

The Iowa Leading Indicators Index (ILII) decreased to 107.0 (100=1999) in April (-0.5 percent) from a revised 107.5 in March. The monthly diffusion index increased to 25.0 in April from 6.3 in March. The Iowa nonfarm employment coincident index recorded a 0.12 percent increase in April, the twenty-fifth month of growth. Long term trends in the ILII suggests that nonfarm employment will decrease over the next three to six months.

During the six-month span through April, the ILII decreased 2.1 percent (an annualized rate of -4.2 percent). The six-month diffusion index decreased to 12.5 in April from 25.0 March. 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 remained in contractionary signals for the fourth month in a row whereas the six-month annualized change remained below the contractionary threshold for the sixth month in a row. Seven of the eight component indicators decreased more than 0.05 percent over the last half-year: Agricultural futures profits index (AFPI), diesel fuel consumption, the Iowa stock market index, national yield spread, new orders index, residential building permits, and initial unemployment insurance claims. The decrease in the six-month diffusion index was due to the initial unemployment insurance claims decreasing more than 0.05 percent.

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

Figure 1. Iowa Leading Indicators Index and Iowa Nonfarm Employment Coincident Index: January 1999-April 2023

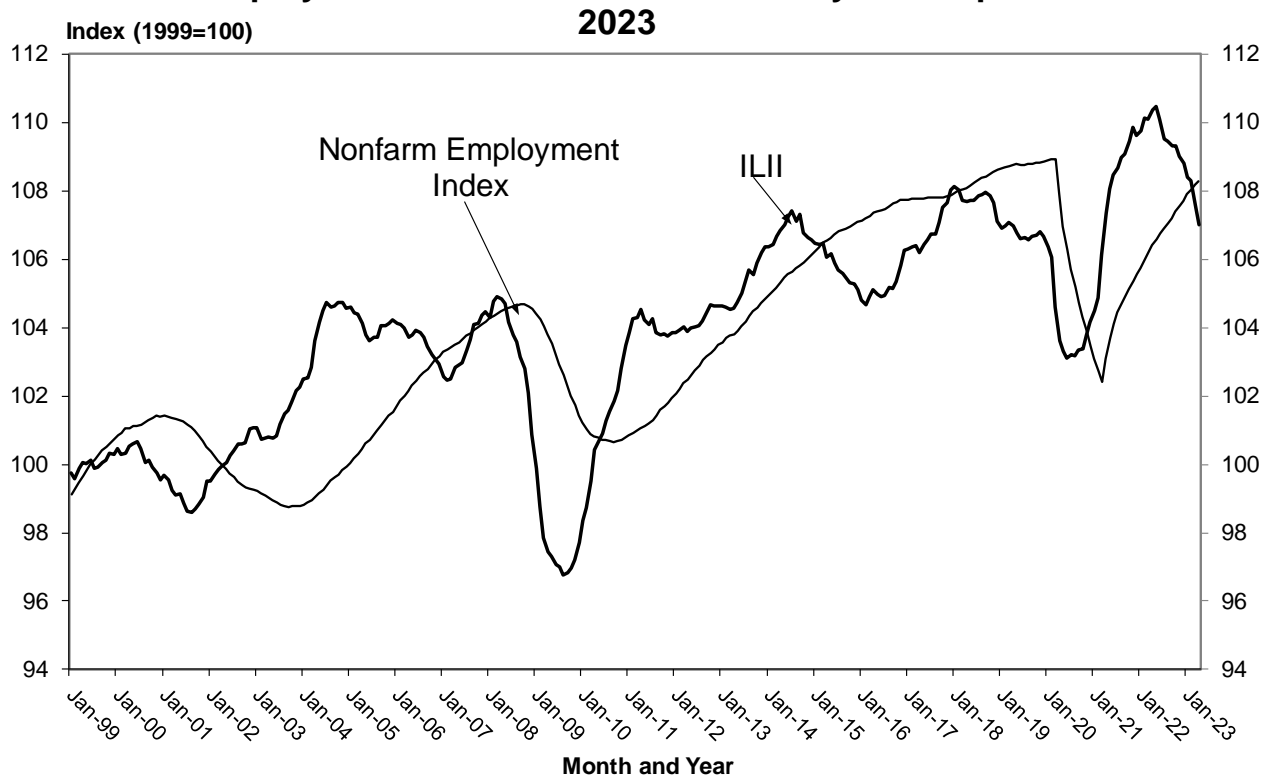


Table 1. Iowa Leading Indicators Index: Six Month Overview

Monthly Values	2022		2023			
	Nov	Dec	Jan	Feb	Mar	Apr
ILII	109.0	108.8	108.4	108.3	107.5	107.0
Percentage Change ^a	-0.3%	-0.2%	-0.4%	-0.1%	-0.7%	-0.5%
Diffusion Index ^b	37.5	25.0	37.5	43.8	6.3	25.0
Six-Month Values	May to Nov	Jun to Dec	Jul to Jan	Aug to Feb	Sep to Mar	Nov to Apr
ILII						
Percentage Change	-1.3%	-1.2%	-1.0%	-1.1%	-1.6%	-2.1%
Annualized Percentage Change	-2.6%	-2.3%	-2.0%	-2.2%	-3.2%	-4.2%
Diffusion Index	37.5	62.5	37.5	37.5	25.0	12.5

Source: Tax Research Bureau, Iowa Department of Revenue, produced May 26, 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 ^a	2022		2023				
	Nov	Dec	Jan	Feb	Mar	Apr	
AFPI ^b							
Corn Profits (cents per bushel)							
Soybean Profits (cents per bushel)							
Hog Profits (cents per pound)							
Cattle Profits (cents per pound)							
Iowa Stock Market Index (10=1984-86)	↓	135.01	130.16	130.45	132.98	121.28	119.62
Yield Spread (10-year less 3-month)	↓	-0.43	-0.74	-1.16	-1.04	-1.20	-1.61
Residential Building Permits	↓	1,060	1,060	1,043	1,046	1,043	988
Average Weekly Unemployment Claims ^d	↓	1,830	1,862	1,797	1,812	1,823	1,840
Average Weekly Manufacturing Hours	↑	39.29	39.28	39.34	39.34	39.33	39.35
New Orders Index (percent)	↓	58.4	56.0	55.6	54.8	53.3	52.5
Diesel Fuel Consumption (mil gallons)	↑	67.52	68.24	67.63	67.37	66.54	66.88

Source: Tax Research Bureau, Iowa Department of Revenue, produced May 26, 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

- **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 increased 5.8 percent between April 2022 and April 2023. The 12-month moving average increased to 66.88 million gallons in April from 66.54 million in March, contributing 0.09 to the ILII value.
- **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 April, this component contributed 0.02 to the ILII with the 12-month moving average increasing to 39.35 in April from a revised 39.33 in March. In April, average hours were 39.30, above the 39.0 hours in April 2022, exactly an hour and a half below the historical monthly average (1996-2022).
- **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 detracted 0.01 from the ILII value, with the 12-month moving average of claims increasing from 1,823 to 1,840. Unemployment claims were 16.30 percent above April 2022 claims, yet 60.2 percent below average historical claims for April (1988-2022).
- **Iowa stock market index:** Capitalization-weighted index of 28 Iowa-based or Iowa-concentrated publicly-traded companies. During April, only 12 of the 28 companies gained value, and two of the 10 financial-sector companies increased. With less than half of the stocks experiencing gains, the index decreased to 119.62 in April from 121.28 in March, detracting 0.02 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 April increased to 61.0 compared to 56.6 in March. However, the 12-month moving average of the new orders index has decreased to 52.46 from 68.38 in April 2022, and detracted 0.05 from the ILII.
- **Yield spread:** Difference between the yield on 10-year Treasury bonds and 3-month Treasury bills. During April, the yield spread decreased and remained in inversion territory (below 0) at -1.61 percent from -1.20 percent in March. April is the sixth month in a row that the yield spread has been in inversion. The long-term rate decreased 20 basis points while the short-term rate increased 21 basis points. For the month, the yield spread detracted 0.15 from the ILII value.
- **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 April, permits were 924, down from 1,580 last year. This component detracted 0.17 from the April ILII with the 12-month moving average decreasing to 988 in April from 1,043 in March. April permits were 5.2 percent below April 2022, and 25.3 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 April, this component detracted 0.20 from the ILII with expected profits decreases in both crop commodities and livestock commodities. Compared to last year, new crop corn prices were 23.8 percent lower while soybean prices were 13.0 percent lower. The April crush margin for cattle decreased 14.2 percent from March while the crush margin for hogs decreased 7.6 percent.

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.