

The Iowa Leading Indicators Index (ILII) increased to 110.7 (100=1999) in April 2022 (0.3 percent) from 110.4 in March 2022. The monthly diffusion index remained unchanged at 50.0. The Iowa nonfarm employment coincident index recorded a 0.18 percent increase in April, the thirteenth month of growth in a row. Despite the one-month decline in December 2021, long term trends in the ILII suggests that the nonfarm employment will continue to improve over the next three to six months.

During the six-month span through April, the ILII increased 0.9 percent (an annualized rate of 1.7 percent). The six-month diffusion index remained unchanged in April at 62.5 from March 2022. 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, diesel fuel consumption, the Iowa Stock Market Index, and national yield spread. Residential building permits decreased by more than 0.05 percent over the last half year causing the decrease in the six-month diffusion index.

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

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

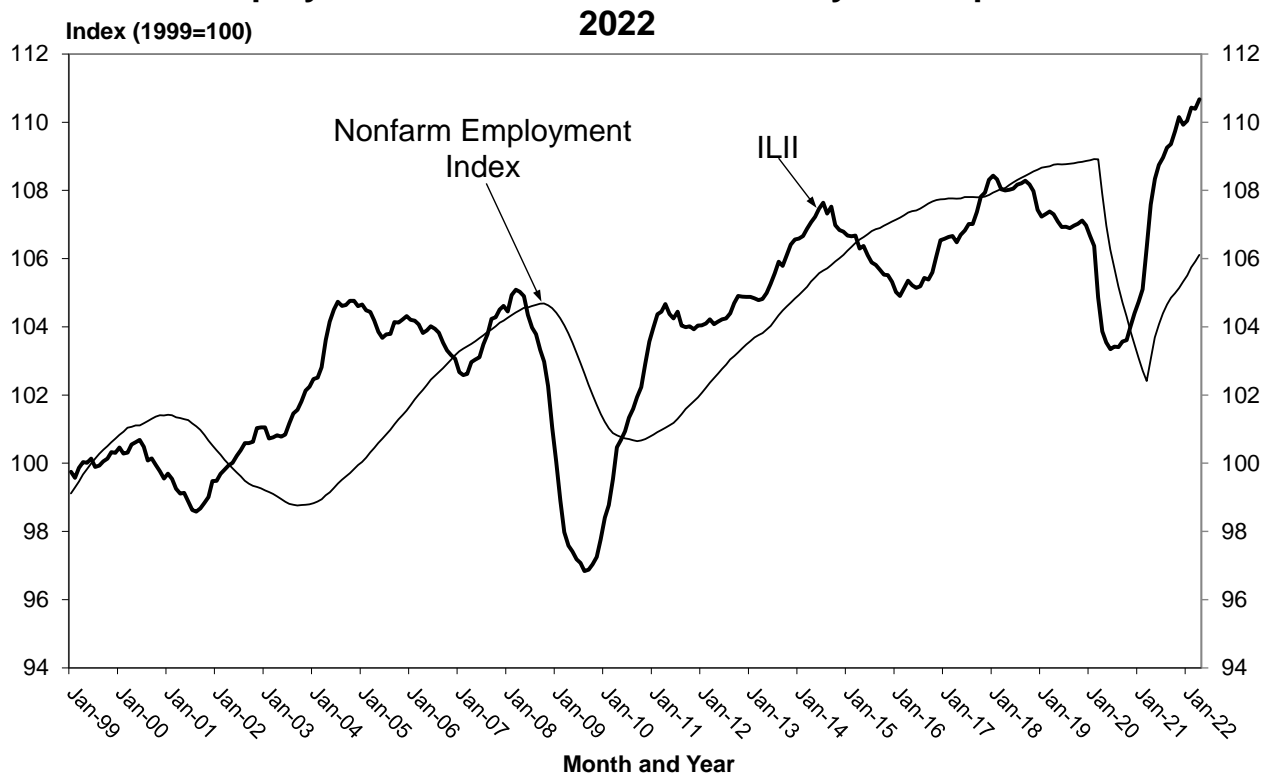


Table 1. Iowa Leading Indicators Index: Six Month Overview

Monthly Values	2021		2022			
	Nov	Dec	Jan	Feb	Mar	Apr
ILII	110.1	109.9	110.0	110.4	110.4	110.7
Percentage Change ^a	0.4%	-0.2%	0.1%	0.4%	0.0%	0.3%
Diffusion Index ^b	68.8	37.5	62.5	56.3	50.0	50.0
Six-Month Values	May to Nov	Jun to Dec	Jul to Jan	Aug to Feb	Sep to Mar	Oct to Apr
ILII						
Percentage Change	1.7%	1.1%	1.0%	1.1%	0.9%	0.9%
Annualized Percentage Change	3.3%	2.2%	2.0%	2.1%	1.9%	1.7%
Diffusion Index	50.0	50.0	68.8	75.0	62.5	62.5

Source: Tax Research Bureau, Iowa Department of Revenue, produced May 27, 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 ^a	2021		2022				
	Nov	Dec	Jan	Feb	Mar	Apr	
AFPJ ^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)	↓	136.91	134.20	140.94	143.40	140.00	137.59
Yield Spread (10-year less 3-month)	↑	1.51	1.41	1.61	1.62	1.68	1.99
Residential Building Permits	↓	1,223	1,190	1,196	1,181	1,119	1,092
Average Weekly Unemployment Claims ^d	↑	3,643	3,364	3,098	2,797	2,472	2,180
Average Weekly Manufacturing Hours	↓	39.57	39.40	39.33	39.29	39.26	39.20
New Orders Index (percent)	↓	72.7	72.7	70.4	69.1	69.1	68.4
Diesel Fuel Consumption (mil gallons)	↑	67.33	67.05	66.85	67.82	67.68	68.09

Source: Tax Research Bureau, Iowa Department of Revenue, produced May 27, 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 2, 2021).

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 0.17 to the ILII value with the 12-month moving average of claims decreasing from 2,472 to 2,180. Unemployment claims were 73.4 percent below April 2021 claims and 65.8 percent below average historical claims for April (1988-2021).
- **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 7.6 percent between April 2021 and April 2022. The 12-month moving average increased to 68.09 million gallons in April from 67.68 million in March, contributing 0.11 to the ILII value.
- **Yield spread:** Difference between the yield on 10-year Treasury bonds and 3-month Treasury bills. During April, the yield spread increased to 1.99 percent from 1.68 percent in March. April is the sixteenth month in a row since December 2020 that the yield spread has been at or above 1.0 percent. The long-term rate increased 62 basis points while the short-term rate increased 31 basis points. For the month, the yield spread contributed 0.11 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 April, this component contributed 0.05 to the ILII with both grain commodities and cattle commodities expecting profit gains while expected profits for hog commodities decreased. Compared to last year, new crop corn prices were 39.9 percent higher while soybean prices were 15.4 percent higher. The April crush margin for hogs decreased 14.4 percent from March while the crush margin for cattle increased 10.0 percent.
- **Iowa stock market index:** Capitalization-weighted index of 29 Iowa-based or Iowa-concentrated publicly-traded companies. During April 2022, only 13 of the 29 companies gained value, and three of the 10 financial-sector companies increased. With just under half of the stocks experiencing gains, the index decreased to 137.59 in April from a revised 140.0 in March, contributing -0.03 of 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 -0.05 to the ILII with the 12-month moving average decreased to 39.2 from a revised 39.3 in March. In April 2022, average hours were 39.1, below the 39.8 hours in April 2021, and nearly two hours below the historical monthly average (1996-2021).
- **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 2022 decreased to 70.6 compared to 75.4 in March. The 12-month moving average of the new orders index has decreased to 68.38 from 70.0 in April 2021, and contributed -0.05 to 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 April, permits were 1,580, down from 1,903 last year. This component detracted -0.08 from the April ILII with the 12-month moving average decreasing to 1,092 in April from 1,119 in March. April 2022 permits were 17.0 percent below April 2021, yet 29.3 percent above the monthly historical average (1998-2021).

Table 3. ILII Components and Standardization Factors for FY 2022

Iowa Leading Indicator Index Components	Standardization Factor
Agricultural Futures Profits Index	0.035
Iowa Stock Market Index	0.015
Yield Spread	0.352
Residential Building Permits	0.031
Average Weekly Unemployment Claims	0.014
Average Weekly Manufacturing Hours	0.310
New Orders Index	0.061
Diesel Fuel Consumption	0.183

Source: Tax Research Bureau, Iowa Department of Revenue, produced September 8, 2021

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 2021 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.