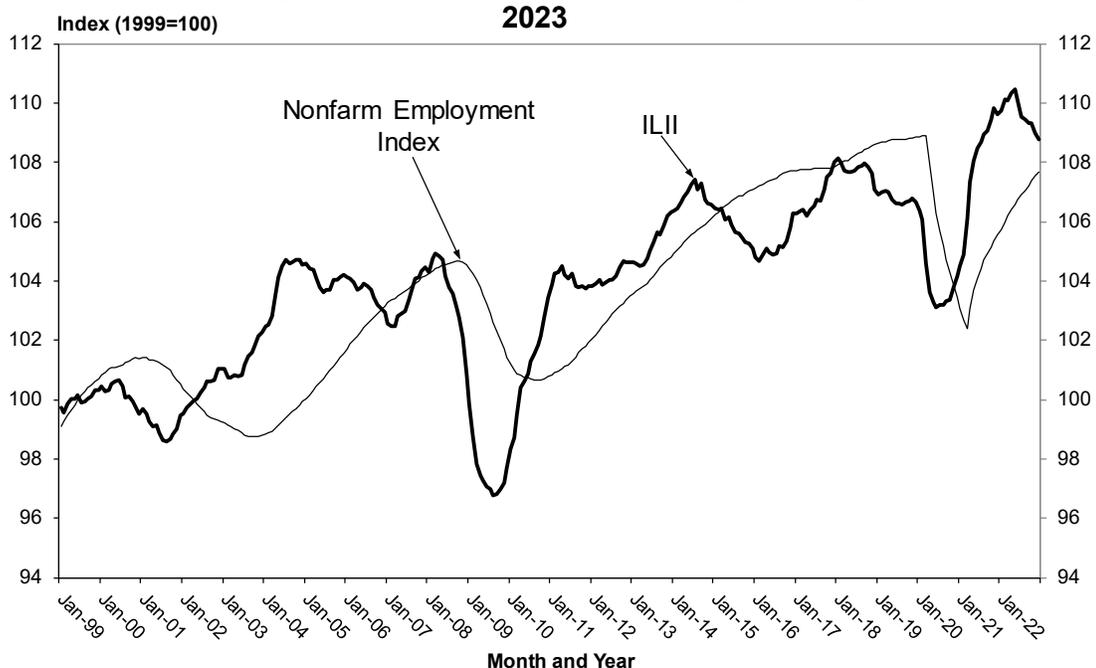


The Iowa Leading Indicators Index (ILII) decreased to 108.4 (100=1999) in January 2023 (-0.4 percent) from a revised 108.8 in December 2022. The monthly diffusion index increased to 37.5 in January 2023 from 25.0 in December 2022. The Iowa nonfarm employment coincident index recorded a 0.20 percent increase in January, the twenty-second month of growth. Long term trends in the ILII suggests that nonfarm employment will decrease over the next three to six months. Updates to breakeven prices for grain commodities going back to June 2022 led to the downward revisions to the index. Grain breakeven prices are determined based upon the amount of overhead that is expended by farmers to produce their commodity. When grain breakevens increase, actual realized profits are weakened.

During the six-month span through January 2023, the ILII decreased 1.0 percent (an annualized rate of -2.0 percent). The six-month diffusion index decreased to 37.5 in January 2023 from 62.5 in December 2022. The ILII was constructed to signal economic turning points with two key metrics that when seen together are considered a signal of a coming contraction: a six-month annualized change in the index below -2.0 percent and a six-month diffusion index below 50.0. The six-month diffusion index has returned to contractionary signals whereas the six-month annualized change remains below the contractionary threshold for the third month in a row. Five of the eight component indicators decreased more than 0.05 percent over the last half-year: Agricultural futures profits index (AFPI), diesel fuel consumption, national yield spread, new orders index, and residential building permits. The decrease to the six-month diffusion index is from diesel fuel consumption and the AFPI going from positive change to negative change.

Only three of the eight components increased month over month in January 2023: Average weekly unemployment claims (inverted), average manufacturing hours, the Iowa Stock Market Index. Diesel fuel consumption, the national yield spread, the AFPI, residential building permits detracted from the index and the new orders index.

**Figure 1. Iowa Leading Indicators Index and Iowa Nonfarm Employment Coincident Index: January 2023**



**Table 1. Iowa Leading Indicators Index: Six Month Overview**

Monthly Values	2022					2023
	Aug	Sept	Oct	Nov	Dec	Jan
ILII	109.5	109.3	109.3	109.0	108.8	108.4
Percentage Change <sup>a</sup>	-0.1%	-0.1%	0.0%	-0.3%	-0.2%	-0.4%
Diffusion Index <sup>b</sup>	50.0	43.8	62.5	37.5	25.0	37.5
Six-Month Values	Feb to Aug	Mar to Sept	Apr to Oct	May to Nov	Jun to Dec	Jul to Jan
ILII						
Percentage Change	-0.6%	-0.7%	-0.9%	-1.3%	-1.2%	-1.0%
Annualized Percentage Change	-1.2%	-1.4%	-1.9%	-2.6%	-2.3%	-2.0%
Diffusion Index	37.5	37.5	37.5	37.5	62.5	37.5

Source: Tax Research Bureau, Iowa Department of Revenue, produced March 13, 2023.

a. Percentage changes in the ILII do not always equal changes in the level of the ILII due to rounding.

b. A diffusion index measures the proportion of components that are rising based on the actual changes (not the standardized contributions to the ILII). Components experiencing increases greater than 0.05 percent are assigned a value of 1.0, components that experience changes less than an absolute value of 0.05 percent are assigned a value of 0.5, and components experiencing decreases greater than 0.05 percent are assigned a value of 0.0.

**Table 2. Iowa Leading Indicators Index Components: Six Month Overview**

Component Series Monthly Values <sup>a</sup>	2022					2023
	Aug	Sept	Oct	Nov	Dec	Jan
AFPJ <sup>b</sup>						
Corn Profits (cents per bushel)	277.8	282.5	286.9	287.0	283.6	278.2
Soybean Profits (cents per bushel)	476.5	467.7	459.1	449.5	440.2	424.1
Hog Profits (cents per pound)	20.1	18.2	18.4	21.7	21.0	20.5
Cattle Profits (cents per pound)	15.9	16.0	17.6	18.4	18.6	17.9
Iowa Stock Market Index (10=1984-86)	129.75	124.99	132.97	135.01	130.16	130.45
Yield Spread (10-year less 3-month)	0.18	0.30	0.11	-0.43	-0.74	-1.16
Residential Building Permits	1,126	1,113	1,084	1,060	1,060	1,043
Average Weekly Unemployment Claims <sup>d</sup>	1,887	1,852	1,810	1,830	1,862	1,797
Average Weekly Manufacturing Hours	39.08	39.12	39.16	39.29	39.28	39.33
New Orders Index (percent)	62.1	60.6	59.2	58.4	56.0	55.6
Diesel Fuel Consumption (mil gallons)	68.02	68.00	68.17	67.52	68.24	67.63

Source: Tax Research Bureau, Iowa Department of Revenue, produced March 13, 2023.

a. For all component series except for the yield spread and the Iowa stock market index, the values represent 12-month backward moving averages.

b. The agricultural futures profits index is computed as the sum of the standardized symmetric percent changes in the four series, each weighted by the commodity's annual share of Iowa cash farm income (updated September 12, 2022).

c. Arrows indicate the direction of the series' contribution to the ILII for the latest month.

d. Changes in average weekly initial unemployment insurance claims are inverted when added to the ILII, thus a negative change in the series contributes positively to the index.

## ILII Components

- **Average weekly unemployment claims:** Weekly average of initial claims for unemployment insurance in Iowa. Changes are calculated based on a 12-month moving average and are inverted when added to the ILII. This component contributed 0.05 to the ILII value, with the 12-month moving average of claims decreasing from 1,862 to 1,797. Unemployment claims were 25.96 percent below January 2022 claims, and 47.84 percent below average historical claims for January (1988-2022).
- **Average weekly manufacturing hours:** Weekly average of hours worked in the manufacturing sector in Iowa. Changes are calculated based on a 12-month moving average. For January, this component contributed 0.04 to the ILII with the 12-month moving average increasing to 39.33 in January 2023 from 39.28 in December 2022. In January 2023, average hours were 39.0, above the 38.4 hours in January 2022, yet nearly two hours below the historical monthly average (1996-2022).
- **Iowa stock market index:** Capitalization-weighted index of 28 Iowa-based or Iowa-concentrated publicly-traded companies. During December 2022, 18 of the 28 companies gained value, and six of the 10 financial-sector companies increased. With just over two-thirds of the stocks experiencing gains, the index increased to 130.45 in January from 130.16 in December, contributing 0.00 of the ILII value.
- **New orders index:** Diffusion index measuring the share of purchasing managers in Iowa reporting increases in orders received for manufacturing output. Changes are calculated based on a 12-month moving average. The new orders index in January increased to 45.7 compared to 38.4 in December. However, the 12-month moving average of the new orders index has decreased to 55.56 from 70.37 in January 2022, and detracted 0.03 from the ILII.
- **Residential building permits:** Number of total permits issued in Iowa for the construction of residential housing units. Changes are calculated based on a 12-month moving average. In January 2023, permits were 355, down from 563 last year. This component detracted 0.05 from the December ILII with the 12-month moving average, decreased to 1,043 in January from 1,060 in December. January 2023 permits were 1.64 percent below January 2022, and 24.6 percent below the monthly historical average (1998-2022).
- **Agricultural futures profits index:** Composite measure of corn and soybean expected profits, measured as the 12-month moving average of the futures price less estimated breakeven costs, and cattle and hog expected profits, measured as the average of the crush margin for the next 12 months, weighted by the respective share of Iowa annual cash receipts averaged over the prior ten calendar years. During January 2023, this component detracted 0.06 from the ILII with expected profits decreases in both crop commodities and livestock commodities. Compared to last year, new crop corn prices were 5.7 percent higher while soybean prices were 4.0 percent lower. The January crush margin for cattle decreased 3.5 percent from December while the crush margin for hogs decreased 2.4 percent. Revisions to the grain breakeven prices (23 percent increase in corn and 30% increase in soybeans) has led to weaker realized gains from the AFPI over the past several months.
- **Yield spread:** Difference between the yield on 10-year Treasury bonds and 3-month Treasury bills. During January, the yield spread fell further into inversion territory (moving below 0) at -1.16 percent from -0.74 percent in December. January is the third month in a row that the yield spread has been in inversion. The long-term rate decreased 9 basis points while the short-term rate increased 33 basis points. For the month, the yield spread detracted 0.15 from the ILII value.
- **Diesel fuel consumption:** Number of taxable gallons of diesel fuel sold in Iowa. Changes are calculated based on a 12-month moving average. Diesel fuel consumption decreased 12.0 percent between January 2022 and January 2023. The 12-month moving average decreased to 67.63 million gallons in January from 68.24 million in December, detracting 0.16 from the ILII value.

**Table 3. ILII Components and Standardization Factors for FY 2023**

Iowa Leading Indicator Index Components	Standardization Factor
Agricultural Futures Profits Index	0.034
Iowa Stock Market Index	0.015
Yield Spread	0.356
Residential Building Permits	0.031
Average Weekly Unemployment Claims	0.013
Average Weekly Manufacturing Hours	0.312
New Orders Index	0.061
Diesel Fuel Consumption	0.177

Source: Tax Research Bureau, Iowa Department of Revenue, produced September 8, 2022

The standardization factors are the inverse of the standard deviation of the month-to-month changes in each component over the January 1999 to June 2022 period. These factors equalize the volatility of the contribution from each component and are normalized to one. The month-to-month changes are based on 12-month backward moving averages for all components except the agricultural futures profits index, the Iowa stock market index, and yield spread. The yield spread and new orders index changes are simple arithmetic changes; month-to-month changes for the rest of the components are computed as symmetric percentage changes.

The factors are updated annually during August.

### Comments

The Iowa Leading Indicators Index (ILII) is designed to forecast the future direction of economic activity in the state of Iowa. The techniques used to build the ILII follow those used by The Conference Board to construct the national Leading Economics Index (LEI) prior to the 2001 revisions. A one-month movement in such an index does not produce a clear signal, rather it is necessary to consider the direction of the index over several consecutive months. A contraction signal in the ILII is considered reliable when two conditions are met: 1. The index declines by at least two percent over a six-month period (using an annualized rate); and, 2. A majority of the individual components decline over those six months (the six-month diffusion index less than 50.0).

The Iowa nonfarm employment coincident index measures the change in non-seasonally adjusted, total nonfarm employment in the state of Iowa. Changes are based on a 12-month moving average of employment and are computed as symmetric percentage changes. The index is a representation of overall economic activity in Iowa.

The employment index and the ILII are constructed to have a value of 100 in the year 1999.