

Nebraska Monthly Economic Indicators: May 22, 2019

Prepared by the UNL College of Business, Bureau of Business Research

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Summary: *The Leading Economic Indicator – Nebraska (LEI-N)¹ rose by 0.79% during April of 2019. The increase in the LEI-N, which is designed to predict economic activity six months into the future, implies moderate economic growth in Nebraska through the end of 2019. Strong business expectations were again the primary reason for the increase in the leading indicator. Respondents to the April Survey of Nebraska Business reported plans to increase both sales and employment at their businesses over the next six months. There also was growth in manufacturing hours-worked during the month.*

Leading Economic Indicator – Nebraska

Figure 1 shows the change in the Leading Economic Indicator – Nebraska (LEI-N) during April 2019 compared to the previous month. The LEI-N predicts economic growth six months into the future. The LEI-N rose by 0.79% in April.

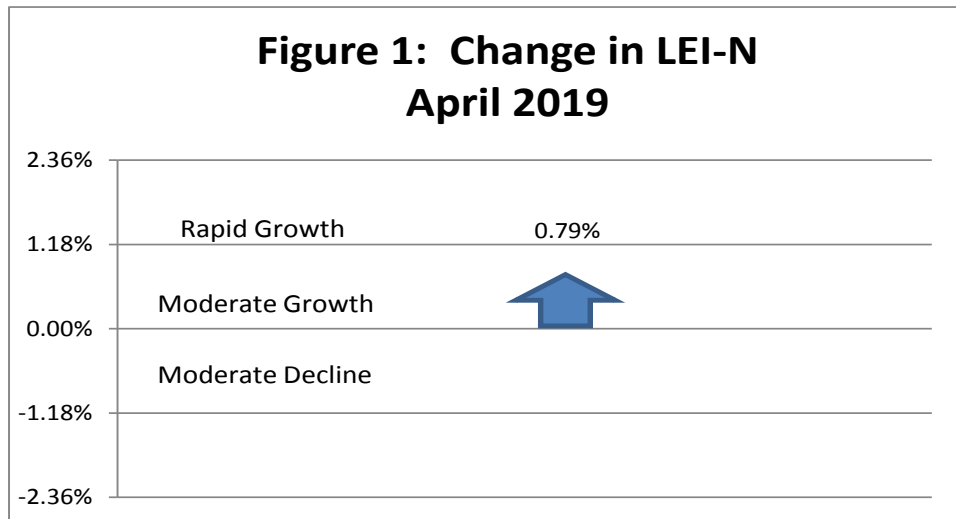


Figure 2 shows that the LEI-N has increased over each of the last six months, and the rate of increase has been especially strong over the last four months. The growing indicator implies that the Nebraska economy will grow through the end of 2019.

¹ The author would like to thank Dr. William Walstad for helping to design the LEI-N.

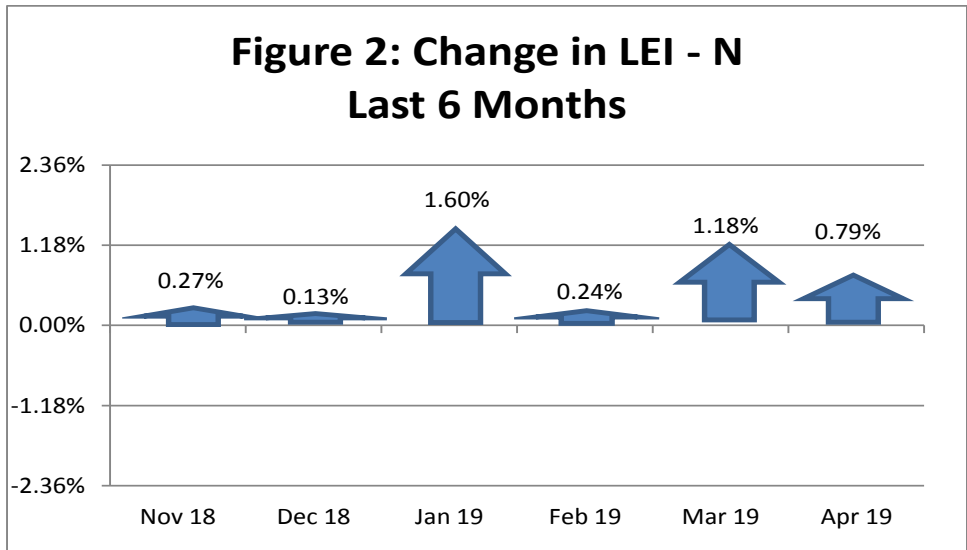
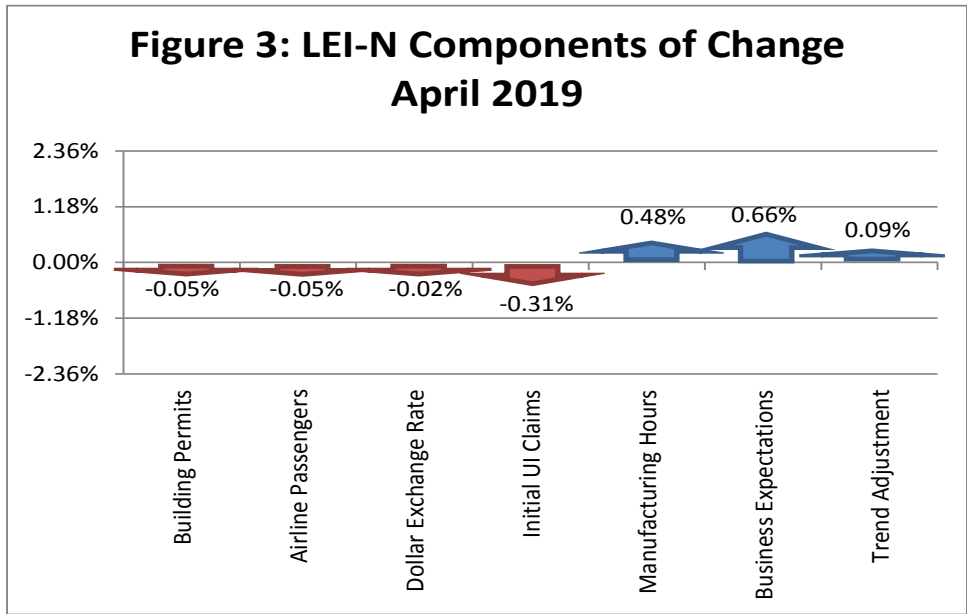


Figure 3 shows the components of change in the Leading Economic Indicator – Nebraska during April of 2019. The change in the overall LEI–N is the weighted average of changes in each component (see page 5). Business expectations made the largest contribution to the leading indicator. Respondents to the April *Survey of Nebraska Business* reported plans to increase both sales and employment at their business over the next six months. Manufacturing hours-worked also rose during April. Most other components of the leading indicator were slightly negative; however there was an increase in initial claims for unemployment insurance. Note that the trend adjustment component pictured in Figure 3 is discussed on page 5.



Coincident Economic Indicator – Nebraska

The Coincident Economic Indicator - Nebraska (CEI-N) is a measure of the current size of the Nebraska economy. The CEI-N rose by 0.41% during April of 2019, as seen in Figure 4.

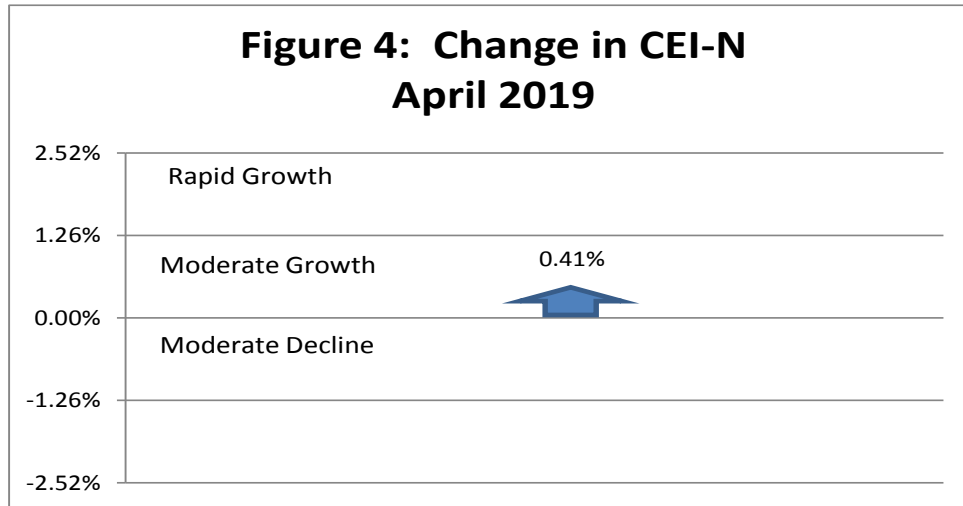
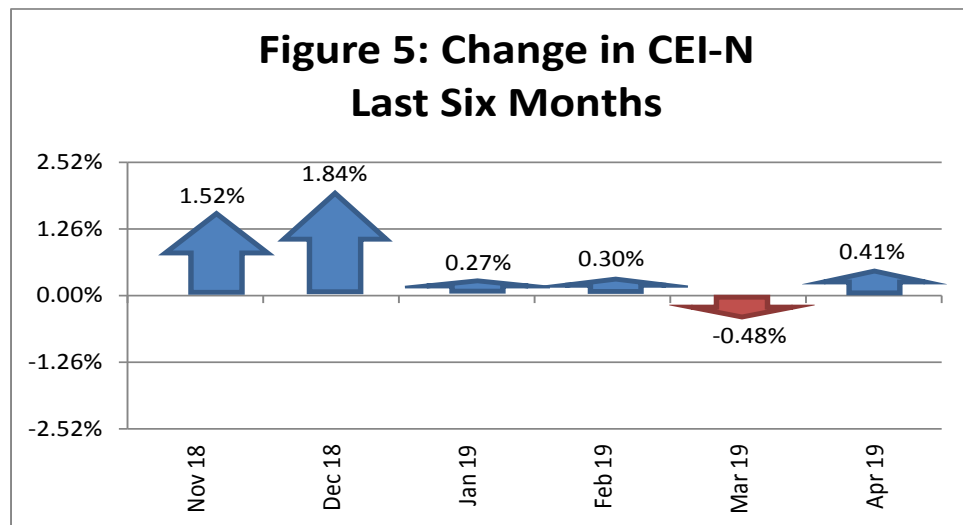


Figure 5 shows the change in the CEI-N over the last 6 months. The CEI-N rose strongly at the end of 2018 but has grown modestly during the first four months of 2019.



Two of four CEI-N components rose during April. Electricity sales rose after adjusting for climate and other seasonal trends. Agricultural commodity prices rose slightly but real private wages declined. Business conditions also were negative during April, with respondents to the monthly *Survey of Nebraska Business* reporting a decrease in sales in recent months. A detailed discussion of the components of the CEI-N and LEI-N can be found at www.cba.unl.edu in *Technical Report: Coincident and Leading Economic Indicators-Nebraska*.

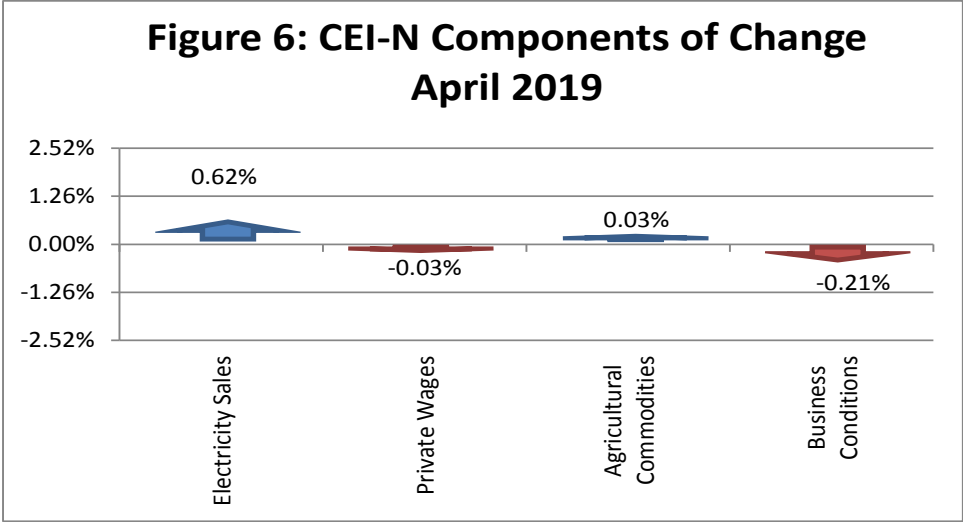
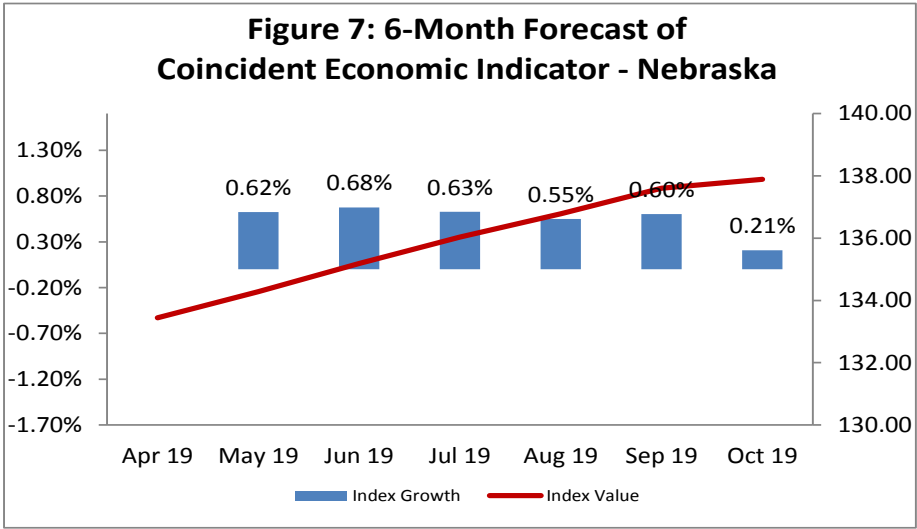


Figure 7 shows the forecast for the CEI-N over the next six months. Economic growth is expected in Nebraska through October of 2019. Forecast growth in the CEI-N is consistent with changes in the LEI-N over the last six months (Figure 2).



Weights and Component Shares

Table 1 shows the weights used to aggregate the individual components into the LEI-N and CEI-N. The weights are the inverse of the “standardized” standard deviation of each component variable. The term standardized simply means that the inverse standard deviations are adjusted proportionately to sum to 1. This weighting scheme makes sense since individual components that are more stable have smaller standard deviations, and therefore, a larger inverse standard deviation. A large movement in a typically stable economic series would provide a more powerful signal of economic change than a large movement in a series with significant month-to-month fluctuations.

Table 1: Component Weights for LEI-N and CEI-N							
Leading Economic Indicator - Nebraska				Coincident Economic Indicator - Nebraska			
Variable	Standard Deviation	Inverse STD	Weight (Inverse STD Standardize)	Variable	Standard Deviation	Inverse STD	Weight (Inverse STD Standardize)
SF Housing Permits	13.4367	0.0744	0.0347	Electricity Sales	4.5258	0.2210	0.1641
Airline Passengers	3.2608	0.3067	0.1431	Private Wages	1.8086	0.5529	0.4105
Exchange Rate	1.1853	0.8437	0.3936	Agricultural Commodities	3.2513	0.3076	0.2284
Initial UI Claims	10.7190	0.0933	0.0435	Survey Business Conditions	3.7674	0.2654	0.1971
Manufacturing Hours	1.6972	0.5892	0.2749				
Survey Business Expectations	4.2384	0.2359	0.1101				

Tables 2 and 3 show the calculation for the change in LEI-N and CEI-N between March and April of 2019. Weights (from Table 1) are multiplied by the change to calculate the contribution of each component. Contributions are converted to percentage terms and summed. Note that in Table 2 a trend adjustment factor is utilized in calculating LEI-N. This is done because LEI-N historically under-predicts CEI-N by 0.09% per month. The U.S. Leading Economic Indicator also has a trend adjustment.

Table 2: Component Contributions to the Change in Leading Economic Indicator						
Leading Economic Indicator - Nebraska						
Component Index Value (May 2007=100)						
Component	Current	Previous	Difference	Weight	Contribution	Percentage Contribution (Relative to Previous LEI-N)
SF Building Permits	50.12	52.49	-2.36	0.03	-0.08	-0.05%
Airline Passengers	111.47	112.03	-0.56	0.14	-0.08	-0.05%
U.S. Dollar Exchange Rate (Inverse)	82.09	82.18	-0.09	0.39	-0.04	-0.02%
Initial Unemployment Insurance Claims (Inverse)	150.52	161.44	-10.92	0.04	-0.48	-0.31%
Manufacturing Hours	97.03	94.34	2.70	0.27	0.74	0.48%
Survey Business Expectations ¹	59.24		9.24	0.11	1.02	0.66%
Trend Adjustment					0.13	0.09%
Total (weighted average)	154.52	153.30			1.22	0.79%

¹ Survey results are a diffusion Index, which is always compared to 50

Table 3: Component Contributions to the Change in Coincident Economic Indicator						
Coincident Economic Indicator - Nebraska						
Component Index Value (May 2007=100)						
Component	Current	Previous	Difference	Weight	Contribution	Percentage Contribution (Relative to Previous CEI-N)
Electricity Sales	206.42	201.42	5.00	0.16	0.82	0.62%
Private Wage	110.65	110.76	-0.11	0.41	-0.04	-0.03%
Agricultural Commodities	119.94	119.74	0.19	0.23	0.04	0.03%
Survey Business Conditions ¹	48.57		-1.43	0.20	-0.28	-0.21%
Total (weighted average)	133.45	132.91			0.54	0.41%

¹ Survey results are a diffusion Index, which is always compared to 50

Performance of the LEI-N and CEI-N

Further information is available on both economic indicators to demonstrate how well the CEI-N tracks the Nebraska economy and how well the LEI-N leads the CEI-N. Figure 8 shows the value of CEI-N and the real gross state product (real GDP) in Nebraska for 2001 through 2017. Annual real gross state product data is provided by the Bureau of Economic Analysis, U.S. Department of Commerce, and quarterly values were estimated using quarterly earnings data. CEI-N closely tracks Nebraska real GDP for the period. The correlation coefficient between the two-pictured series is 0.95.

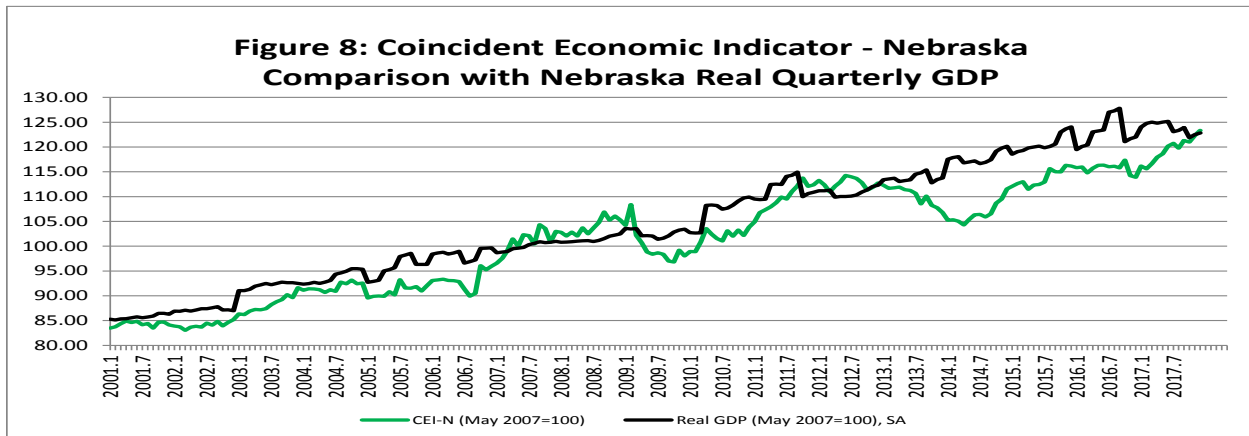


Figure 9 again shows the values for the CEI-N. It also graphs 6-months forward values for the LEI-N. Recall that the LEI-N is intended to forecast the Nebraska economy six months into the future. This implies that Figure 9 is comparing the predicted movement in CEI-N (predicted by LEI-N values six months earlier) with the actual movement in CEI-N. In Figure 9, predicted values using the LEI-N closely track trends and movement in the CEI-N. The correlation coefficient between CEI-N and six-month forward values of LEI-N is 0.93.

