

# Financial stress in Iowa farms: 2014-2016

## Summary

Iowa farm financial conditions have deteriorated since 2012, but average indicators of liquidity and solvency remain close to their long-term levels. However, average financial measures mask the variability across farms. This article tracks the evolution of financial stress in Iowa farms using a panel of financial statements for 273 farms collected by the Iowa Farm Business Association (IFBA). The share of financially stressed farms (vulnerable liquidity or solvency ratings) increased from 38 percent in December 2014 to 47 percent in December 2016. On average, farms lost \$180 per acre of working capital over that period, but farms with vulnerable liquidity ratings lost almost twice that amount. Iowa State University Extension and Outreach makes available a number of resources free of charge to help farmers with their farm financial planning.

Average accrued net farm income in Iowa declined by 89 percent from its peak of \$243,072 in 2012 to \$27,927 in 2015, before recovering slightly to \$45,597 in 2016 (Figure 1). As a consequence of this erosion in farm profitability (Plastina 2017), a deterioration of the overall financial health of the farm sector ensued. Relative measures of solvency<sup>1</sup> (such as the debt-to-asset ratio) and liquidity<sup>2</sup> (such as the current ratio) have deteriorated rapidly since 2012, and are now close to their 2006 levels (Figure 2). However, average net worth per acre<sup>3</sup> has remained stable at around \$2,750 since 2011 (Figure 1).

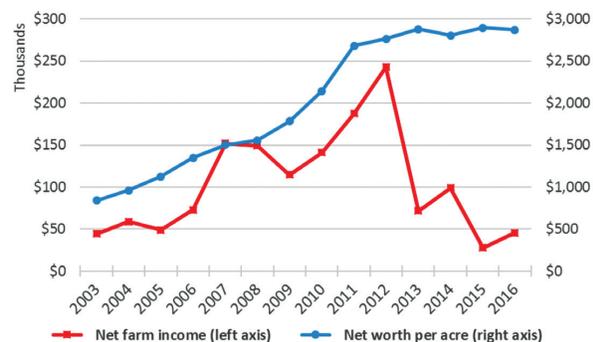


Figure 1. Average net farm income and net worth per acre in Iowa

<sup>1</sup> 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 a relative measure of solvency, and is calculated as the ratio of total farm liabilities to total farm assets.

<sup>2</sup> 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 a relative indicator to gauge farms' liquidity, and is calculated as the ratio of current farm assets to current farm liabilities.

<sup>3</sup> Net worth is measured on a cost basis. See the Data section for more details.

Although state averages show to some extent the recent deterioration of farm financial conditions, they also seem to indicate that the liquidity and solvency situations as of December 2016 are similar to their pre-2010 levels, when far fewer editorials about financially stressed farms made news.

This article provides an assessment of the degree of financial stress across Iowa farms and its recent evolution using a panel of farm financial statements from the IFBA, and lists the resources that ISU Extension and Outreach makes available free of charge to farmers to facilitate their financial planning and coping with the associated stress.

To ensure the comparability of financial indicators across farms of different sizes, the assessment is conducted using the debt-to-asset ratio (DTA) as an indicator of solvency, and the current ratio as an indicator of financial liquidity. At each point in time, each farm is assigned a solvency rating and a liquidity rating. Then, farms are grouped into different categories according to their ratings. The evolution of the farm financial situation is assessed by comparing the composition and characteristics of the different groups of farms through time.

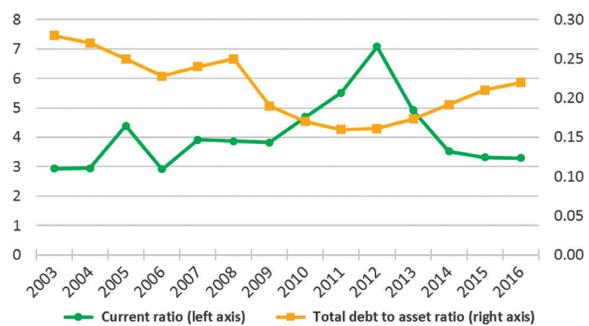


Figure 2. Average current ratio and total debt-to-asset ratio in Iowa

## Data

The 273 farms analyzed in this study were selected from the IFBA database based on the availability of complete and detailed financial statements for 2014, 2015, and 2016.

The IFBA is an independent farm business management association, managed and controlled by its members. Because the IFBA data come from actual accounting records, they are generally more accurate and consistent than data obtained from cross-sectional surveys (Hoppe et. al). However, because the data are not obtained using survey sampling methods, they may not be fully representative of the Iowa farm population.

**Table 1. Farm size of sample and Iowa Census farms**

Farm Size (Acres)	IFBA Farms		2012 Ag Census	
	N	%	N	Percent
a) 1 to 9	0	0.00	6,707	7.57
b) 10 to 49	1	0.37	20,665	23.31
c) 50 to 179	9	3.30	22,788	25.71
d) 180 to 499	77	28.21	18,654	21.05
e) 500 to 999	117	42.86	11,581	13.07
f) 1,000 and up	69	25.27	8,242	9.30
Total Observations	273	100	88,637	100
Average Acres	796		345	

Table 1 compares farms used in this study against the 2012 USDA Census of Agriculture by farm size. The farms in the present study tend to be larger farms, particularly those operating more than 500 acres. It is important to note that a farm, using the census definition, is any place that sells more than \$1,000 of agricultural produce a year. Consequently, the bulk of the farms in the census are small, part-time operations. The dataset used in the present study represents the medium-size commercial farm population in Iowa. According to the most recent census, farms larger than 180 acres – those more typified by the IFBA data – made up approximately 43 percent of all farms in Iowa and produced 84 percent of the total value of farm output.

Another difference between the agricultural census and the IFBA farms is that operators in the 55 to 64 years old category account for a higher share of the sample farms, and operators in the 65 and up category account for a smaller share than in the census (Table 2). In summary, the sample farms are representative of medium-size commercial farms largely managed by experienced farmers.

**Table 2. Age of principal operator for sample and Iowa Census farms**

Age Group	IFBA Farms		2012 Ag Census	
	N	%	N	Percent
a) Under 25	1	0.37	595	0.67
b) 25 to 34	10	3.66	5,647	6.37
c) 35 to 44	20	7.33	9,824	11.08
d) 45 to 54	71	26.01	20,765	23.43
e) 55 to 64	114	41.76	25,701	29.00
f) 65 and up	57	20.88	26,105	29.45
Total Observations	273	100	88,637	100
Average Age	56		57	

Financial statements prepared by IFBA consultants use a mix of valuation strategies to better track farm financial performance; current assets are valued at their market value but some intermediate and all long term assets (such as machinery and land, respectively) are valued at their cost (or book) value. If a cost value is not available, then the asset is assigned a value equivalent to a certain percent of the market value the first time it is recorded and its value is reduced thereafter by a fixed percentage if the asset is depreciable. Therefore, solvency measures (net worth, debt-to-asset ratio, etc.) are not affected by

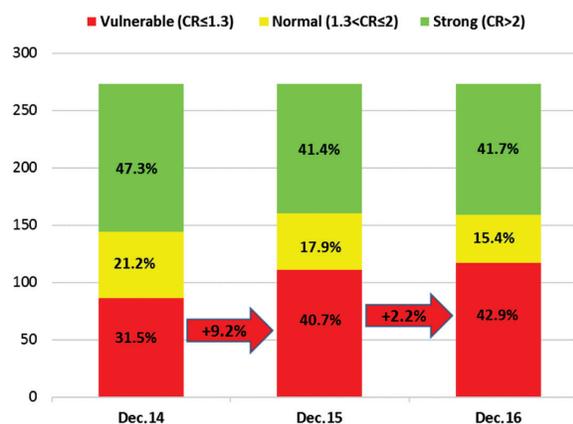
changes in the market value of land, machinery, and other long-lived assets, or by their tax basis.

## Changes in liquidity

To ensure the comparability of financial liquidity across farms of different sizes, the assessment is conducted using the current ratio (CR), calculated as current assets divided by current liabilities.

Farms with good liquidity typically have CRs of 3.0 or higher. Dairy farms or other farms that have continuous sales throughout the year can safely operate with a CR as low as 2.0, however. Conversely, operations that concentrate sales during several periods each year, such as cash grain farms, need to strive for a CR higher than 3.0, especially near the beginning of the year. The average CR in IFBA farms amounted to 4.1 between 2003 and 2016 (Plastina 2017).

According to the Farm Financial Scorecard (Becker et al. 2014), a CR 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 is *normal* and indicates that liquidity should be kept under close watch. These thresholds are much lower than the annual averages for IFBA farms, but averages do not provide information about the dispersion of farm-level indicators and can be affected by even a few very high or very low individual values. To avoid outliers in the sample, only farms with non-negative current ratio values below 50 were selected.

**Figure 3. Annual distribution of farms by liquidity rating**

In December 2014, almost half (47.3 percent) of the farms had a strong liquidity rating and less than one third (31.5 percent) of the farms had a vulnerable liquidity rating (Figure 3). By December 2015, the percent of farms with vulnerable liquidity ratings increased by 9.2 percentage points and vulnerable farms accounted for about the same share as farms with strong liquidity ratings: 40.7 percent versus 41.4 percent. By December 2016, there were more farms with vulnerable liquidity ratings than farms with strong liquidity ratings, representing 42.9 percent versus 41.7 percent of the sample, respectively. More than two in five farms run the risk of not being able to pay off their obligations as they become due over the course of 2017.

### Changes in solvency

To ensure the comparability of financial solvency across farms of different sizes, the assessment is conducted using the debt-to-asset ratio, calculated as total farm liabilities divided by total farm assets.

The average DTA in IFBA farms between 2003 and 2016 amounted to 0.21, and the most profitable farms (measured by returns to management) tended to be more leveraged than the least profitable farms: 0.26 vs. 0.21 (Plastina 2016, 2017).

According to the Farm Financial Scorecard (Becker et al. 2014), a total DTA 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 is *normal* and indicates that solvency should be kept under close scrutiny. This study uses the 30 percent and 60 percent DTA thresholds to classify farms according to their solvency position. According to these solvency thresholds, the annual average DTA for IFBA farms is consistently *strong*.

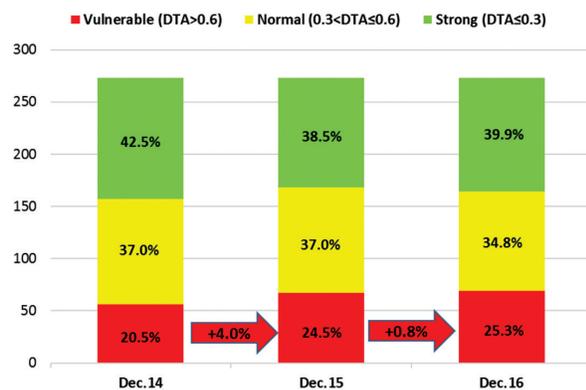


Figure 4. Annual distribution of farms by solvency rating

In December 2014, only one in five farms (20.5 percent) was assigned a vulnerable solvency rating (Figure 4). But a year later, almost one in four farms (24.5 percent) had a vulnerable solvency rating. By December 2016, slightly more than one in four farms was highly leveraged. By comparing Figures 3 and 4 it becomes apparent that solvency issues are much less prevalent than liquidity issues. However, it must be noted that machinery, land, and other long-lived assets are valued at their cost (or book) value and therefore do not reflect the recent decline in asset values.

Agricultural lenders are typically more interested in the market value of the collateral used to secure loans, such as machinery and land, than on the cost value used to track farm management performance. Although the dataset used in the present analysis cannot be consistently adapted to reflect market values without a detailed and extensive review of individual financial records that is beyond the scope of this study, the following comments will add perspective to the present results. Average cropland values in Iowa declined by 17.3 percent between November

2013 and November 2016 (Zhang 2016). If a farmer in the sample purchased land in November 2013, then the DTA calculated at market value in 2016 will likely be lower than the DTA used in this study (and probably would have a weaker solvency rating). However, if another farmer purchased their land in 1987, then their DTA calculated at market value in 2016 should be higher than the DTA used in this study (and probably would have a stronger solvency rating), since land values in 2016 were more than seven times higher than in 1987 (CARD 2017). Consequently, lenders with portfolios dominated by operations with most of the land purchased in recent years will likely see weaker solvency ratings than the ones reported here; and lenders with portfolios dominated by operations with most of the land purchased long ago will likely see stronger solvency ratings than the ones reported here.

### Losses in working capital per acre

While the CR is useful to track the evolution of liquidity ratings through time, it does not provide an indication of the dollar amount associated with the liquidity rating. The working capital per acre provides such information, as the dollar amount of current assets minus current liabilities divided by the number of acres in the operation.

The average loss in working capital across all farms in the sample amounted to \$123 per acre in 2015 and \$57 per acre in 2016, accumulating a \$180 loss over the entire period (Table 3). But farms with vulnerable liquidity ratings in December 2016 accumulated an average loss in working capital of \$347 per acre. Even a few farms with strong solvency ratings had vulnerable liquidity ratings in December 2016, and they had accumulated a working capital loss of \$253 per acre.

Table 3. Average changes in working capital by farm, in dollars per acre by 2016 ratings

Period	Vulnerable Liquidity and ...			All Farms with Vulnerable Liquidity	All Farms in Sample
	Strong Solvency	Normal Solvency	Vulnerable Solvency		
Dec.14- Dec.15	-\$141	-\$181	-\$198	-\$181	-\$123
Dec.15- Dec.16	-\$112	-\$53	-\$193	-\$166	-\$57
Cumulative	-\$253	-\$234	-\$391	-\$347	-\$180
Number of farms	8	50	59	117	273
Percent of total	2.93	18.32	21.61	42.86	100.00

### A way forward for financially stressed farms

Financially stressed farms typically have insufficient short term assets to cancel the projected obligations over the following 12 months. The extra cash they need might come from higher future profits, new or expanded loans, or the sale of assets. Asset liquidation might reduce financial stress, but it might also reduce the capacity of the operation to generate future profits.

New or expanded loans affect solvency through a reduction in net worth and an increase in the DTA, requiring more profits be made in the future to pay off the additional interest expenses. In most cases, financially stressed farms face difficult decisions in the short run.

Anecdotal evidence suggests that financially stressed farms are likely to have already tried strategies to improve their bottom line, so quick fixes are likely to have already been exhausted. These operations will have to re-evaluate how they generate profits, by enterprise, parcel, leasing contract, and so on, to come up with a bold, encompassing strategic plan to generate a solid stream of profits over the next few years that also accounts for the need of short term financing; or otherwise play the odds of going out of business. Planning can involve some tough choices, but the sooner it is tackled, the higher the chances of success. In order to facilitate the planning process and to provide support to the people directly or indirectly related to financially stressed farms, ISU Extension and Outreach offers the following resources free of charge:

- ✓ Farm financial planning support: one-on-one consultation with a financial associate who provides financial analysis support and advice to farmers. The program includes FINPACK, a computerized analysis of the farm business. It also offers useful referrals to ISU Extension and Outreach programs and outside services such as counseling or finance management courses. To set up an appointment, contact the Farm Financial Associate in your area ([www.extension.iastate.edu/farmanalysis/associatelist.htm](http://www.extension.iastate.edu/farmanalysis/associatelist.htm)).
- ✓ Iowa Concern: a 24/7 live source of help for Iowans in need of:
  - Legal education: easy-to-understand facts and where to go to get help.
  - Financial education: tips about family finances, unemployment, and more.
  - Stress counseling: learn about stress and depression, parenting, and wellness.
  - Crisis and disaster assistance: resources related to homeland security, illness, and recovery.
  - Call the 24-hour hotline: 800-447-1985, or learn more online at <http://www.extension.iastate.edu/iowaconcern>
- ✓ Educational materials on farm business management are available online at the ISU Extension and Outreach Ag Decision Maker website: <https://www.extension.iastate.edu/agdm>

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Prepared by Alejandro Plastina, extension economist, Iowa State University Extension and Outreach.



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