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Nebraska Monthly Economic Indicators: December 20, 2017

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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 0.64% during November of 2017. The increase in the LEI-N, which is designed to predict economic activity six months into the future, suggests that Nebraska economic growth will continue through the second quarter of 2018. The increase in the indicator was due to an increase in building permits for single-family homes. There also were positive business expectations during the month. In particular, respondents to the November Survey of Nebraska Business reported plans to increase sales and employment in the coming months. In terms of negative components, there was a rise in initial claims for unemployment insurance on a seasonally-adjusted basis. There also was an increase in the value of the U.S. dollar in November. A higher dollar is challenging for Nebraska exporters.

Leading Economic Indicator – Nebraska

Figure 1 shows the change in the Leading Economic Indicator – Nebraska (LEI-N) during November 2017 compared to the previous month. The LEI-N predicts economic growth six months into the future. The LEI-N rose by 0.64% in November.

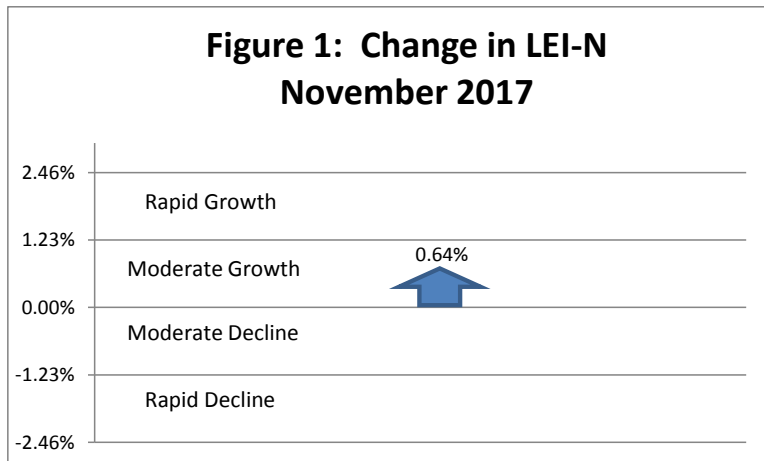


Figure 2 shows the change in the LEI-N over the last six months. The indicator rose during each of the last 6 months. The LEI-N had originally been reported to decline slightly in October, but now is reported to have grown, as a result of revisions to indicator components. Taken together, LEI-N results for the last 6 months suggest the Nebraska economy will grow through the 2nd quarter of 2018.

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

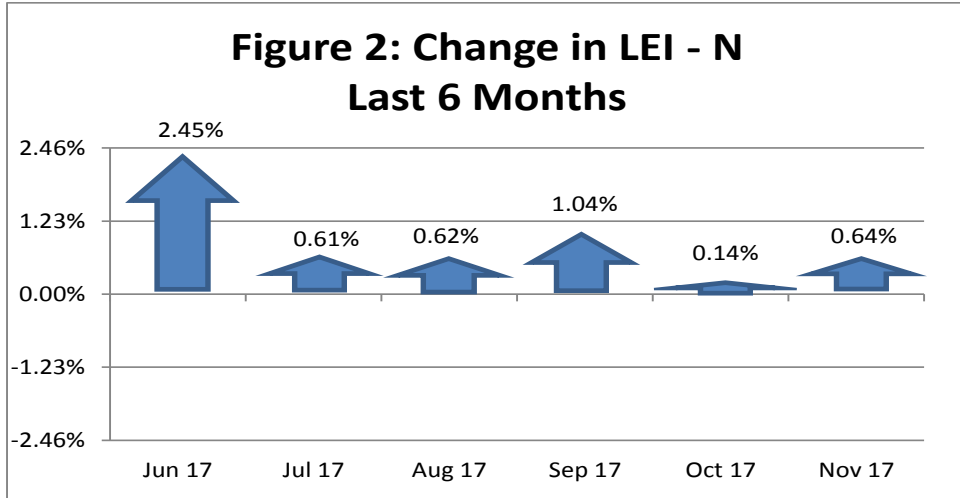
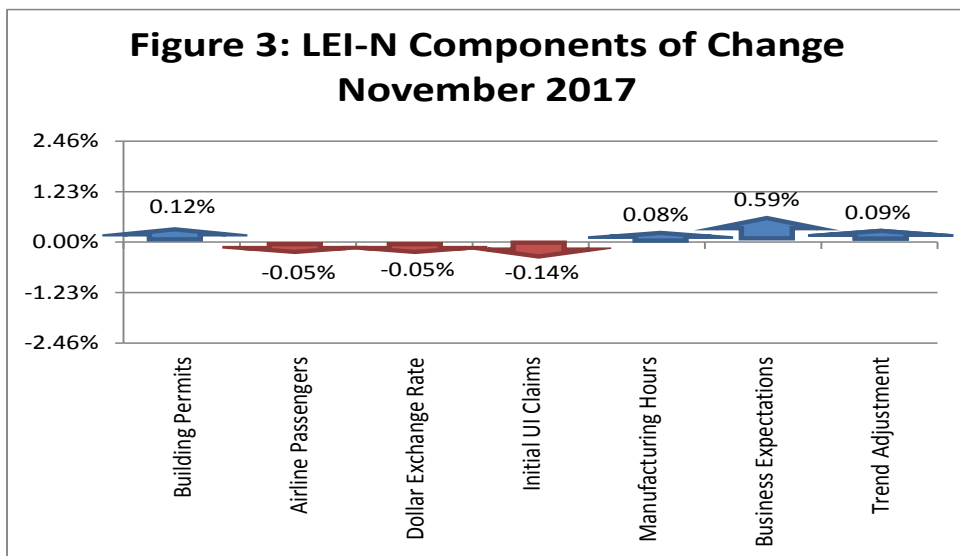


Figure 3 shows the components of change in the Leading Economic Indicator – Nebraska during November 2017. The change in the overall LEI–N is the weighted average of changes in each component (see page 5). Three of six components of the LEI-N rose during November. There was an increase in building permits for single family homes. Business expectations also were positive as respondents to the November *Survey of Nebraska Business* predicted growth in both sales and employment at their businesses over the next six months. Among worsening components, there was an increase in initial claims for unemployment insurance, which is a negative sign for the labor market. The value of the U.S. dollar also rose during November, which reduces the competitiveness of Nebraska exporters. 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 1.29% during November 2017, as seen in Figure 4.

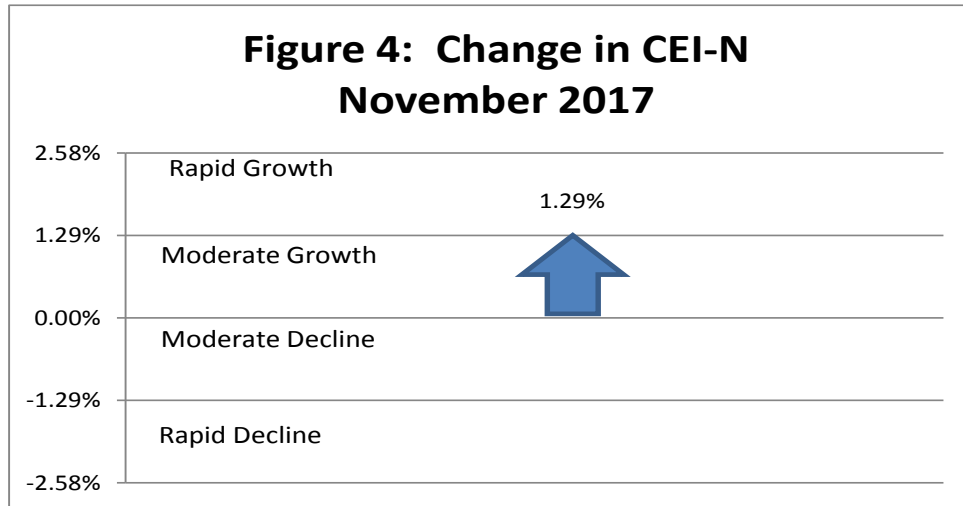
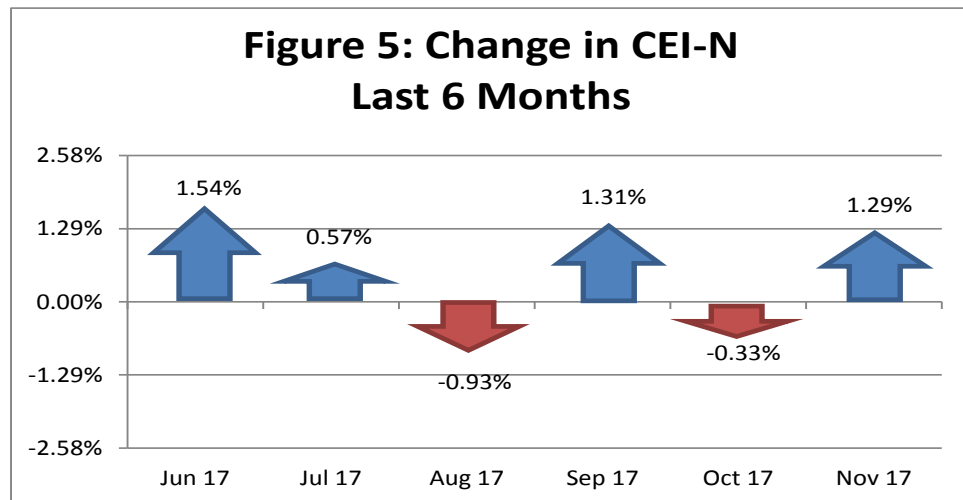


Figure 5 shows the change in the CEI-N over the last 6 months. The CEI-N rose two of the last three month, as well as in June and July. Results show that the Nebraska economy expanded during the second half of 2017.



Two of four components of the CEI-N rose during November (Figure 6). There was an increase in electricity sales on a seasonally-adjusted basis. There also were a positive business conditions as reported by respondents to the November *Survey of Nebraska Business*. Among declining components, agricultural commodity prices fell. 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*.

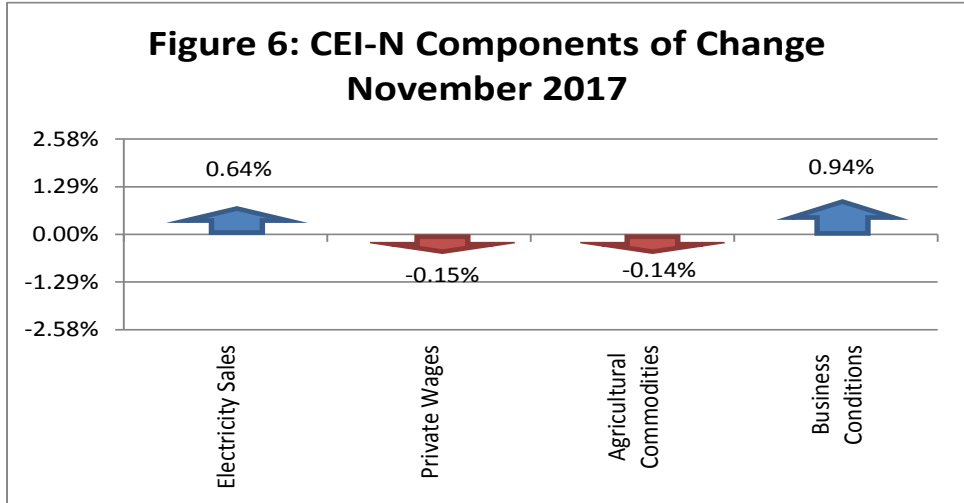
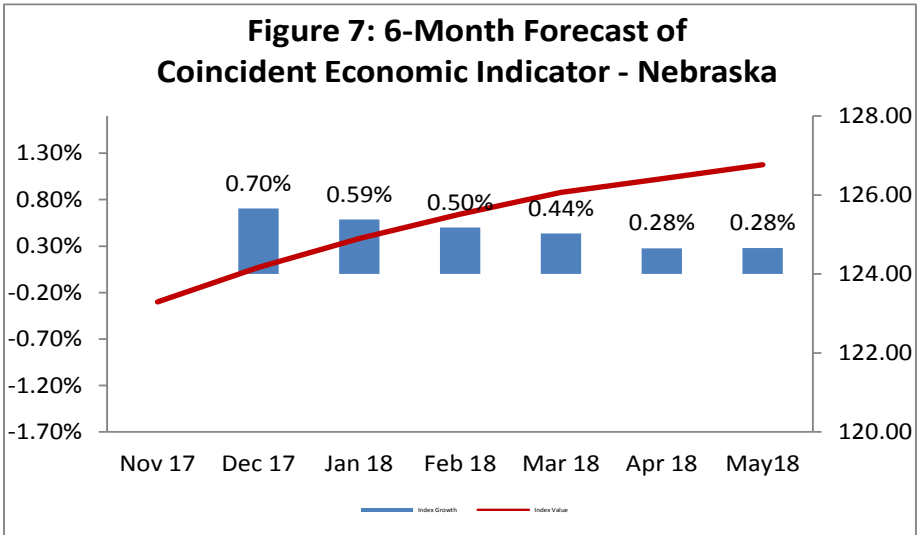


Figure 7 shows the forecast for the CEI-N over the next six months. The Nebraska economy is expected to grow through May 2018, although the pace of growth will moderate throughout the period. These expectations are consistent with the changes in the LEI-N over the last six months (Figure 2).



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	13.3520	0.0749	0.0352	Electricity Sales	4.6557	0.2148	0.1604
Airline Passengers	3.3286	0.3004	0.1410	Private Wages	1.7867	0.5597	0.4179
Exchange Rate	1.1989	0.8341	0.3915	Agricultural Commodities	3.3543	0.2981	0.2226
Initial UI Claims	10.8641	0.0920	0.0432	Survey Business Conditions	3.7489	0.2667	0.1992
Manufacturing Hours	1.6799	0.5953	0.2794				
Survey Business Expectations	4.2794	0.2337	0.1097				

Tables 2 and 3 show the calculation for the change in LEI-N and CEI-N between October and November 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 0.09% 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	70.82	66.06	4.76	0.04	0.17	0.12%
Airline Passengers	104.81	105.35	-0.54	0.14	-0.08	-0.05%
U.S. Dollar Exchange Rate (Inverse)	86.92	87.08	-0.16	0.39	-0.06	-0.05%
Initial Unemployment Insurance Claims (Inverse)	146.79	151.35	-4.56	0.04	-0.20	-0.14%
Manufacturing Hours	94.41	94.00	0.41	0.28	0.11	0.08%
Survey Business Expectations ¹	57.41		7.41	0.11	0.81	0.59%
Trend Adjustment					0.13	0.09%
Total (weighted average)	139.19	138.30			0.89	0.64%

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	172.99	168.14	4.85	0.16	0.78	0.64%
Private Wage	114.81	115.26	-0.45	0.42	-0.19	-0.15%
Agricultural Commodities	116.76	117.54	-0.78	0.22	-0.17	-0.14%
Survey Business Conditions ¹	55.77		5.77	0.20	1.15	0.94%
Total (weighted average)	123.30	121.73			1.57	1.29%

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.

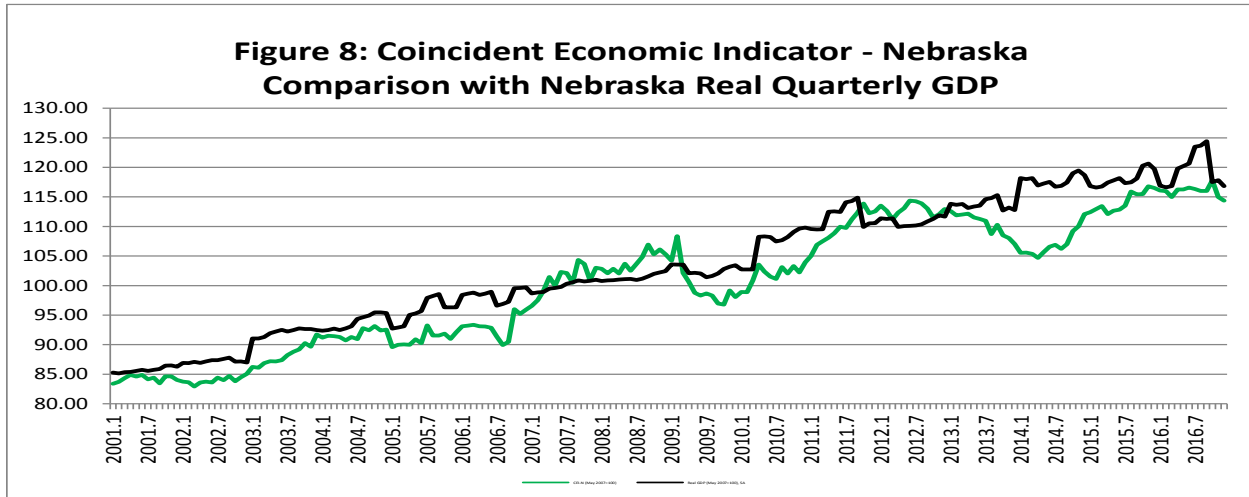


Figure 9 again shows the values for the CEI-N. It also graphs 6-months forward values for the LEI-N. Recall that the LEI-N is intended to forecast the Nebraska economy six months into the future. This implies that Figure 9 is comparing the predicted movement in CEI-N (predicted by LEI-N values six months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

