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Nebraska Monthly Economic Indicators: September 20, 2017

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Nebraska Monthly Economic Indicators: September 20, 2017

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

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Leading Economic Indicator.....	1
Coincident Economic Indicator.....	3
Weights and Component Shares.....	5
Performance of the LEI-N and CEI-N.....	6

Summary: *The Leading Economic Indicator – Nebraska (LEI-N)¹ fell by 0.38% during August of 2017. The decline in the LEI-N, which is designed to predict economic activity six months into the future, suggests that the Nebraska economy will grow slowly during the first few months of 2018. The drop in the indicator was primarily due to a decline in manufacturing hours-worked during August. Building permits for single-family homes and airline passenger enplanements also dropped slightly. There were two positive components of the LEI-N. Businesses responding to the August Survey of Nebraska Business reported plans to increase sales and employment over the next six months. The value of the U.S. dollar also continued its recent decline during August, a positive sign for Nebraska’s export-oriented businesses.*

Leading Economic Indicator – Nebraska

Figure 1 shows the change in the Leading Economic Indicator – Nebraska (LEI-N) during August 2017 compared to the previous month. The LEI-N predicts economic growth six months into the future. The LEI-N fell by 0.38% in August.

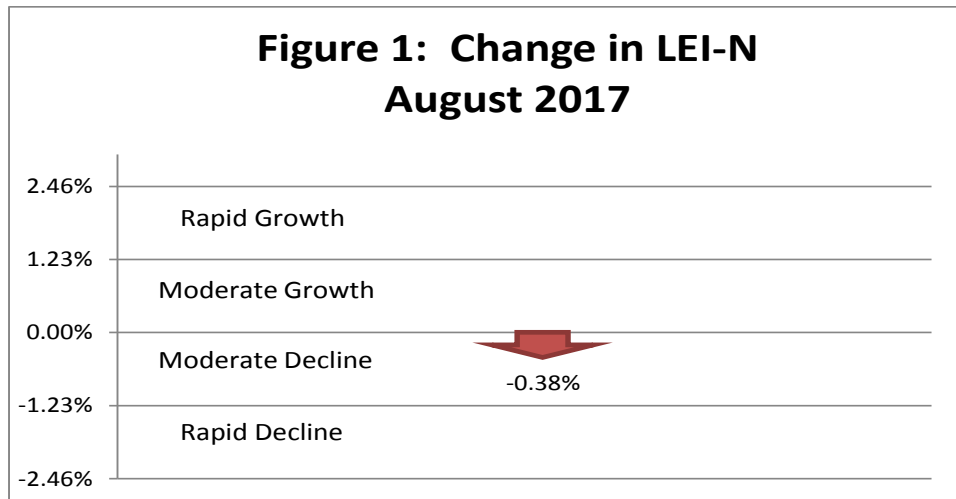


Figure 2 shows the change in the LEI-N over the last six months. The indicator has increased overall since February. Increases in March, June and July have been larger than declines during the other months, implying that the Nebraska economy will expand through February 2018.

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

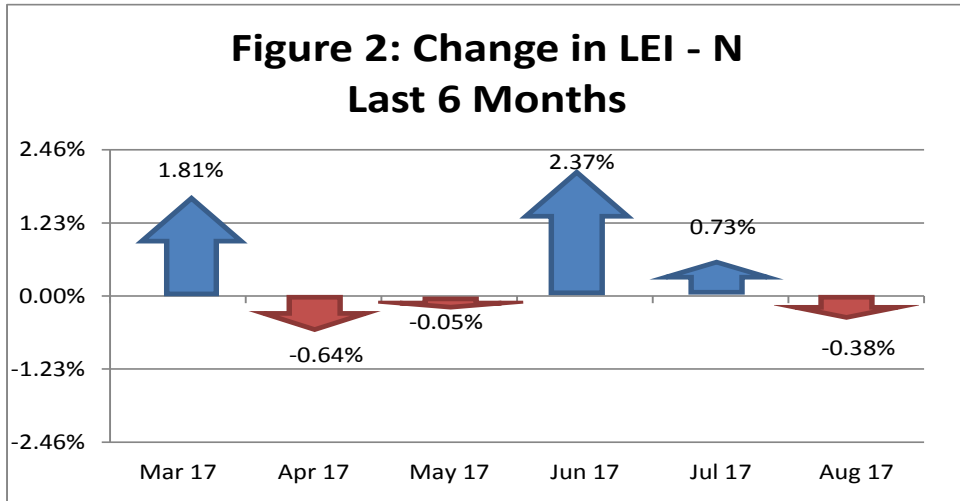
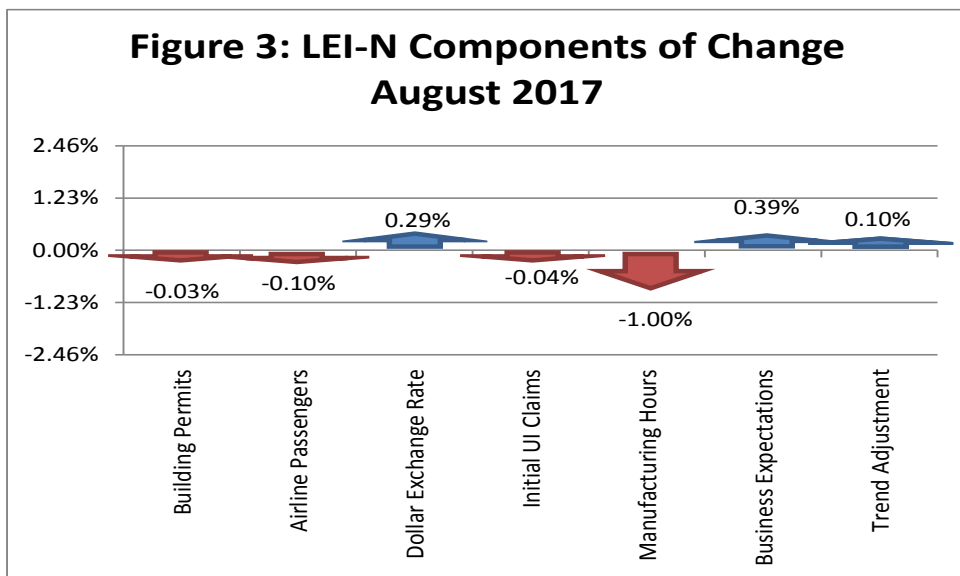


Figure 3 shows the components of change in the Leading Economic Indicator – Nebraska during August 2017. The change in the overall LEI-N is the weighted average of changes in each component (see page 5). Four of six components of the LEI-N worsened during July. There was a sharp decline in manufacturing hours-worked during August. There were small declines in building permits for single-family homes and airline passenger counts. In terms of improving components, business expectations were positive as respondents to the *August 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 August, which is a positive development for Nebraska exporters in manufacturing, agriculture and other sectors. 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 fell by 1.01% during August 2017, as seen in Figure 4.

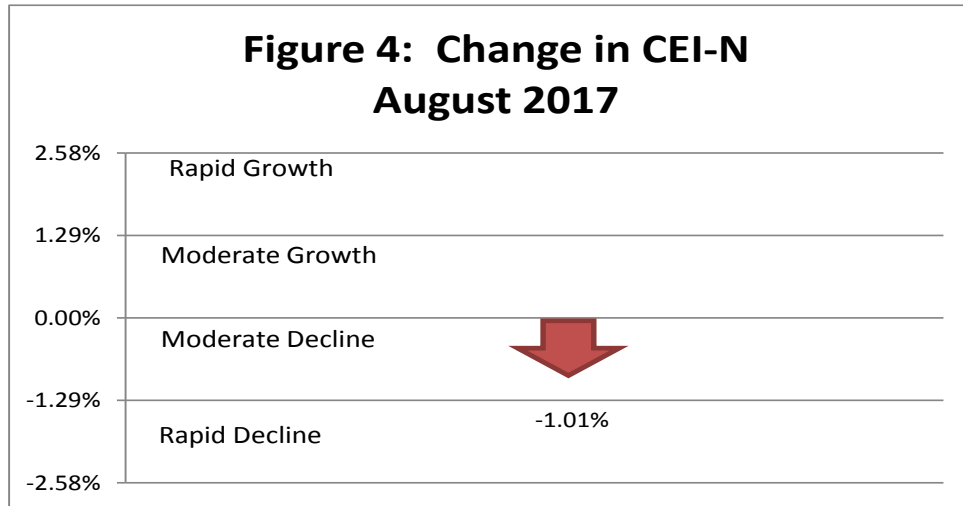
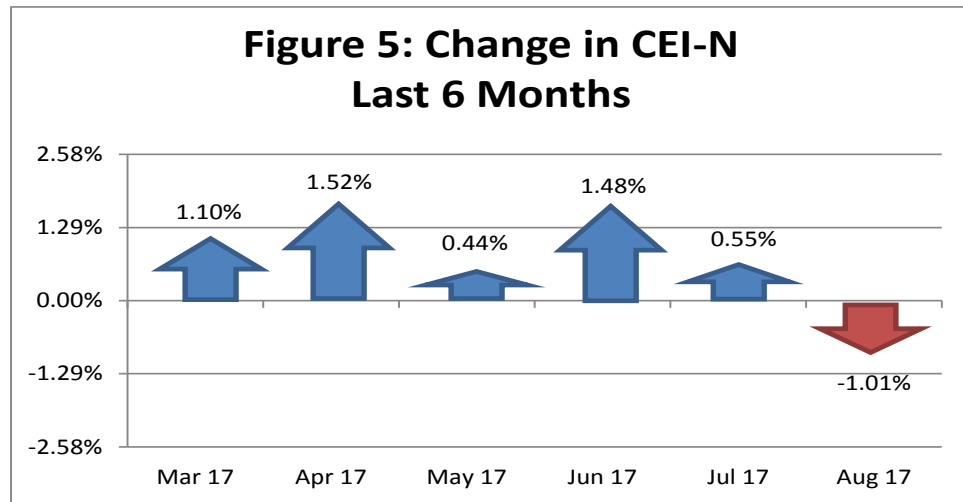


Figure 5 shows the change in the CEI-N over the last 6 months. The CEI-N rose every month between March and July, suggesting that economic growth has been solid in mid-2017, despite the August decline.



All of four components of the CEI-N fell during August (Figure 6). Agricultural commodity prices fell and there was a modest decline in electricity sales after adjusting for weather and seasonal factors. There also was a small drop in business conditions as reported by respondents to the *August Survey of Nebraska Business*. The largest decline in August was in real private wages, which reflects employment, weekly hours-worked and real hourly wages. 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*.

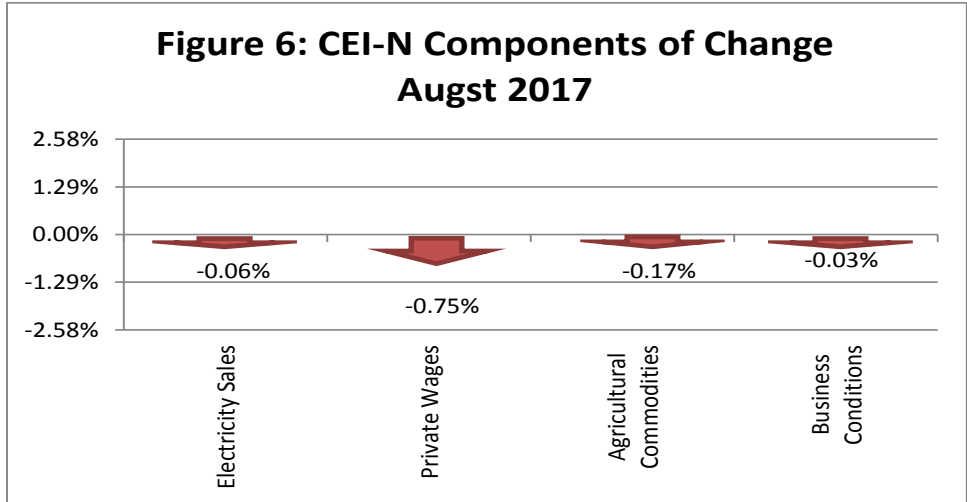
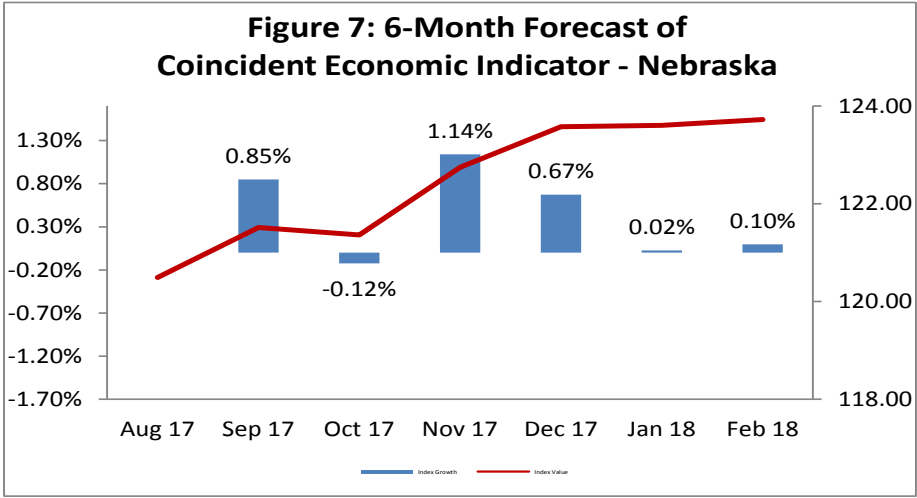


Figure 7 shows the forecast for the CEI-N over the next six months. The Nebraska economy is expected to grow during the last four months of 2017, but the rate of growth will slow during early 2018. These expectations are consistent with the changes in the LEI-N over the last six months (Figure 2).



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	13.3783	0.0747	0.0352	Electricity Sales	4.6181	0.2165	0.1623
Airline Passengers	3.3142	0.3017	0.1423	Private Wages	1.8206	0.5493	0.4117
Exchange Rate	1.2009	0.8327	0.3927	Agricultural Commodities	3.3181	0.3014	0.2259
Initial UI Claims	11.0058	0.0909	0.0428	Survey Business Conditions	3.7475	0.2668	0.2000
Manufacturing Hours	1.7001	0.5882	0.2774				
Survey Business Expectations	4.3039	0.2323	0.1096				

Tables 2 and 3 show the calculation for the change in LEI-N and CEI-N between July and August 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	65.11	66.11	-1.00	0.04	-0.04	-0.03%
Airline Passengers	101.23	102.15	-0.92	0.14	-0.13	-0.10%
U.S. Dollar Exchange Rate (Inverse)	87.64	86.64	1.00	0.39	0.39	0.29%
Initial Unemployment Insurance Claims (Inverse)	136.16	137.50	-1.34	0.04	-0.06	-0.04%
Manufacturing Hours	91.80	96.69	-4.89	0.28	-1.36	-1.00%
Survey Business Expectations ¹	54.86		4.86	0.11	0.53	0.39%
Trend Adjustment					0.13	0.10%
Total (weighted average)	135.22	135.75			-0.52	-0.38%

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	161.99	162.42	-0.44	0.16	-0.07	-0.06%
Private Wage	112.21	114.42	-2.21	0.41	-0.91	-0.75%
Agricultural Commodities	119.35	120.29	-0.94	0.23	-0.21	-0.17%
Survey Business Conditions ¹	49.82		-0.18	0.20	-0.04	-0.03%
Total (weighted average)	120.49	121.72			-1.23	-1.01%

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.

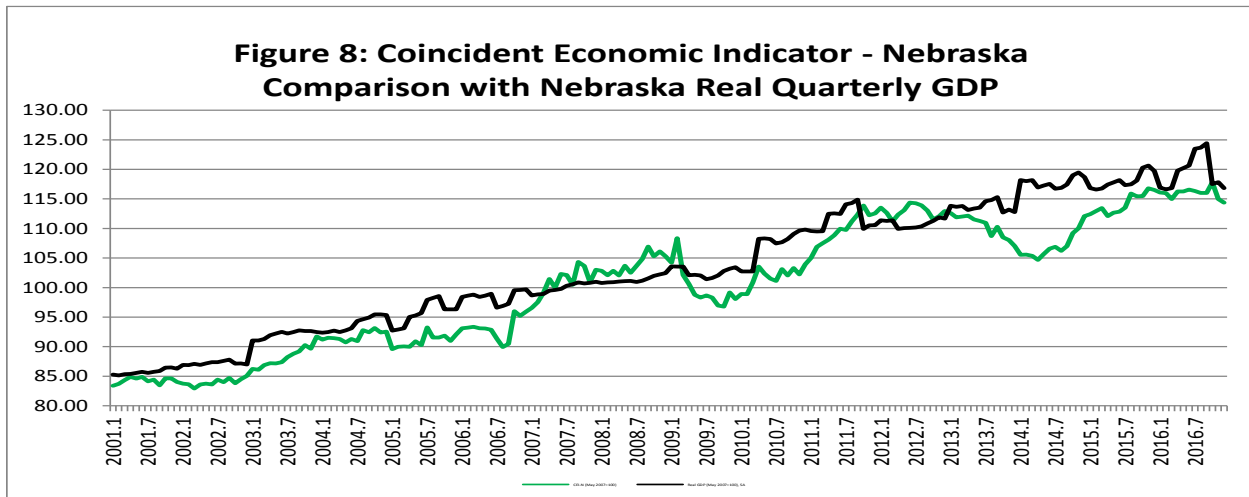


Figure 9 again shows the values for the CEI-N. It also graphs 6-months forward values for the LEI-N. Recall that the LEI-N is intended to forecast the Nebraska economy six months into the future. This implies that Figure 9 is comparing the predicted movement in CEI-N (predicted by LEI-N values six months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

