

The Iowa Leading Indicators Index (ILII) decreased to 109.2 (100=1999) in December 2022 (0.1 percent) from 109.3 in November 2022. The monthly diffusion index remained unchanged at 37.5 in December from November. The Iowa nonfarm employment coincident index recorded a 0.18 percent increase in December, the twenty-first month of growth. Long term trends in the ILII suggests suggesting that nonfarm employment will continue to grow at a slower rate over the next three to six months.

During the six-month span through December, the ILII decreased 0.9 percent (an annualized rate of -1.70 percent). The six-month diffusion index increased to 62.5 in December from 37.5 in November, September, August, and July. 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 exited contractionary signals whereas the six-month annualized change remains close to the contractionary threshold. Five of the eight component indicators increased more than 0.05 percent over the last half-year: Agricultural futures profits index (AFPI), average weekly unemployment claims, average weekly manufacturing hours, diesel fuel consumption, and the Iowa Stock Market Index. The increase to the six-month diffusion index is from diesel fuel consumption and the Iowa Stock Market Index going from negative change to positive change.

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

Figure 1. Iowa Leading Indicators Index and Iowa Nonfarm Employment Coincident Index: January 1999-December 2022

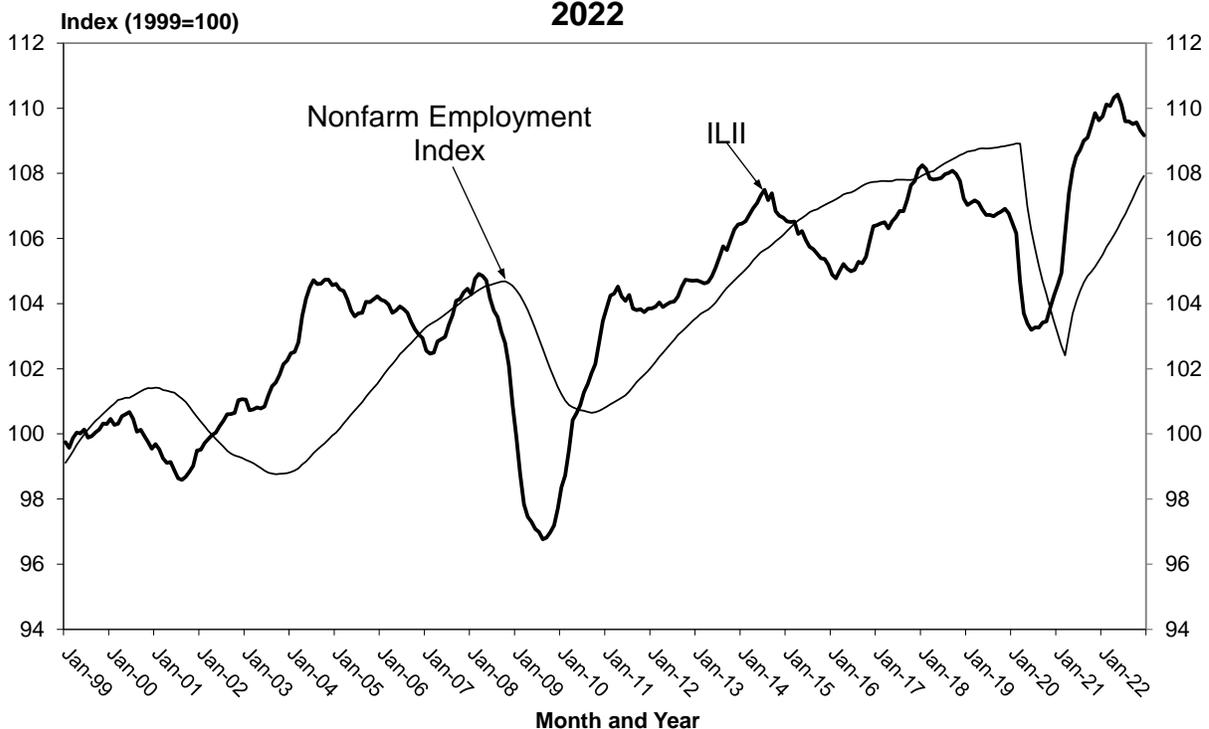


Table 1. Iowa Leading Indicators Index: Six Month Overview

| Monthly Values | 2022 | | | | | |
|--------------------------------|------------|------------|-------------|------------|------------|------------|
| | Jul | Aug | Sept | Oct | Nov | Dec |
| ILII | 109.6 | 109.6 | 109.5 | 109.6 | 109.3 | 109.2 |
| Percentage Change ^a | -0.5% | 0.0% | -0.1% | 0.1% | -0.2% | -0.1% |
| Diffusion Index ^b | 25.0 | 50.0 | 56.3 | 62.5 | 37.5 | 37.5 |
| Six-Month Values | Jan to Jul | Feb to Aug | Mar to Sept | Apr to Oct | May to Nov | Jun to Dec |
| ILII | | | | | | |
| Percentage Change | -0.1% | -0.5% | -0.5% | -0.7% | -1.0% | -0.9% |
| Annualized Percentage Change | -0.3% | -0.9% | -1.0% | -1.4% | -1.99% | -1.7% |
| Diffusion Index | 37.5 | 37.5 | 37.5 | 37.5 | 37.5 | 62.5 |

Source: Tax Research Bureau, Iowa Department of Revenue, produced January 30, 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 | | | | | |
|---|--------|--------|--------|--------|--------|--------|
| | Jul | Aug | Sept | Oct | Nov | Dec |
| AFP ^b | | | | | | |
| Corn Profits (cents per bushel) | 278.6 | 284.6 | 296.8 | 308.9 | 316.6 | 320.9 |
| Soybean Profits (cents per bushel) | 543.0 | 547.9 | 557.9 | 568.4 | 578.2 | 588.7 |
| Hog Profits (cents per pound) | 22.0 | 20.1 | 18.2 | 18.4 | 21.7 | 21.0 |
| Cattle Profits (cents per pound) | 15.2 | 15.9 | 16.0 | 17.6 | 18.4 | 18.6 |
| Iowa Stock Market Index (10=1984-86) | 118.51 | 129.75 | 124.99 | 132.97 | 135.01 | 130.16 |
| Yield Spread (10-year less 3-month) | 0.60 | 0.18 | 0.30 | 0.11 | -0.43 | -0.74 |
| Residential Building Permits | 1,106 | 1,126 | 1,113 | 1,084 | 1,060 | 1,060 |
| Average Weekly Unemployment Claims ^d | 1,933 | 1,887 | 1,852 | 1,810 | 1,830 | 1,862 |
| Average Weekly Manufacturing Hours | 39.13 | 39.08 | 39.12 | 39.16 | 39.29 | 39.28 |
| New Orders Index (percent) | 63.8 | 62.1 | 60.6 | 59.2 | 58.4 | 56.0 |
| Diesel Fuel Consumption (mil gallons) | 67.73 | 68.02 | 68.00 | 68.17 | 67.52 | 68.24 |

Source: Tax Research Bureau, Iowa Department of Revenue, produced January 30, 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 14.1 percent between December 2021 and December 2022. The 12-month moving average increased to 68.24 million gallons in December from 67.53 million in November, contributing 0.19 to the ILII value.
- **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 December, this component contributed 0.01 to the ILII with expected profits increases in both crop commodities and live cattle, with expected profits decrease to lean hogs. Compared to last year, new crop corn prices were 9.5 percent higher while soybean prices were 11.4 percent higher. The December crush margin for cattle increased 0.8 percent from November while the crush margin for hogs decreased 3.1 percent.
- **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 December, permits were 711, down from 716 last year. This component detracted 0.00 from the December ILII with the 12-month moving average, remaining unchanged at 1,060 in December from November. December 2022 permits were 0.04 percent below December 2021, yet 2.5 percent above the monthly historical average (1998-2021).
- **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 December, this component detracted 0.01 to the ILII with the 12-month moving average decreasing to 39.28 in December from 39.29 in November. In December 2022, average hours were 38.8, below the 38.9 hours in December 2021, and nearly three hours below the historical monthly average (1996-2021).
- **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 0.02 to the ILII value, with the 12-month moving average of claims increasing from 1,830 to 1,862. Unemployment claims were 9.97 percent above December 2021 claims, yet 36.8 percent below average historical claims for December (1988-2021).
- **Iowa stock market index:** Capitalization-weighted index of 28 Iowa-based or Iowa-concentrated publicly-traded companies. During December 2022, 10 of the 28 companies gained value, and three of the 10 financial-sector companies increased. With nearly two-thirds of the stocks experiencing losses, the index decreased to 130.16 in December from 135.01 in November, detracting 0.05 of the ILII value.
- **Yield spread:** Difference between the yield on 10-year Treasury bonds and 3-month Treasury bills. During December, the yield spread fell further into inversion territory (moving below 0) at -0.74 percent from -0.43 percent in November. December is the sixth month in a row since December 2020 that the yield spread has been below 1.0 percent. The long-term rate decreased 27 basis points while the short-term rate increased 4 basis points. For the month, the yield spread detracted 0.11 from 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 December 2022 decreased sharply to 38.4 compared to 47.4 in November. Likewise, the 12-month moving average of the new orders index has decreased to 56.01 from 72.73 in December 2021, and detracted 0.15 from the ILII.

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.