Nebraska Monthly Economic Indicators: February 21, 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 1.18% during January 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 grow steadily through the summer of 2018. A falling U.S. dollar, which is positive for Nebraska exporters, was one primary reason for the improvement in the leading indicator. The other was business expectations. Respondents to the January Survey of Nebraska Business reported plans to increase sales and employment at their businesses over the next six months. In terms of negative components, there was an increase in initial claims for unemployment insurance during January.*

Leading Economic Indicator – Nebraska

Figure 1 shows the change in the Leading Economic Indicator – Nebraska (LEI-N) during January 2018 compared to the previous month. The LEI-N predicts economic growth six months into the future. The LEI-N rose by 1.18% in January.

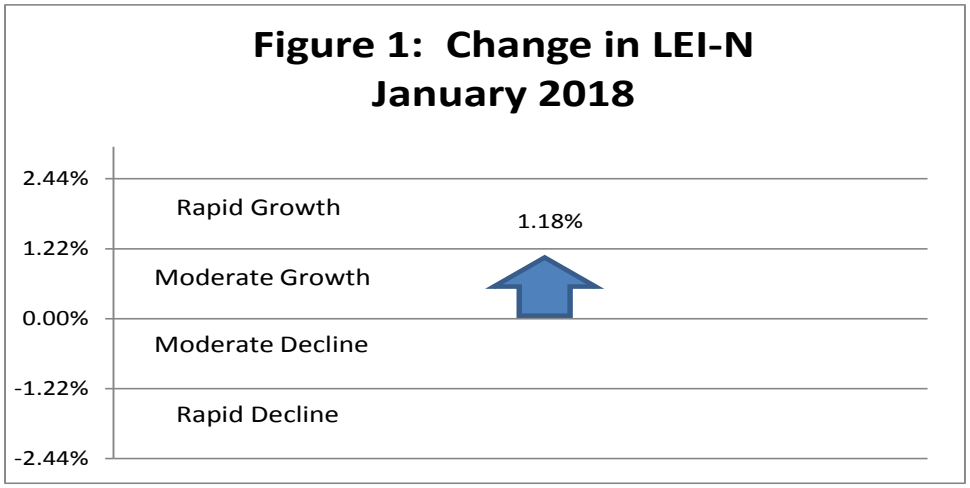


Figure 2 shows the change in the LEI-N over the last six months. The indicator has risen consistently over the last 6 months. The October 2017 value was revised from a slight increase to a slight decrease. Taken together, these results suggest the Nebraska economy will grow through the summer of 2018.

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

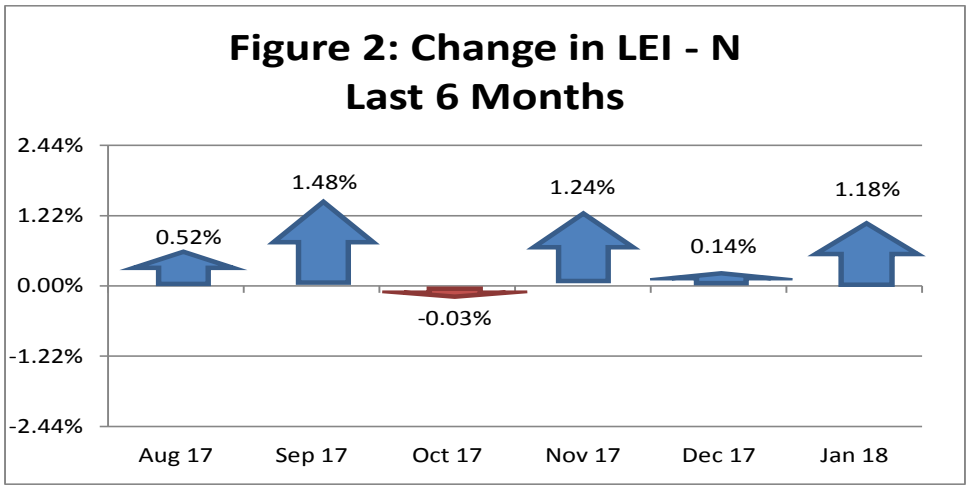
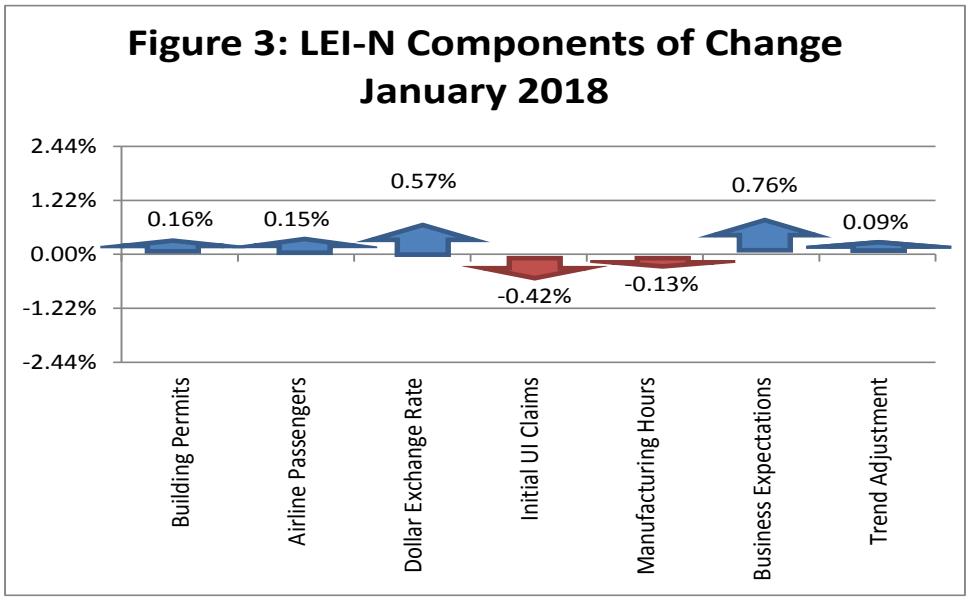


Figure 3 shows the components of change in the Leading Economic Indicator – Nebraska during January 2018. The change in the overall LEI–N is the weighted average of changes in each component (see page 5). Four of six LEI-N components rose during January. In particular, business expectations were positive as respondents to the January *Survey of Nebraska Business* predicted growth in both sales and employment at their businesses over the next six months. The value of the U.S. dollar also fell during January, which is a positive for the competitiveness of Nebraska exporters. There also was modest growth in building permits for single-family homes on a seasonally-adjusted basis. Among declining components, there was an increase in initial claims for unemployment insurance during January. 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 0.85% during January 2018, as seen in Figure 4.

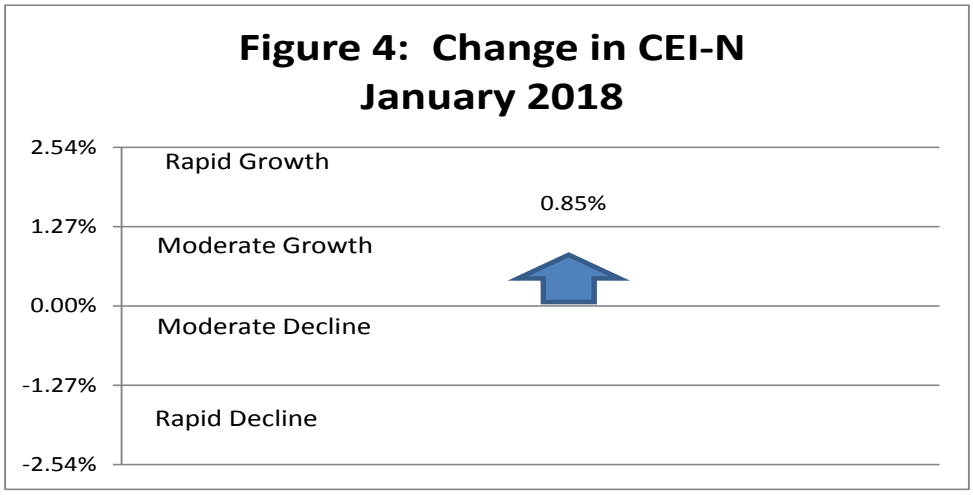
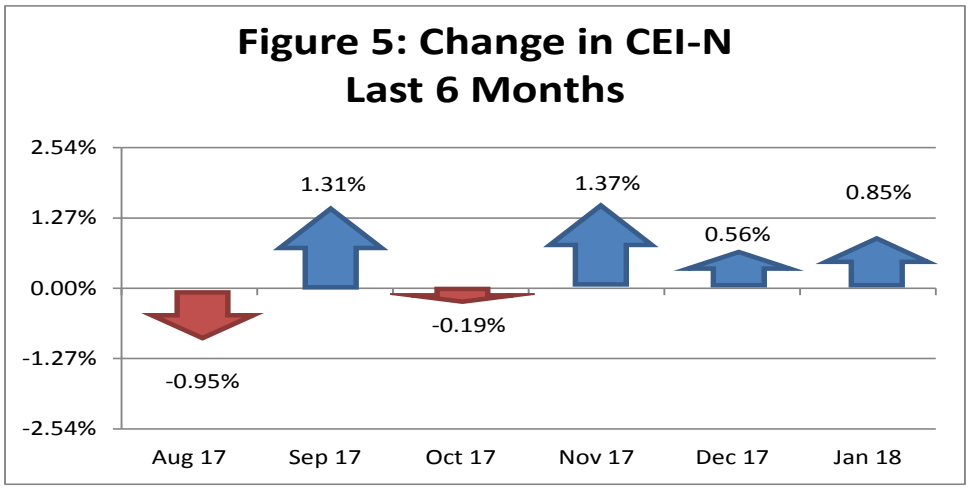


Figure 5 shows the change in the CEI-N over the last 6 months. The CEI-N rose over the last three months and during four of the last six months. Results show that the Nebraska economy expanded solidly at the end of 2017 and that it is continuing to grow in early 2018.



All four components of the CEI-N rose during January. Respondents to the January *Survey of Nebraska Business* reported recent increases in sales and employment. Electricity sales also rose after adjusting for weather and seasonal factors. There was a modest improvement in private wages in January and even a small improvement in agricultural commodity prices. 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.*

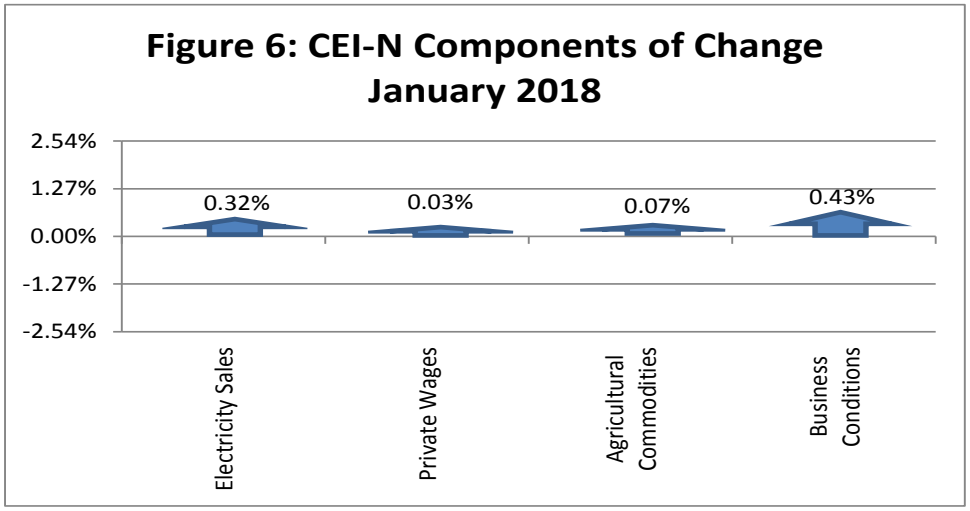
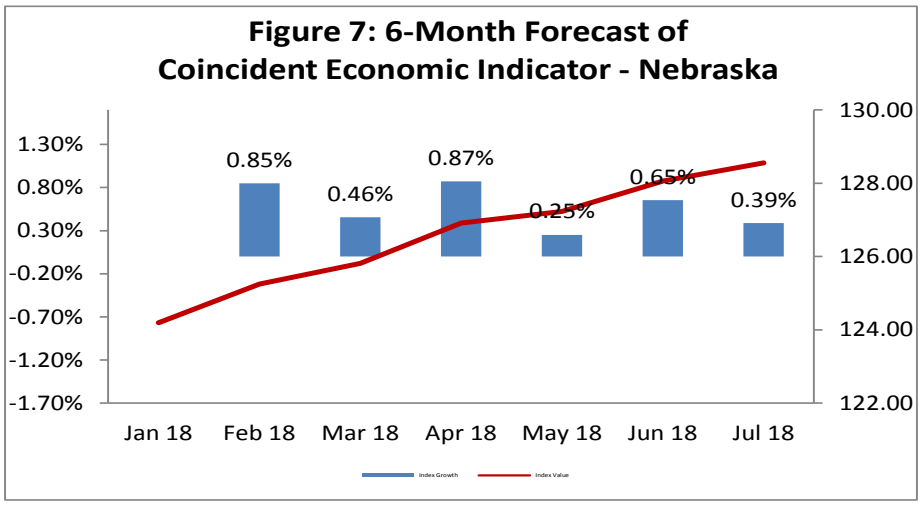


Figure 7 shows the forecast for the CEI-N over the next six months. The Nebraska economy is expected to grow through the summer of 2018. These expectations are consistent with the improvement in the LEI-N over the last six months (Figure 2).



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	13.5030	0.0741	0.0347	Electricity Sales	4.6364	0.2157	0.1596
Airline Passengers	3.3196	0.3012	0.1413	Private Wages	1.7632	0.5671	0.4198
Exchange Rate	1.2015	0.8323	0.3904	Agricultural Commodities	3.3141	0.3017	0.2233
Initial UI Claims	10.9403	0.0914	0.0429	Survey Business Conditions	3.7516	0.2666	0.1973
Manufacturing Hours	1.6697	0.5989	0.2810				
Survey Business Expectations	4.2776	0.2338	0.1097				

Tables 2 and 3 show the calculation for the change in LEI-N and CEI-N between December of 2017 and January 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	91.80	85.13	6.67	0.03	0.23	0.16%
Airline Passengers	105.63	104.09	1.54	0.14	0.22	0.15%
U.S. Dollar Exchange Rate (Inverse)	89.19	87.15	2.04	0.39	0.79	0.57%
Initial Unemployment Insurance Claims (Inverse)	130.55	144.38	-13.82	0.04	-0.59	-0.42%
Manufacturing Hours	94.68	95.36	-0.67	0.28	-0.19	-0.13%
Survey Business Expectations[1]	59.77		9.77	0.11	1.07	0.76%
Trend Adjustment					0.13	0.09%
Total (weighted average)	142.20	140.53			1.66	1.18%

[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	178.84	176.37	2.48	0.16	0.40	0.32%
Private Wage	114.93	114.84	0.09	0.42	0.04	0.03%
Agricultural Commodities	116.61	116.24	0.37	0.22	0.08	0.07%
Survey Business Conditions[1]	52.74		2.74	0.20	0.54	0.43%
Total (weighted average)	125.25	124.19			1.06	0.85%

[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.

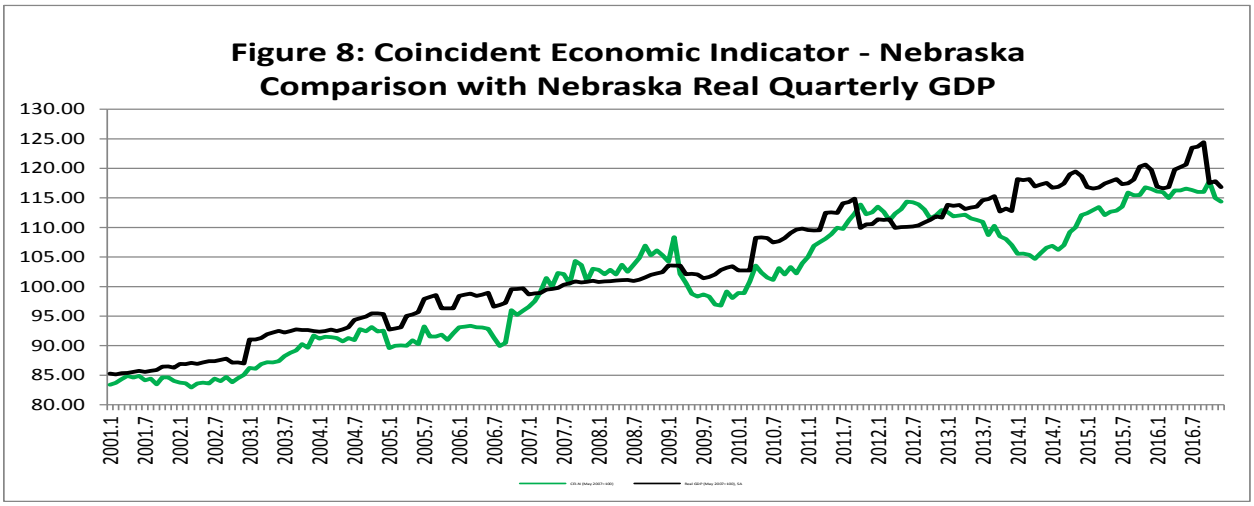


Figure 9 again shows the values for the CEI-N. It also graphs 6-months forward values for the LEI-N. Recall that the LEI-N is intended to forecast the Nebraska economy six months into the future. This implies that Figure 9 is comparing the predicted movement in CEI-N (predicted by LEI-N values six months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