

Nebraska Monthly Economic Indicators: May 23, 2018

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 0.67% during April of 2018. The increase in the LEI-N, which is designed to predict economic activity six months into the future, suggests that the Nebraska economy will continue to grow through the 4th quarter of 2018. The LEI-N rose due to strong business expectations, an increase in airline passenger counts, and a drop in initial claims for unemployment insurance. In particular, respondents to the April Survey of Nebraska Business reported plans to increase both sales and employment at their businesses over the next six months. However, there were also signs of weakness in the Nebraska economy. There was a decline in manufacturing hours and building permits for single-family homes during April. Further, for the third consecutive month there was a small increase in the value of the U.S. dollar, which raises competitive pressure for Nebraska exporters.*

Leading Economic Indicator – Nebraska

Figure 1 shows the change in the Leading Economic Indicator – Nebraska (LEI-N) during April 2018 compared to the previous month. The LEI-N predicts economic growth six months into the future. The LEI-N rose by 0.67% in April.

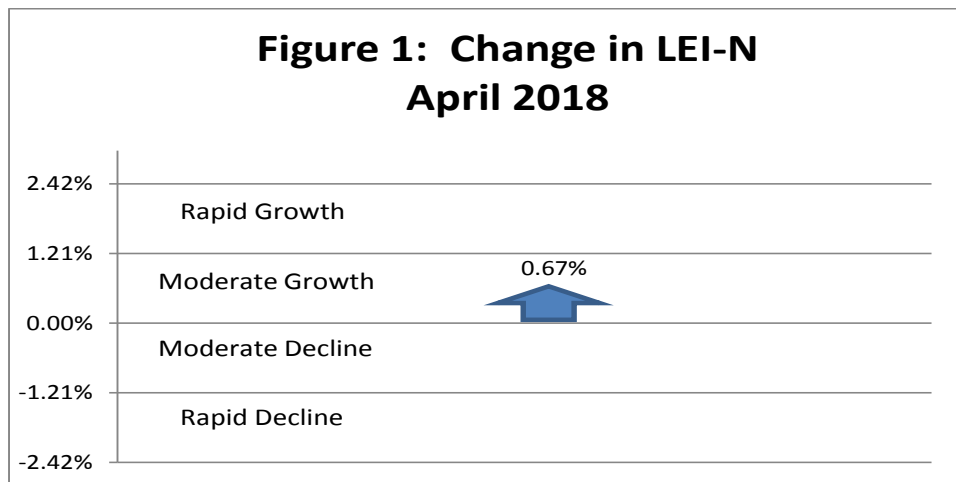


Figure 2 shows the change in the LEI-N over the last six months. The indicator rose each of the last six months, signaling continued economic growth in Nebraska.

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

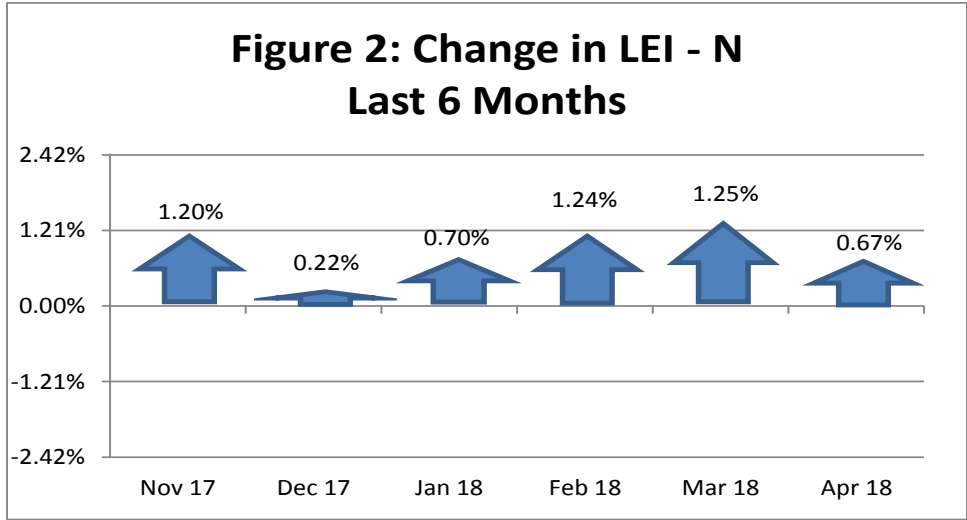
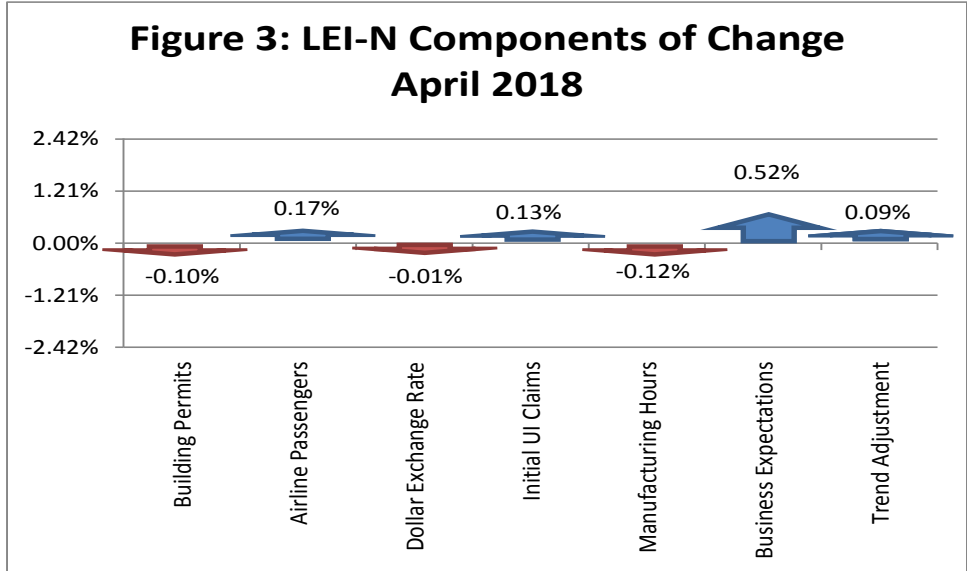


Figure 3 shows the components of change in the Leading Economic Indicator – Nebraska during April 2018. The change in the overall LEI–N is the weighted average of changes in each component (see page 5). Three of six LEI-N components rose during April. Business expectations were strong as respondents to the April *Survey of Nebraska Business* predicted gains in both sales and employment at their businesses over the next six months. There also was an increase in airport passenger counts and a decline in initial claims for unemployment insurance during April. There were pockets of weakness in the Nebraska economy. Building permits for single family homes declined during April on a seasonally-adjusted basis and manufacturing hours worked also fell. Further, for the third consecutive month, there was a small increase in the value of the U.S. dollar. A rising dollar increases competitive pressures on Nebraska exporters, including in agriculture and manufacturing. 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 0.08% during April 2018, as seen in Figure 4.

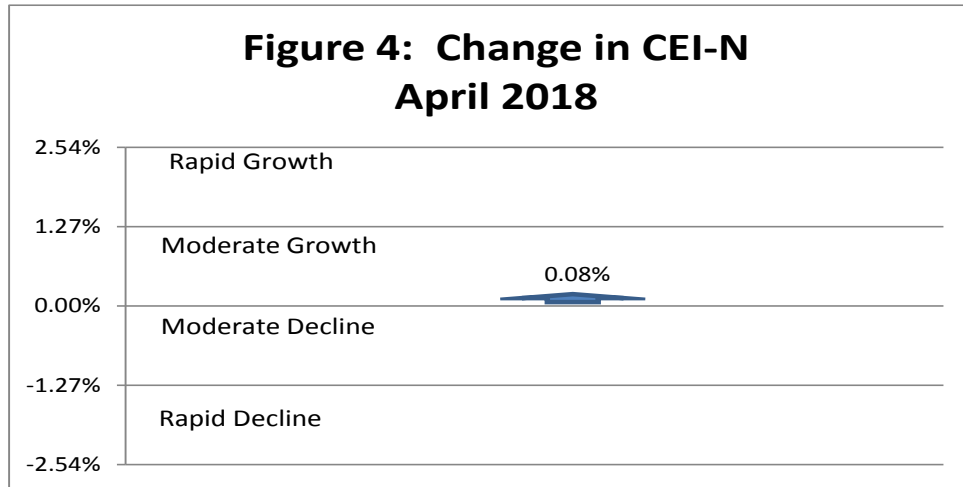
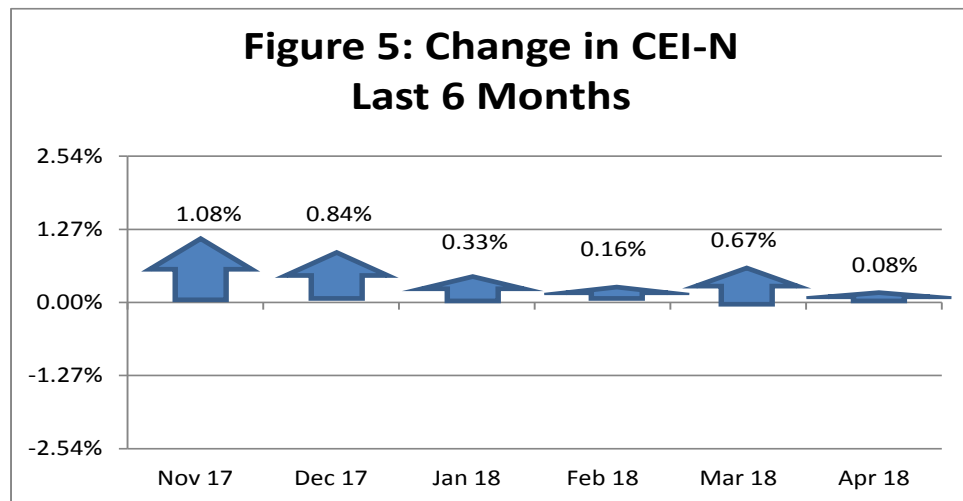


Figure 5 shows the change in the CEI-N over the last 6 months. The CEI-N rose during each of the last six months. Growth was robust at the end of 2017 but moderated during the first quarter of 2018.



Only one of four CEI-N components rose during April. There was a solid increase in real private sector wages, reflecting increases in employment, weekly hours-worked and real hourly wages. Other components of the CEI-N fell during April. Agricultural commodity prices and electricity sales both fell. Business conditions were weak according to respondents to the *April Survey of Nebraska Business*, who reported a modest decrease in sales and employment 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*.

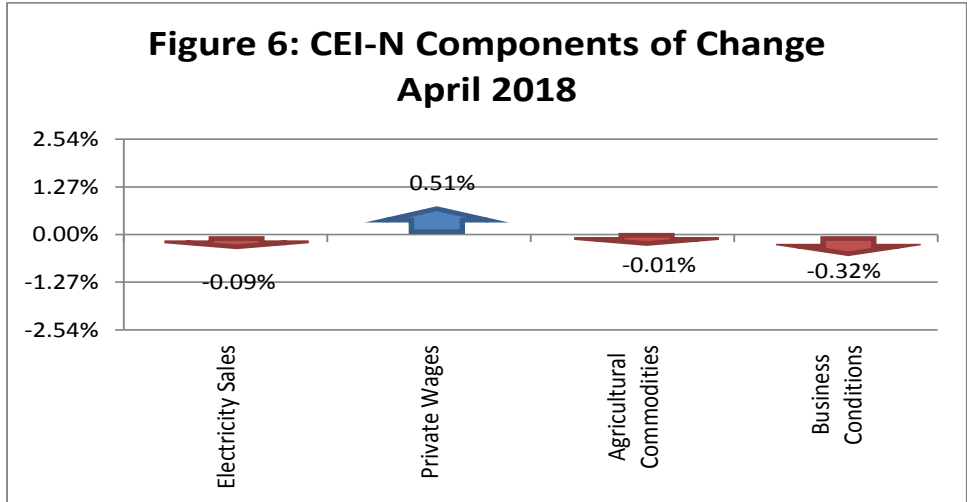
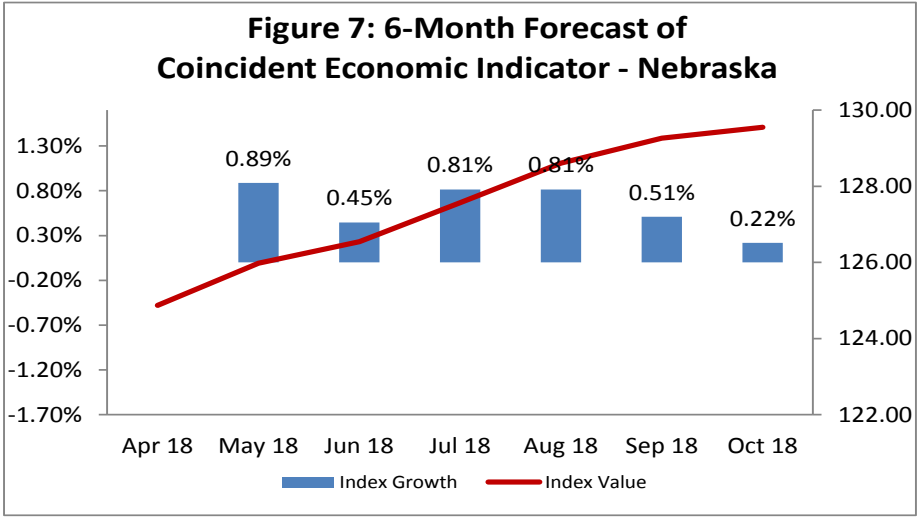


Figure 7 shows the forecast for the CEI-N over the next six months. The Nebraska economy is expected to grow through October of 2018. The steady growth of the Nebraska economy is consistent with growth in the LEI-N over the last six months (Figure 2).



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	13.4316	0.0745	0.0349	Electricity Sales	4.6168	0.2166	0.1595
Airline Passengers	3.3150	0.3017	0.1413	Private Wages	1.7518	0.5709	0.4203
Exchange Rate	1.1937	0.8378	0.3924	Agricultural Commodities	3.3050	0.3026	0.2227
Initial UI Claims	10.9662	0.0912	0.0427	Survey Business Conditions	3.7271	0.2683	0.1975
Manufacturing Hours	1.6770	0.5963	0.2793				
Survey Business Expectations	4.2819	0.2335	0.1094				

Tables 2 and 3 show the calculation for the change in LEI-N and CEI-N between March and April of 2018. 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	74.59	78.67	-4.07	0.03	-0.14	-0.10%
Airline Passengers	109.27	107.55	1.72	0.14	0.24	0.17%
U.S. Dollar Exchange Rate (Inverse)	88.47	88.51	-0.04	0.39	-0.02	-0.01%
Initial Unemployment Insurance Claims (Inverse)	164.27	159.83	4.44	0.04	0.19	0.13%
Manufacturing Hours	94.44	95.09	-0.64	0.28	-0.18	-0.12%
Survey Business Expectations ¹	56.88		6.88	0.11	0.75	0.52%
Trend Adjustment					0.13	0.09%
Total (weighted average)	146.22	145.24			0.98	0.67%

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	182.72	183.45	-0.74	0.16	-0.12	-0.09%
Private Wage	112.69	111.18	1.51	0.42	0.63	0.51%
Agricultural Commodities	118.61	118.69	-0.08	0.22	-0.02	-0.01%
Survey Business Conditions ¹	48.00		-2.00	0.20	-0.40	-0.32%
Total (weighted average)	124.87	124.77			0.10	0.08%

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 2016. 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 0.94.

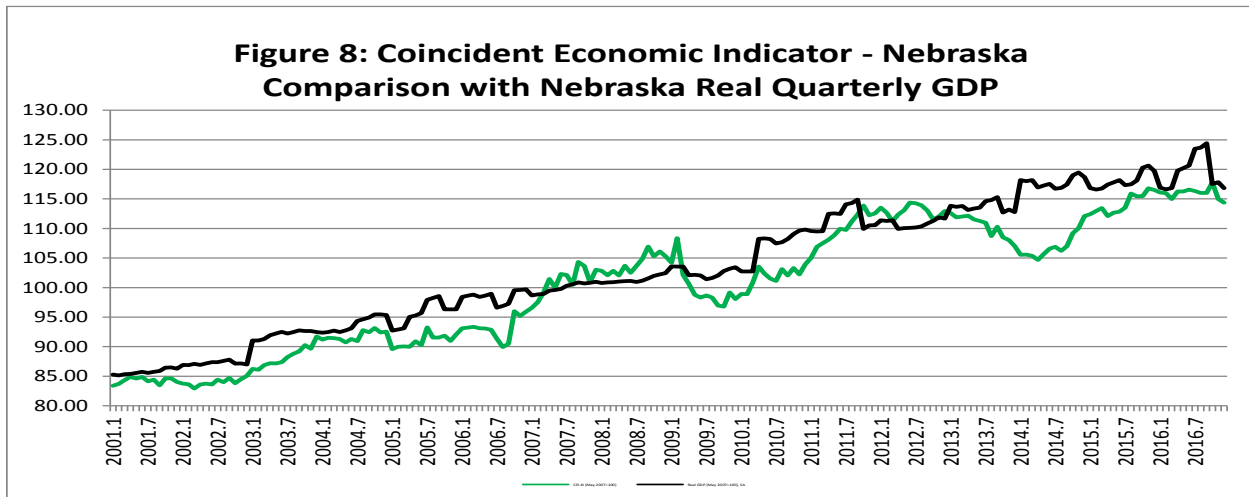


Figure 9 again shows the values for the CEI-N. It also graphs 6-months forward values for the LEI-N. Recall that the LEI-N is intended to forecast the Nebraska economy six months into the future. This implies that Figure 9 is comparing the predicted movement in CEI-N (predicted by LEI-N values six months 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 0.92.

