edu

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Alejandro Plastina, assistant professor and Extension economist, Economics, Iowa State University

This article distills the major findings from two studies of recent anonymous farm-level financial information from the Iowa Farm Business Association (IFBA). The first study gauges the extent of financial deterioration among Iowa farms between January 1, 2015 and January 1, 2016 (Plastina, 2016a). The second study identifies the factors associated with the capacity of farms to produce free cash flows to pay for family living expenses, cover depreciation, and re-invest in the farm business (Plastina 2016b).

What percent of Iowa farms are financially vulnerable?

The financial strength of a particular farm operation is assessed with respect to its solvency and liquidity ratings at a certain point in time (Plastina 2016a). Solvency refers to the degree to which all debts are secured and the relative mix of equity and debt capital used by the farm. The total debt-to-asset ratio is the selected relative measure of solvency, and is calculated as total farm liabilities to total farm assets. According to the Farm Financial Scorecard (Becker et al. 2005), a total debt-to-asset ratio above 60 percent indicates a vulnerable solvency position; a ratio below 30 percent indicates a strong solvency position, and a ratio between 30 percent and 60 percent indicates that solvency should be kept under close scrutiny.

Liquidity refers to the degree to which debt obligations coming due over the following year can be paid from cash or assets that soon will be turned into cash. The current ratio is the selected indicator to gauge farms' liquidity, and is calculated as the ratio of current farm assets to current farm liabilities. In this study, a current ratio above 2.0 indicates a strong liquidity position; a ratio below 1.3 indicates a vulnerable liquidity position, and a ratio between 1.3 and 2.0 indicates that liquidity should be kept under close watch.

Table 1. Distribution of farms across categories in January 2016, in percent of sample (farm count in parenthesis).

		Jan 2016 Solvency: Total Debt-to-Asset Ratio			
		***Vulnerable*: Above 60%**	***Under Watch*: Between 30% and 60%**	***Strong*: Under 30%**	**All**
Jan 2016 Liquidity: Current Ratio	*Vulnerable*: Below 1.3	17.7% (56)	15.5% (49)	2.9% (9)	36.1% (114)
	Under Watch: Between 1.3 and 2.0	3.2% (10)	10.8% (34)	7% (22)	20.9% (66)
	Strong: Over 2.0	1.6% (5)	10.8% (34)	30.7% (97)	43.0% (136)
	All	22.5% (71)	37% (117)	40.5% (128)	100% (316)

All 316 farms used in this study can be assigned to 1 of the 9 categories created when combining the 3 categories for solvency and 3 categories for liquidity (table 1). The average farm size in this study is 801 crop acres, and 67% of the farms in the sample are 500 crop acres in size or larger.

In January 2016, liquidity and solvency ratings were simultaneously vulnerable for 17.7% (56 out of 316 operations) of the farms in the sample. Liquidity positions were rated as vulnerable for 36.1% of the farms.

Solvency positions were rated as vulnerable for 22.5% of the farms. Therefore, liquidity problems were more likely to surface than solvency problems.

The solvency and liquidity ratings were simultaneously strong for 30.7% of the farms in the sample. The liquidity rating was strong for 43.0% of the farms, and the solvency rating was strong for 40.5% of the farms.

Are Iowa farms becoming more financially vulnerable?

The same 316 farms analyzed in Table 1 were categorized according to their solvency and liquidity ratings as of January 1, 2015. Table 2 summarizes the changes in categories for all farms in the sample between January 2015 and January 2016. The total number of farms that did not switch categories between January 2015 and January 2016 amounted to 204, and represented 64.6% of the sample.

Table 2. Summary of changes in categories between January 2015 and January 2016.

Type of change	Count of farms	Percent of total
No change	204	64.6%
Similar solvency rating, lower liquidity rating	51	16.1%
Similar liquidity rating, lower solvency rating	21	6.6%
Similar solvency rating, higher liquidity rating	18	5.7%
Lower liquidity and solvency ratings	10	3.2%
Similar liquidity rating, higher solvency rating	8	2.5%
Higher liquidity and solvency ratings	4	1.3%
Higher liquidity rating, lower solvency rating	0	0.0%
Lower liquidity rating, higher solvency rating	0	0.0%
Total	316	100.0%

The most common switch in categories involved a lower liquidity rating while maintaining the solvency classification (16.1% of farms). This is a clear indication that lower commodity prices affected farm operations mostly through liquidity in 2015.

The second most common switch involved a lower solvency rating, while maintaining the liquidity rating (6.6% of farms). Farms in this group with vulnerable liquidity classification (12 farms), saw their farm net worth decline 23% on average in 2015, mostly due to operating losses and increasing debt. Farms with strong liquidity classification (9 farms), saw their net worth decline 6% on average in 2015, due mainly to increased debt levels to maintain their liquidity (several farms in this group also purchased land or machinery in 2015).

The third most common switch involved improving the liquidity rating while maintaining the solvency classification (5.7% of farms), mainly through debt restructuring.

Only 3.2% of the sample experienced a simultaneous switch to lower liquidity and solvency ratings.

The total number of farm operations that saw their liquidity or solvency rating fall between January 2015 and January 2016 amounted to 82, and they represent 25.9% of the farms in the sample. The total number of farms that experienced improvements in their liquidity or solvency ratio over the same period amounted to 30, or 9.2% of the sample.

How much working capital did farms burn through in 2015?

Working capital is an absolute measure of liquidity, and is calculated as the difference between short term assets and short term liabilities. If working capital is greater than zero, then all short term liabilities can be paid off by liquidating a portion of the short term assets. To provide a reasonable answer to the question posed in this section, farms were assigned to one of three possible groups according to their liquidity ratings in January 2016: vulnerable, under watch, or strong. Then, the average working capital for each of those groups was calculated using January 2015 and January 2016 data. It is important to note that the number of farms in each group is the same for both points in time because the composition of the groups remained unchanged for this comparison.

On average, farms burned through $91,658 of working capital in 2015, or 24% of their working capital in January 1, 2015. However, while farms with strong liquidity ratings in January 2016 burned through $58,445 in 2015 (equivalent to 9% of their working capital in January 2015), farms with vulnerable liquidity ratings burned through $137,149 in 2015, ending up with short term liabilities in excess of short term assets by $44,398. Farms with under watch liquidity ratings burned through $81,520 in 2015, equivalent to 28% of their working capital in January 2015.

Table 3. Average changes in working capital for farms grouped according to their liquidity ratings in January 2016.

	Working Capital				
Jan 2016 Liquidity Rating	**Jan 2015 ($)**	**Jan 2016 ($)**	**Change ($)**	**Change (%)**	**Number of Farms**
Vulnerable: Below 1.3	92,751	-44,398	-137,149	-148%	114
Under Watch: Between 1.3 and 2.0	291,405	209,885	-81,520	-28%	66
Strong: Over 2.0	661,860	603,415	-58,445	-9%	136
All	379,175	287,517	-91,658	-24%	316

What are financially strong farms doing differently?

Using a larger sample of farms (not directly comparable to the study previously referenced), Plastina 2016b measures the capacity of each farm to generate free cash flows through the adjusted farm cash income (AFCI = to accrued net farm income + depreciation) in 2015. Because AFCI is estimated from accrual net farm income, changes in inventory are taken into account and consequently gives a better indicator of financial capacity than would annual cash income. If AFCI is positive, cash from the operation can be used to pay taxes, reduce principal, purchase capital assets or be invested in the farm operation, or pay family living expenses. If AFCI is negative, the shortfall must be covered by off-farm income from wages or investments, or reductions in family living expenses.

Individual farm business are ranked based on their AFCI and then divided into five groups of equal size or quintiles (Figure 1). The average AFCI across the 558 farms in the sample was $100,000 in 2015, but while the lowest 20% farms had an average AFCI of -$81,000 the top 20% farms had an average AFCI of $323,000. Correspondingly, the rate of return on assets average 0.9% across all farms, but it averaged -8.4% for the lowest 20% farms and 6.0% for the top 20% farms.

Several characteristics for each of these five groups are evaluated, and the most relevant factors associated with financial success are: farm size, enterprise mix, agricultural productivity, good marketing, and controlled expenses.

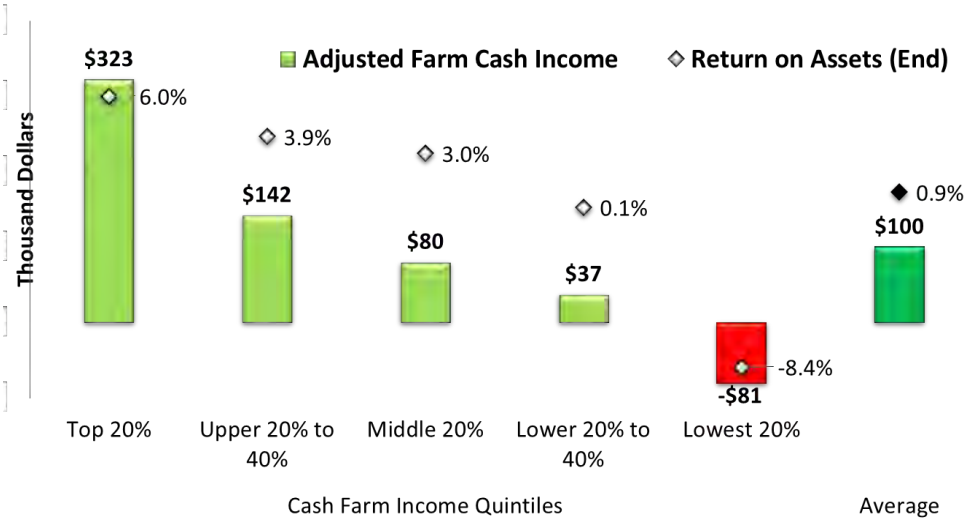

Figure 1. Average adjusted farm cash income and return on assets, by groups of farms.

Farm size is positively correlated with AFCI across all groups but the lowest 20% of farms (Figure 2), that have negative AFCI with an average farm size close to the sample average (715 versus 741 crop operated acres, respectively). In order to filter out the effect of farm size, the rest of the analysis is conducted on a per acre basis.

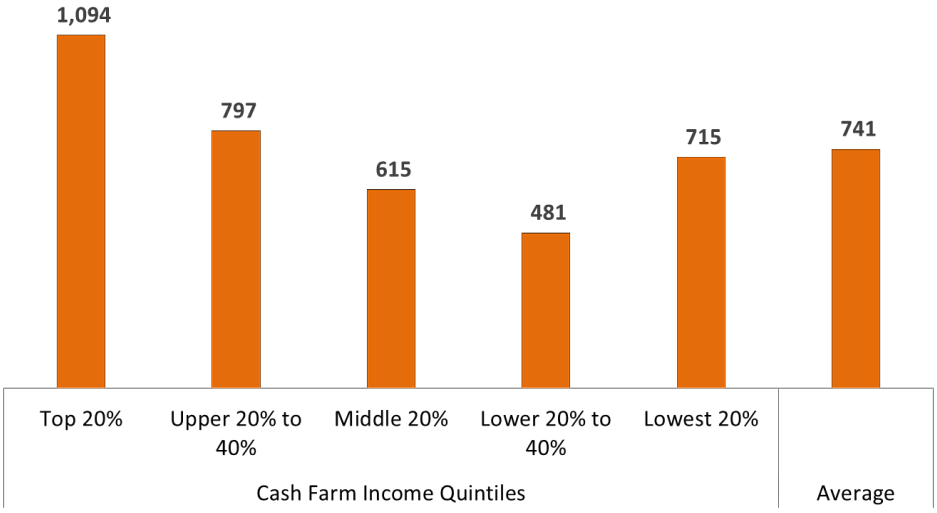

Figure 2. Average farm size in crop operated acres, by groups of farms.

The average AFCI per acre across all farms amounted to $135, but while the top 20% generated an average AFCI per acre of $295, the lowest 20% lost $113 per acre of AFCI.

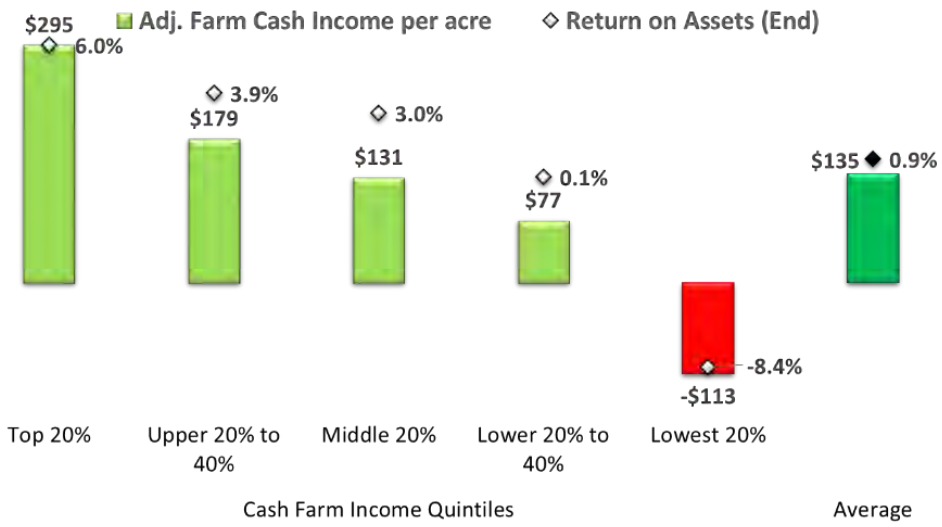

Figure 3. Average farm size in crop operated acres, by groups of farms.

The enterprise mix was an important factor in the performance of Iowa farms in 2015. Within each group, the composition of farms by types of production was evaluated according to the following categories: "Cash grain" farms if crops are greater than 90 percent of gross farm income; "Grain-livestock" farms if crops are greater than 50 percent but less than 90 percent of gross farm income; "Hog" farms if pork is greater than 50 percent of gross farm income; "Beef" farms if beef is greater than 50 percent of gross farm income; "Mixed" farms are all other farms. Groups with a higher proportion of farms specialized in grain production were able to generate higher AFCI, on average, than groups with a higher proportion of farms specialized in livestock production (Figure 4).

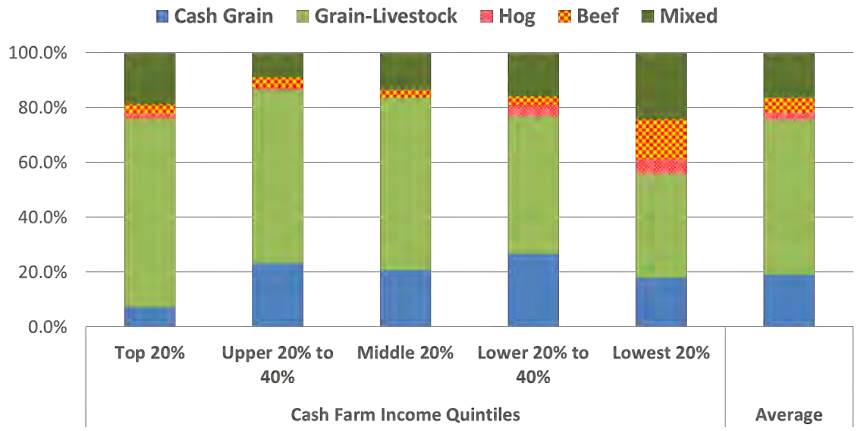

Figure 4. Sources of income, by groups of farms.

As shown in Figures 5 and 6, both agricultural productivity and good marketing contribute to the generation of free cash flows, but in 2015 the importance of the latter was more pronounced that the importance of the former. The average corn yield for the top 20% of farms was 11 bushels or 6% higher than for the lowest 20% of farms. But the average soybean yield for the top 20% of farms was only 0.6

bushels or 0.1% higher than for the lowest 20% of farms. However, crop prices received by farmers in the top 20% were 9.2% (33 cents) higher for corn and 5.7% (54 cents) higher for soybeans than those received by the lowest 20% of farms.

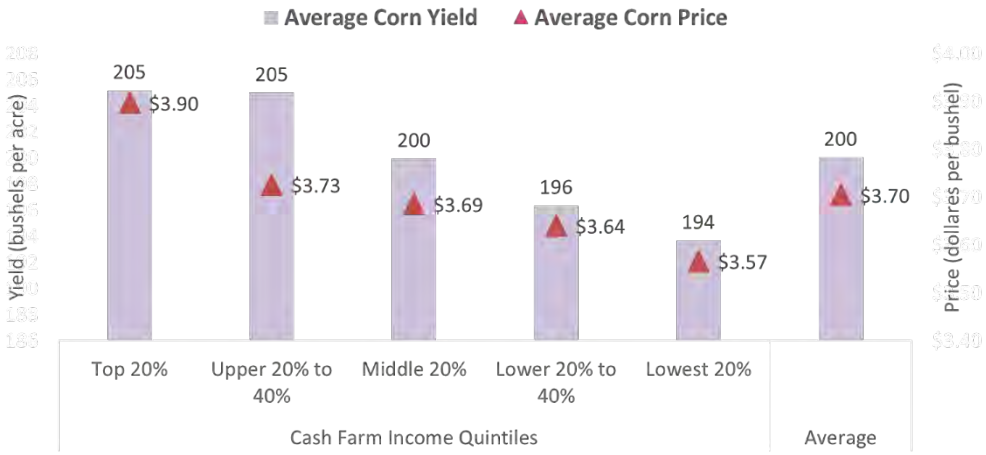

Figure 5. Average corn yields and corn prices received by farmers, by groups of farms.

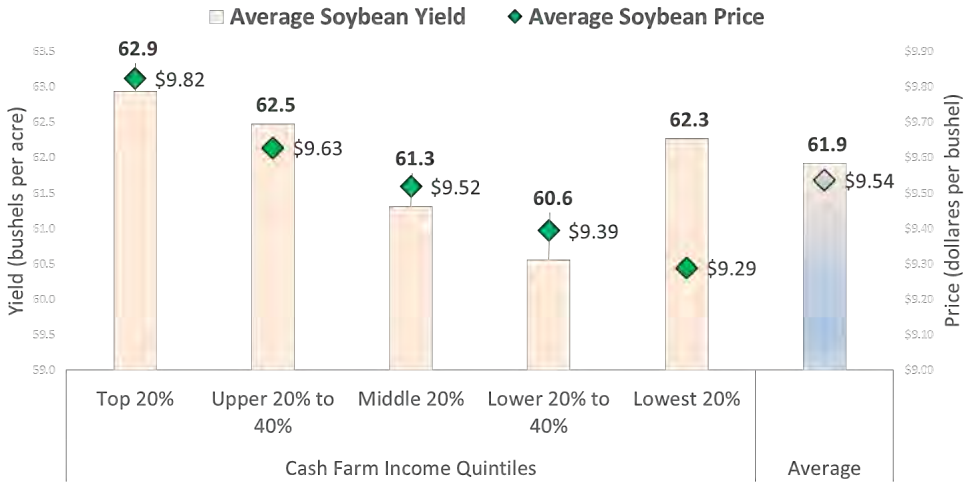

Figure 6. Average soybean yields and soybean prices received by farmers, by groups of farms.

Finally, total expenses (including interest payments) per acre are similar across all groups, except for the lowest 20% of farms where expenses per acre more than double the average across the other four groups (Figure 7). Moreover, the expense ratio (calculated as total expenses divided by gross farm income), is negatively correlated to AFCI: starting at 79% for the top 20% group, total expenses account for 119% of gross farm revenue for the lowest 20% group. Taking these two measures simultaneously, it can be inferred that with the exception of the lowest 20% group, farms were similarly successful in managing costs per acre. This seems to indicate that while containing costs is important for the success of the business, it is certainly not the differentiating characteristics among most farms in 2015. On the contrary, it seems that the appropriate choice of enterprises, good marketing and to a smaller extent agricultural productivity played bigger roles than cost management in differentiating very successful farms from the rest.

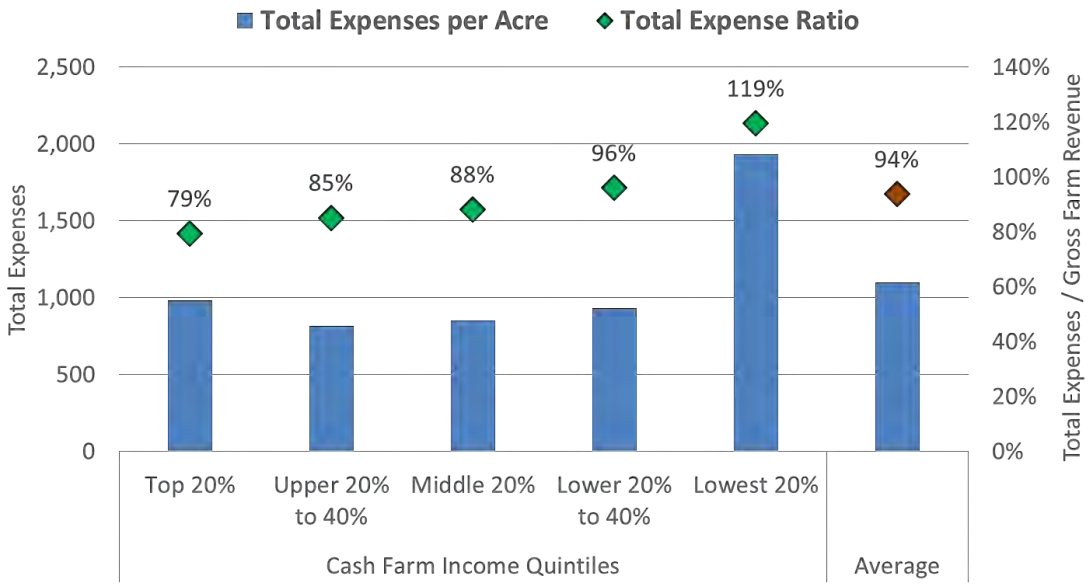

Figure 7. Average total expenses and total expense ratio, by groups of farms.

References

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