

Liquidity Analysis of Iowa Farms: High liquidity will help Iowa farmers get through low margins

The accrual net farm income of commercial Iowa farms averaged \$265,013 in 2022, according to the analysis of anonymized data from mid- to large-size farms collected by the Iowa Farm Business Association (IFBA).¹ Such income level was 22% lower in real terms² than in 2021, but 9% higher than the previous peak income observed in 2012 (Figure 1).

The 2022 average cash net farm income in Iowa was estimated at \$190,433, 24% higher than in 2021 and the highest level on record. The gap between accrual and cash income is mostly explained by the decrease in crop inventory values between January and December 2022.

Despite the relatively high average net farm income, not all Iowa farms were profitable in 2022. However, even the bottom third of the farms (arranged according to their annual return to management) averaged positive net farm income levels in 2022 for the third consecutive year after seven years of negative net farm income (Figure 2). In contrast, the top third group has consistently averaged incomes more than twice the size of the state average, reaching \$799,017 in 2022. For a more detailed analysis of the three groups, see Ag Decision Maker File C1-10, [2022 Iowa Farm Costs and Returns](#), store.extension.iastate.edu/Product/1812.

The financial efficiency of Iowa farms in 2022, measured by the rates of return to assets and equity, and the operating profit margin ratio, was lower than in 2021, but it was the second-highest since 2012 (Figure 3). The relatively high farm income continued to improve the overall financial situation of most Iowa farms.

¹ The IFBA is an independent association, managed and controlled by its farmer-members.

² Deflated with the Consumer Price Index for All Urban Consumers (CPI-U 1982-84=100) published by the US Bureau of Labor Statistics, re-expressed as 2022=100.

Figure 1. Average accrual and cash net farm income in Iowa (inflation-adjusted)

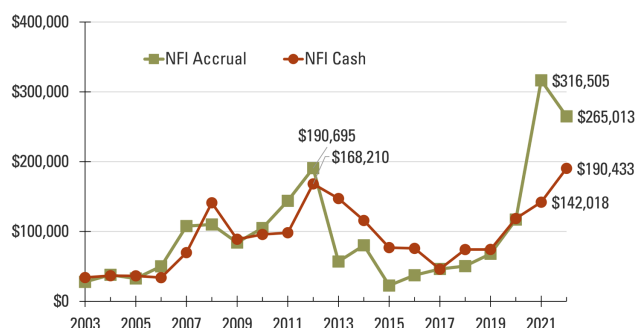


Figure 2. Average accrual net farm income in Iowa (inflation-adjusted)

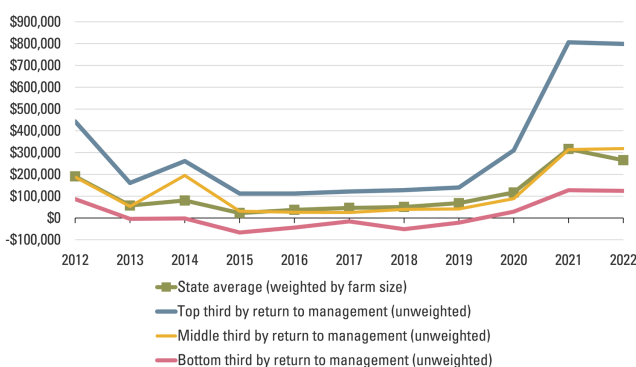
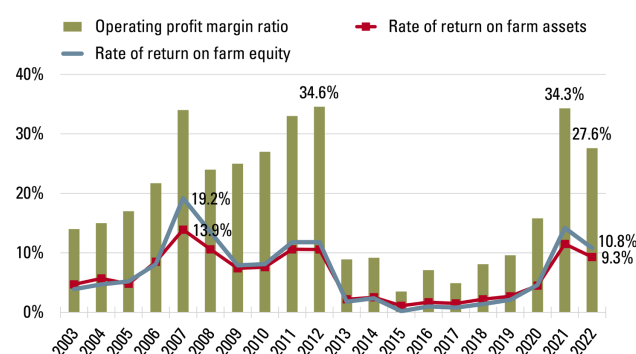


Figure 3. Financial efficiency of Iowa farms



Overall Liquidity

We analyzed liquidity using four indicators: the current ratio, the annual change in working capital per acre, the share of farms with less than \$250 in working capital per acre, and the share of farms with vulnerable liquidity ratings.

The average increase in working capital between January and December 2022 amounted to \$200 per acre. However, not all farms saw their working capital increase. While the share of farms with vulnerable liquidity declined for the third consecutive year in 2022, their average working capital remained negative.

The average ending current ratio³ for Iowa farms peaked in 2012 at 7.08. It declined to 2.77 by 2017, bounced around that level over the following three years and increased to 4.62 in 2021 and 6.87 in 2022 (Figure 4). Having \$6.87 in cash, inventories, and other liquid assets per each dollar in liabilities that will come due over the next twelve months means that the average farm should be able to comfortably cash flow its normal operation (not accounting for any expansion plans) in 2023. Short-term liabilities declined by 26% in 2022, accumulating a 48% decline since their peak in 2017. Short-term assets remained stable in 2022.

A major drawback of comparing financial indicators across all farms in the sample through time is the variability of the sample size and its composition across years. In order to partially address this issue, Figure 5 illustrates changes in working capital per acre between January 1 and December 31 for the same set of farms at those two points in time. In 2022, the average increase in working capital per acre among the 376 farms with detailed balance sheets at both points in time was \$200. This gain was the third consecutive gain, and the second-largest over the period for which farm-level data are available.

Figure 4. Ending current ratio and average liabilities (by maturity) of Iowa farms

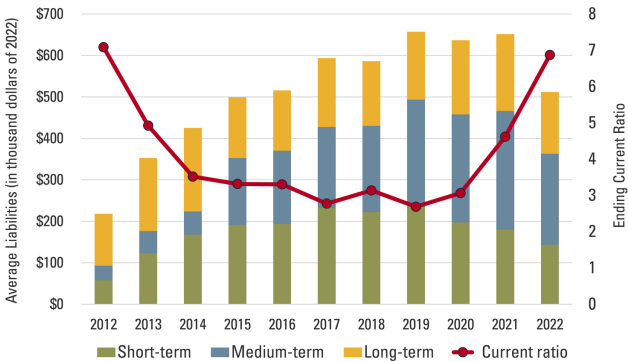
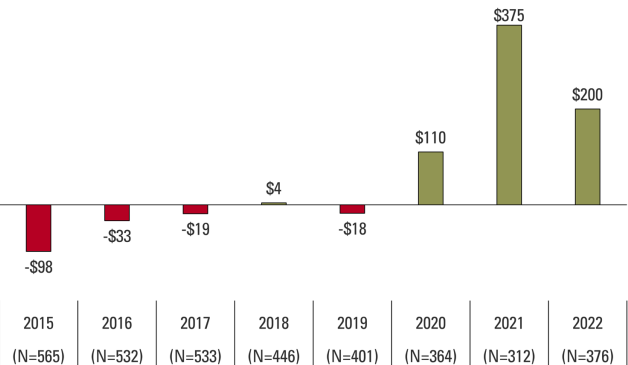
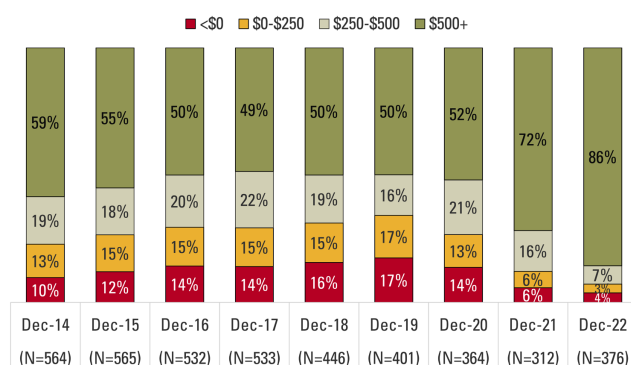


Figure 5. Average change in working capital per acre between Jan 1 and Dec 31



In an attempt to understand the distribution of liquidity across farms, rather than focusing on the average farm, Figure 6 shows the share of farms with negative working capital, and working capital per acre between zero and \$250, between \$250 and \$500, and beyond \$500. The share of farms with negative working capital increased from 10% in December 2014 to 17% in December 2019, and declined to 4% (the lowest percent on record) by December 2022. Similarly, the share of farms with working capital below \$250 per acre increased from 23% in December 2014 to 34% in 2019, and declined to 7% by December 2022. Furthermore, farms with more than \$500 per acre in working capital accounted for 86% in 2022, showing a tremendous improvement in overall farm liquidity.

³The ending current ratio is calculated as current assets divided by current liabilities as of December 31.

Figure 6. Distribution of farms by working capital per acre

Based on farms' ending current ratios, they were assigned a liquidity rating of vulnerable, normal, or strong. According to the *Farm Financial Scorecard*,⁴ a current ratio above 2 indicates a **strong** liquidity position; a ratio below 1.3 indicates a **vulnerable** liquidity position, and a ratio between 1.3 and 2 is **normal** and indicates that liquidity should be kept under close watch.⁵ To avoid outliers, only farms with current ratios between 0 and 50 were selected. Given the large number of farms in the sample with no short-term liabilities, a fourth category is shown in Figure 7, along with the three liquidity categories.⁶ In December 2014, there were 4.2 farms with strong liquidity or no current liabilities per farm with vulnerable liquidity (70.8% vs. 16.8% of the sample, respectively). Five years later, that ratio declined to 2.1, given the increase in the share of farms with vulnerable liquidity to 28.8% and the reduction in the share of farms with strong liquidity or no current liabilities to 61.6%. In December 2022, there were 11 farms with strong liquidity or no current liabilities per farm with vulnerable liquidity, as a result of the 7.2-percent point increase in the share of farms with strong liquidity and the 4.0-percent point decline in the share of farms with vulnerable liquidity.

⁴Becker, K., Kaupilla D., Rogers G., Parsons R., Nordquist D., and R. Craven. 2014. *Farm Finance Scorecard*. Center for Farm Financial Management, University of Minnesota. Available online at www.cffm.umn.edu/wp-content/uploads/2019/02/FarmFinanceScorecard.pdf. Last accessed Aug. 2, 2023.

⁵While dairy farms or other farms that have continuous sales throughout the year can safely operate with lower CRs, operations that concentrate sales during several periods each year (such as cash grain farms) need to strive for higher CRs, especially near the beginning of the crop year.

⁶Due to rounding, some shares might not sum to 100%.

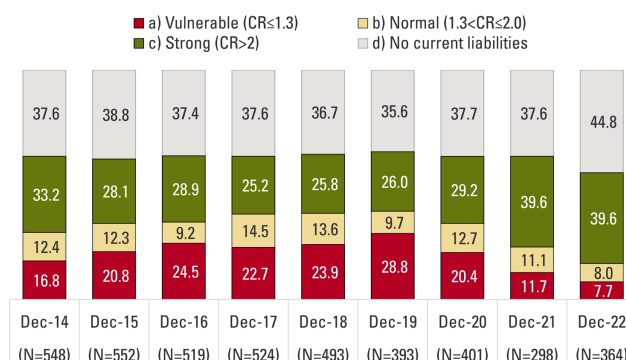
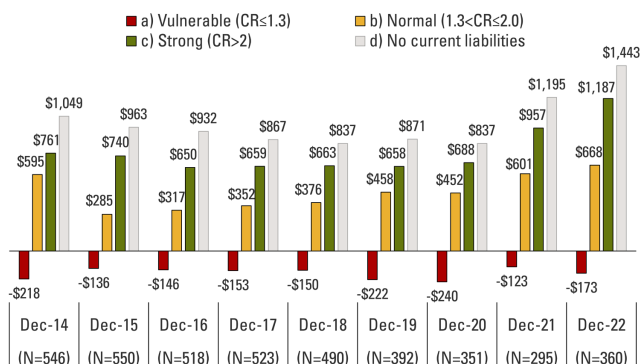
Figure 7. Distribution of farms by liquidity rating

Figure 8 shows the evolution of working capital per acre for each of the four groups of farms presented in Figure 7. The average working capital per acre in December 2022 was the highest on record for all groups of farms but those with vulnerable liquidity. Annual increases in working capital ranged from \$67 for the group of farms with normal liquidity to \$247 for farms with no current liabilities. The group of farms with vulnerable liquidity shrunk in 2022, but their average working declined by \$50 per acre.

It must be noted that the sample size became smaller through time, from around 550 farms in 2014 to about 360 farms in 2022, affecting the robustness of the comparisons presented in the present section. The next section explores the overall liquidity situation of farms for the same subset of farms over the most recent three years.

Figure 8. Average working capital per acre by liquidity rating

Analysis of Farms with Full Financial Records Over the Most Recent Three Years

The declining number of farms in our sample through the years and the changing composition of the annual samples might drive some of the results presented in the previous section. In what follows, the analysis is limited to a subset of 249 farms with detailed balance sheet records across the most recent three years. We interpret the data from January 1, 2020, as data from December 31, 2019. Since some farms in the sample operate integrated crop-livestock operations, we replicate the analyses for farms with no livestock production or “crop-only farms” to evaluate whether qualitative results depend on the mix of enterprises.

Figure 9a highlights the growth in the share of farms with vulnerable liquidity from 13.7% in 2019 to 21.3% in 2020, followed by an abrupt decline to 10.0% in 2021, and a further slight decline to 9.2% in 2022, along with the steady increase in the share of farms with strong liquidity or no current liabilities from 56.6% in 2019 to 82.3% in 2022. Note that while the percentages of farms in each category differ across Figures 7 and 9a, the qualitative results derived from them are similar. Additionally, Figure

9b suggests that crop-only farms have followed a similar pattern of improvement of financial liquidity, from a relatively worse-off situation of 23.2% farms with vulnerable liquidity (compared to 13.7%) in December 2019. The smaller share of vulnerable farms in 2020-2022 among the crop-only operations suggests that integrated crop-livestock operations tend to carry short-term liabilities more frequently than crop-only farms.

Figures 10a and 10b show a similar pattern as the one shown in Figure 8: working capital per acre increased for all groups of farms in 2022, except for the group of farms with vulnerable liquidity. The nominal weighted average working capital per acre across the 249 farms was \$210 higher in December 2022 than in December 2021: \$1,137 vs. \$927. However, the average working capital for the group of farms with vulnerable liquidity became \$87 more negative, reaching -\$161 per acre.

The findings in this section reinforce the conclusion that overall liquidity improved in 2022 and fewer farms would need short-term financing in 2023, although some farms (with vulnerable liquidity) may need larger lines of credit than in 2021.

Figure 9. Distribution of selected farms by liquidity rating

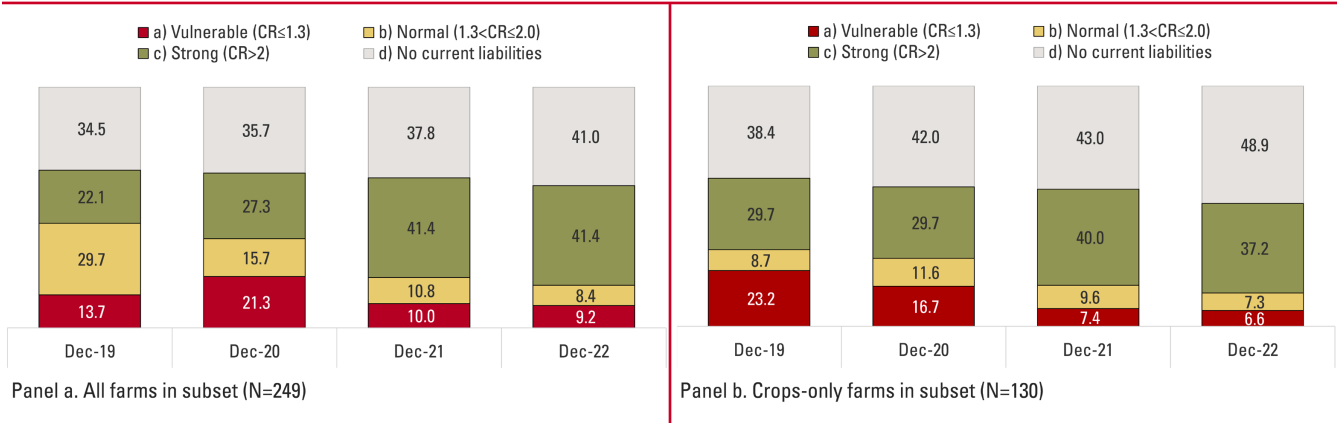
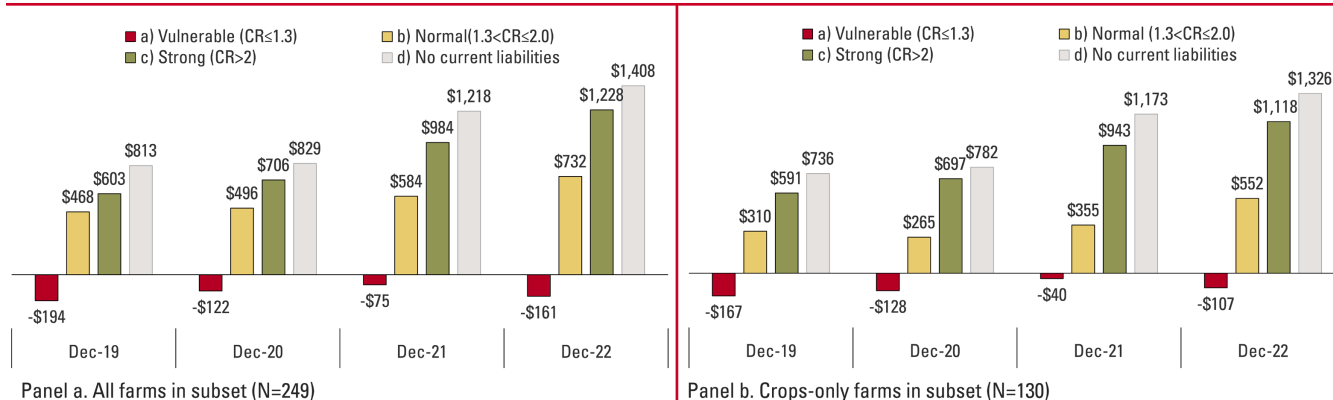


Figure 10. Average working capital per acre by liquidity rating for selected farms

Conclusions

This article explores the evolution of financial liquidity among mid- and large-size Iowa farms in 2022 against a backdrop of strong but declining accrual net farm income. All indicators point to a smaller share of farms in vulnerable liquidity situations, and an overall reduced need for working capital financing in 2023, except maybe for farms with negative working capital.

Multi-year trends suggest that overall farm liquidity has continued to improve in 2022, almost fully offsetting the persistent erosion of liquidity observed between 2014 and 2020. However, increasing input costs, cash rental rates, and the uncertainty stemming from weather variability, the war in Ukraine, trade and supply chain disruptions, are major risk factors in 2023 and the foreseeable future. In order to address the effect of risks on the farming community, an array of confidential and 24/7 free-of-charge resources related to legal issues, finance, stress, crisis, and disaster are available through Iowa Concern (1-800-447-1985, or www.extension.iastate.edu/iowaconcern)

One tool to help farmers better manage liquidity is the use of a realistic cash-flow budget.

Several publications by Iowa State University Extension and Outreach discuss how to develop and implement effective cash-flow budgets:

AgDM File C1-15, [Twelve Steps to Cash Flow Budgeting](http://www.extension.iastate.edu/agdm/wholefarm/html/c3-15.html), www.extension.iastate.edu/agdm/wholefarm/html/c3-15.html

AgDM File C3-14: [Understanding Cash Flow Analysis](http://www.extension.iastate.edu/agdm/wholefarm/html/c3-14.html), www.extension.iastate.edu/agdm/wholefarm/html/c3-14.html

AgDM File C5-213: [Cash Flow and Profitability are Not the Same](http://www.extension.iastate.edu/agdm/wholefarm/html/c5-213.html), www.extension.iastate.edu/agdm/wholefarm/html/c5-213.html

AgDM File C3-58: [Farm Financial Management: 16 Ways to Stretch Cash Flow](http://www.extension.iastate.edu/agdm/wholefarm/html/c3-58.html), www.extension.iastate.edu/agdm/wholefarm/html/c3-58.html

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Prepared by Alejandro Plastina
extension economist,
plastina@iastate.edu
extension.iastate.edu/agdm
store.extension.iastate.edu