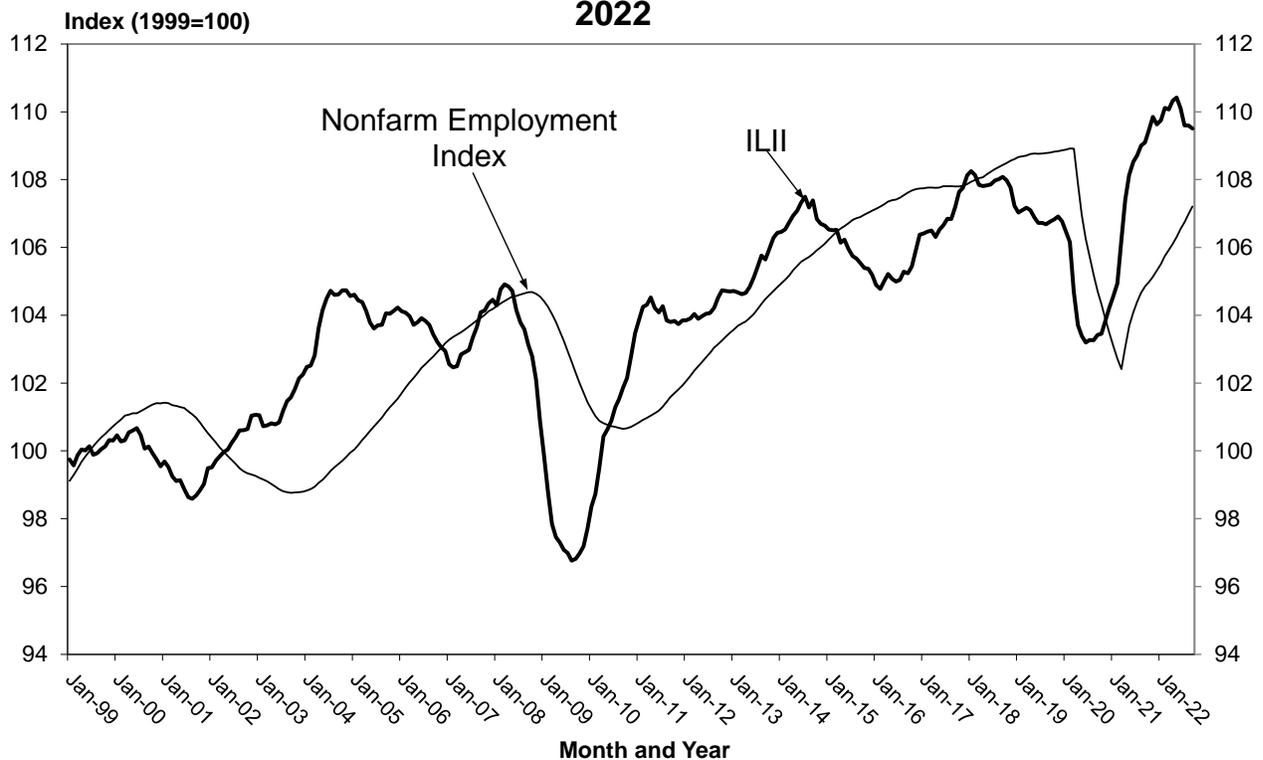


The Iowa Leading Indicators Index (ILII) decreased to 109.5 (100=1999) in September 2022 (-0.1 percent) from 109.6 in August 2022. The monthly diffusion index increased to 56.3 in September from 50.0 in August. The Iowa nonfarm employment coincident index recorded a 0.21 percent increase in September, the eighteenth month of growth. Long term trends in the ILII suggests that the nonfarm employment will continue to improve over the next three to six months though at a slower pace.

During the six-month span through September, the ILII decreased 0.5 percent (an annualized rate of -1.0 percent). The six-month diffusion index remained unchanged at 37.5 in September from August and July. The six-month diffusion index remains in a contractionary signal whereas the six-month annualized change has not reached a contractionary threshold.<sup>1</sup> Only three 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, and diesel fuel consumption.

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

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



<sup>1</sup> 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.

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

Monthly Values	2022					
	Apr	May	Jun	Jul	Aug	Sept
ILII	110.3	110.4	110.1	109.6	109.6	109.5
Percentage Change <sup>a</sup>	0.2%	0.1%	-0.3%	-0.5%	0.0%	-0.1%
Diffusion Index <sup>b</sup>	50.0	50.0	43.8	25.0	50.0	56.3
Six-Month Values	Oct to Apr	Nov to May	Dec to Jun	Jan to Jul	Feb to Aug	Mar to Sept
ILII						
Percentage Change	0.8%	0.5%	0.4%	-0.1%	-0.5%	-0.5%
Annualized Percentage Change	1.6%	1.0%	0.9%	-0.3%	-0.9%	-1.0%
Diffusion Index	62.5	62.5	50.0	37.5	37.5	37.5

Source: Tax Research Bureau, Iowa Department of Revenue, produced October 28, 2022.

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					
		Apr	May	Jun	Jul	Aug	Sept
AFPI <sup>b</sup>	↑ <sup>c</sup>						
Corn Profits (cents per bushel)		250.1	265.5	275.2	278.6	284.6	296.8
Soybean Profits (cents per bushel)		521.8	536.9	545.6	543.0	547.9	557.9
Hog Profits (cents per pound)		16.2	15.8	18.5	22.0	20.1	18.2
Cattle Profits (cents per pound)		15.2	14.9	14.9	15.2	15.9	16.0
Iowa Stock Market Index (10=1984-86)	↓	139.12	141.88	122.20	118.51	129.75	124.99
Yield Spread (10-year less 3-month)	↑	1.99	1.91	1.60	0.60	0.18	0.30
Residential Building Permits	↓	1,092	1,118	1,128	1,106	1,126	1,113
Average Weekly Unemployment Claims <sup>d</sup>	↑	2,180	2,021	1,963	1,933	1,887	1,852
Average Weekly Manufacturing Hours	↑	39.19	39.15	39.15	39.13	39.08	39.11
New Orders Index (percent)	↓	68.4	67.0	65.3	63.8	62.1	60.6
Diesel Fuel Consumption (mil gallons)	↓	68.09	67.95	67.78	67.73	68.02	68.00

Source: Tax Research Bureau, Iowa Department of Revenue, produced October 28, 2022.

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

- **Yield spread:** Difference between the yield on 10-year Treasury bonds and 3-month Treasury bills. During September, the yield spread increased to 0.30 percent from 0.18 percent in August. September is the third month in a row since December 2020 that the yield spread has been below 1.0 percent. The long-term rate increased 62 basis points while the short-term rate increased 50 basis points. For the month, the yield spread contributed 0.04 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 September, this component contributed 0.03 to the ILII with the 12-month moving average increased to 39.11 in September from a revised 39.08 in August. In September 2022, average hours were 39.8, above the 39.4 hours in September 2021, yet just over one and a half 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 contributed 0.03 to the ILII value with the 12-month moving average of claims decreasing from 1,887 to 1,852. Unemployment claims were 26.0 percent below September 2021 claims and 51.04 percent below average historical claims for September (1988-2021).
- **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 September, this component contributed 0.01 to the ILII with expected profits increases in both crop commodities and live cattle, with a decrease in expected live hog profits. Compared to last year, new crop corn prices were 11.5 percent higher while soybean prices were 29.1 percent higher. The September crush margin for cattle increased 0.6 percent from August while the crush margin for hogs decreased 9.8 percent.
- **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 0.2 percent between September 2021 and September 2022. The 12-month moving average decreased to 68.00 million gallons in September from 68.02 million in August, contributing - 0.00 to 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 September, permits were 1,174, down from 1,319 last year. This component detracted 0.03 from the September ILII with the 12-month moving average, decreasing to 1,113 in September from 1,126 in August. September 2022 permits were 11.0 percent below September 2021, and 4.8 percent below the monthly historical average (1998-2021).
- **Iowa stock market index:** Capitalization-weighted index of 28 Iowa-based or Iowa-concentrated publicly-traded companies. During September 2022, only three of the 28 companies gained value, and only one of the 10 financial-sector companies increased. With nearly all of the stocks experiencing losses, the index decreased to 124.99 in September from a revised 129.75 in August, detracting 0.06 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 September 2022 decreased sharply to 45.8 compared to 57.3 in August. Likewise, the 12-month moving average of the new orders index has decreased to 60.56 from 62.13 in September 2021, and contributed - 0.10 to 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.