

Nebraska Monthly Economic Indicators: October 25, 2017

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

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Summary: The Leading Economic Indicator – Nebraska (LEI-N)¹ rose by 1.86% during September of 2017. The increase in the LEI-N, which is designed to predict economic activity six months into the future, suggests solid economic growth in Nebraska during the first quarter of 2018. The rise in the indicator was due to an increase in building permits for single-family homes and growth in manufacturing hours-worked. There also was a decline in the value of the dollar in September, which is positive for Nebraska exporters. Finally, there were positive business expectations. Businesses responding to the September Survey of Nebraska Business reported plans to increase sales and employment over the next six months. There was, however, a modest increase in initial claims for unemployment insurance during September on a seasonally adjusted basis.

Leading Economic Indicator – Nebraska

Figure 1 shows the change in the Leading Economic Indicator – Nebraska (LEI-N) during September 2017 compared to the previous month. The LEI-N predicts economic growth six months into the future. The LEI-N rose by 1.86% in September.

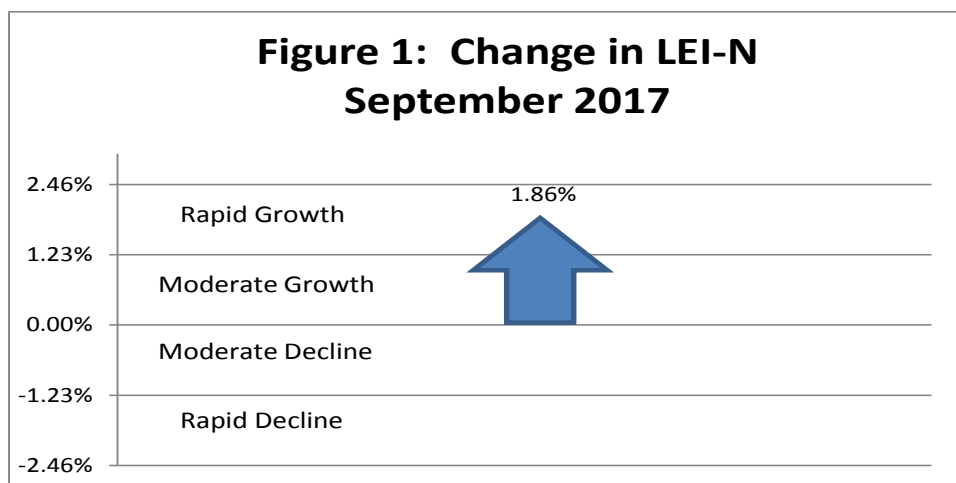


Figure 2 shows the change in the LEI-N over the last six months. The indicator has increased in recent months. In particular, note that the LEI-N value rose in August despite last month's indicator report, which had concluded that the LEI-N declined. The August indicator turned positive due to a significant upward

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

revision to Nebraska manufacturing hours by the U.S. Bureau of Labor Statistics. The consistent rise in the leading indicator seen in Figure 2 portends solid growth in Nebraska for the remainder of 2017 and the 1st quarter of 2018.

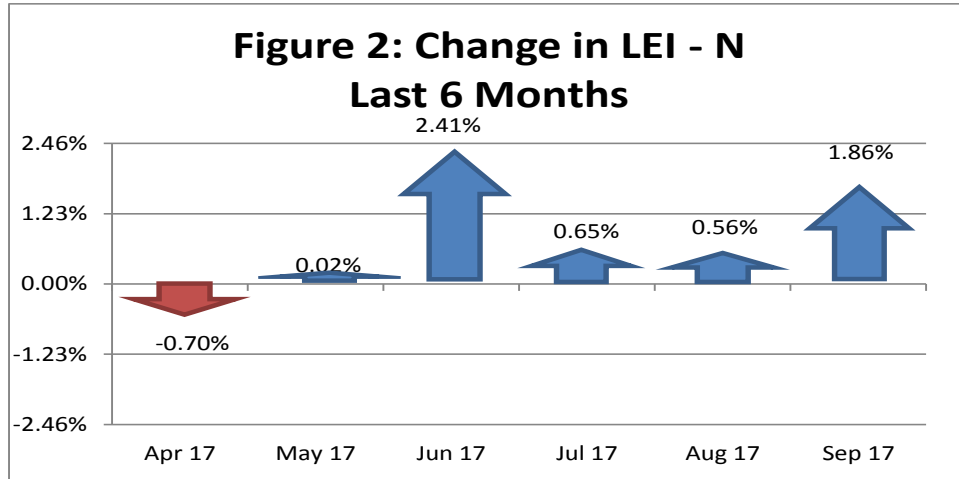
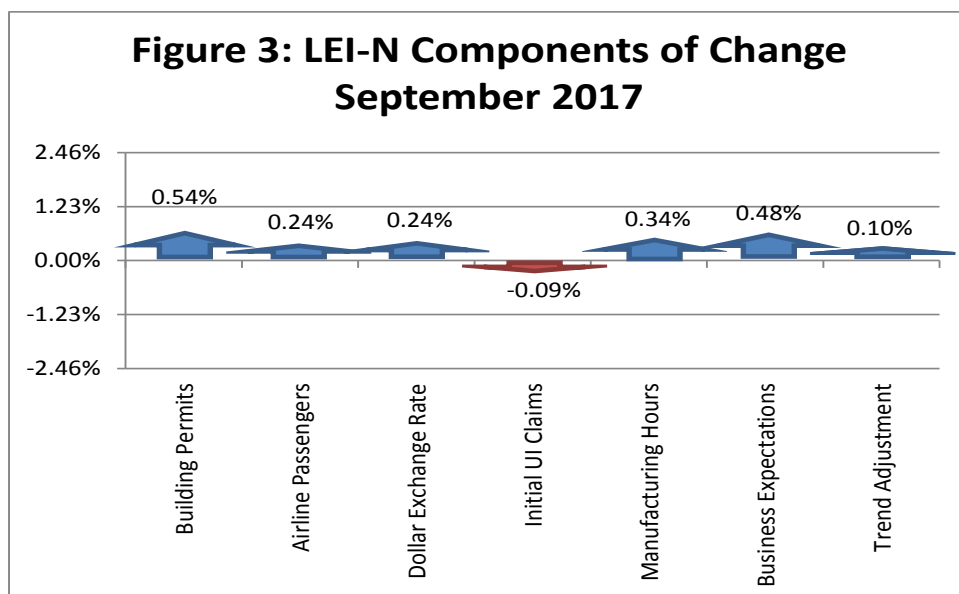


Figure 3 shows the components of change in the Leading Economic Indicator – Nebraska during September 2017. The change in the overall LEI–N is the weighted average of changes in each component (see page 5). Five of six components of the LEI–N rose during September. There was an increase in manufacturing hours-worked and building permits for single family homes during September. Business expectations also were positive as respondents to the September *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 declined again during September, which is a positive development for Nebraska exporters in the manufacturing and agriculture industries. 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 1.35% during September 2017, as seen in Figure 4.

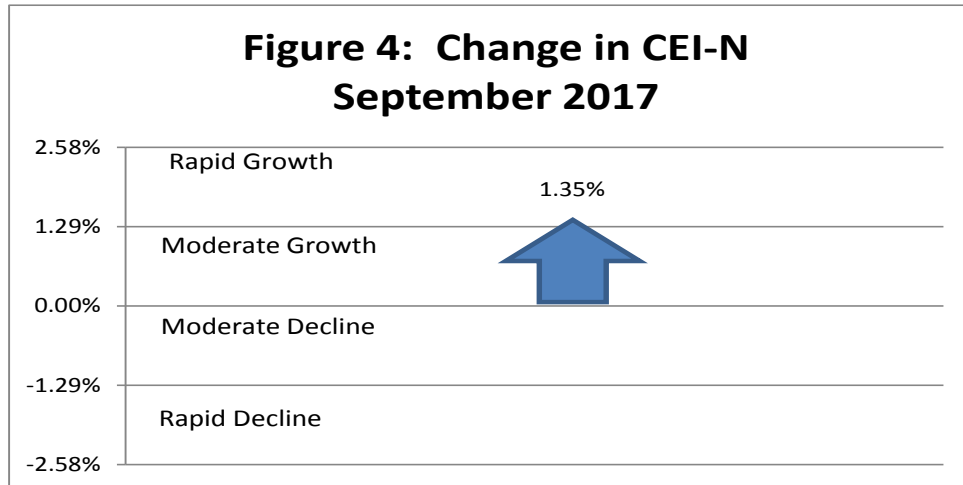
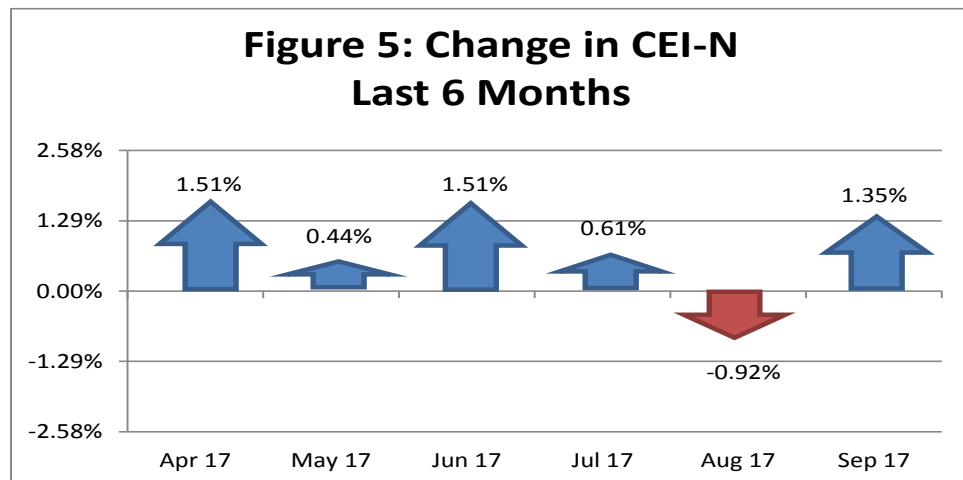


Figure 5 shows the change in the CEI-N over the last 6 months. The CEI-N rose in both the 2nd and 3rd quarter of 2017. Growth was strong in the 2nd quarter but moderated in the 3rd quarter.



Two of four components of the CEI-N fell rose during September (Figure 6). There was a strong increase in electricity sales on a seasonally-adjusted basis, even after adjusting for weather. There also was a solid gain in real private wages during September, reflecting growth in employment, weekly hours-worked and real hourly wages. Among other components, agricultural commodity prices fell and there also was a modest decline in business conditions as reported by respondents to the September *Survey of Nebraska Business*. 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*.

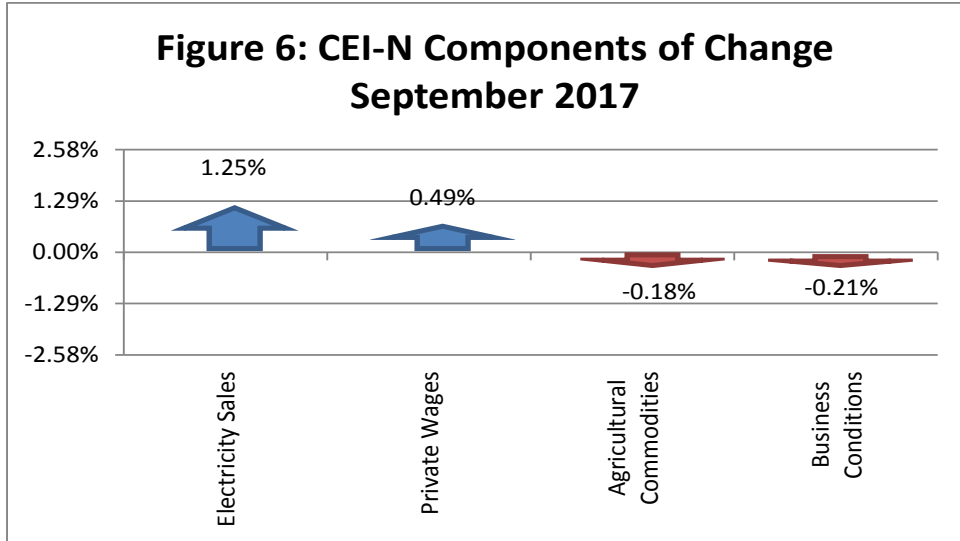
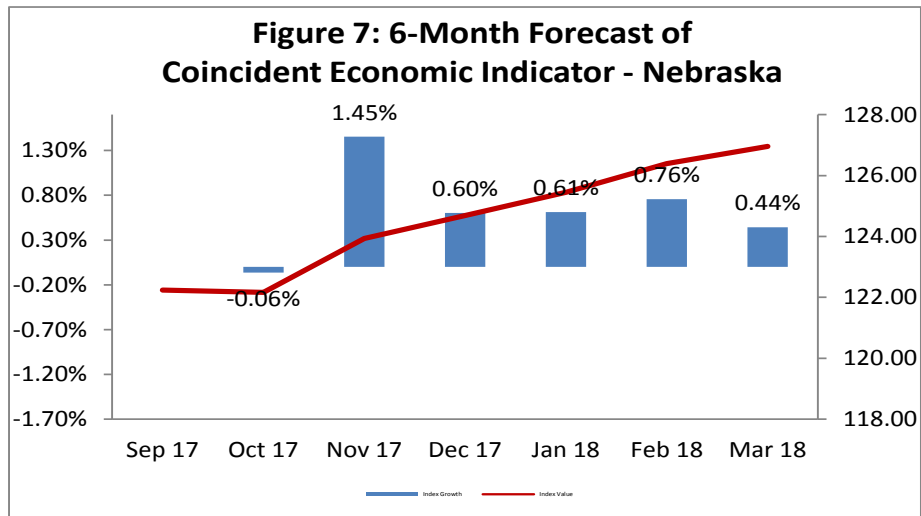


Figure 7 shows the forecast for the CEI-N over the next six months. The Nebraska economy is expected to be flat in October after the sharp September increase. However, growth will be solid overall during the 4th quarter of 2017 and during the 1st quarter of 2018. These expectations are consistent with the 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 large 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	13.4317	0.0745	0.0350	Electricity Sales	4.6544	0.2149	0.1610
Airline Passengers	3.3123	0.3019	0.1417	Private Wages	1.8113	0.5521	0.4136
Exchange Rate	1.1995	0.8337	0.3914	Agricultural Commodities	3.3286	0.3004	0.2251
Initial UI Claims	10.8536	0.0921	0.0433	Survey Business Conditions	3.7386	0.2675	0.2004
Manufacturing Hours	1.6805	0.5951	0.2794				
Survey Business Expectations	4.2946	0.2329	0.1093				

Tables 2 and 3 show the calculation for the change in LEI-N and CEI-N between August and September of 2017. 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 0.10% 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	76.10	55.18	20.92	0.03	0.73	0.54%
Airline Passengers	109.23	106.87	2.36	0.14	0.33	0.24%
U.S. Dollar Exchange Rate (Inverse)	88.49	87.64	0.85	0.39	0.33	0.24%
Initial Unemployment Insurance Claims (Inverse)	133.27	136.06	-2.79	0.04	-0.12	-0.09%
Manufacturing Hours	96.47	94.79	1.68	0.28	0.47	0.34%
Survey Business Expectations ¹	56.01		6.01	0.11	0.66	0.48%
Trend Adjustment					0.13	0.10%
Total (weighted average)	139.00	136.47			2.53	1.86%

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	172.56	163.22	9.33	0.16	1.50	1.25%
Private Wage	113.78	112.36	1.42	0.41	0.59	0.49%
Agricultural Commodities	118.18	119.13	-0.95	0.23	-0.21	-0.18%
Survey Business Conditions ¹	48.77		-1.23	0.20	-0.25	-0.21%
Total (weighted average)	122.24	120.61			1.63	1.35%

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.

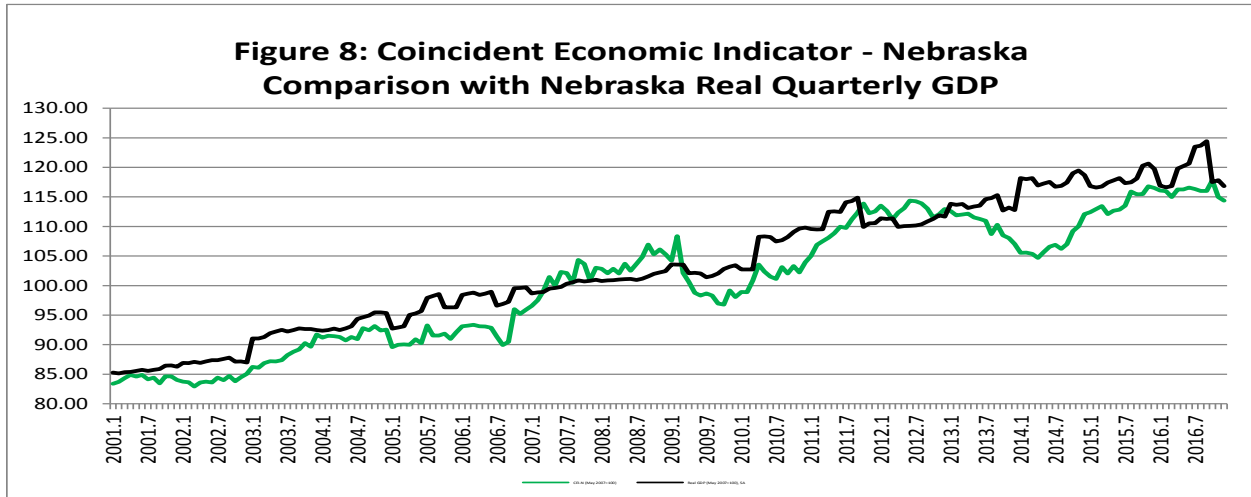


Figure 9 again shows the values for the CEI-N. It also graphs 6-months forward values for the LEI-N. Recall that the LEI-N is intended to forecast the Nebraska economy six months into the future. This implies that Figure 9 is comparing the predicted movement in CEI-N (predicted by LEI-N values six months 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 0.91.

