Nebraska Monthly Economic Indicators: September 25, 2019

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

Author: Dr. Eric Thompson

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 1.89% during August of 2019. The drop in the LEI-N, which is designed to predict economic activity six months into the future, follows a sharp 2.51% increase during July. Taken together, results from the two months imply modest economic growth in Nebraska at the end of 2019 and the beginning of 2020. The leading indicator fell primarily due to a an increase in initial claims for unemployment insurance and a sharp increase in the value of the U.S. dollar. A rising dollar creates challenges for Nebraska busineses which export. Business expecations were one bright spot for the Nebraska economy. Respondents to the August Survey of Nebraska Business reported plans to increase in sales and employment at their businesses over the next six months.*

Leading Economic Indicator – Nebraska

Figure 1 shows the change in the Leading Economic Indicator – Nebraska (LEI-N) during August 2019 compared to the previous month. The LEI-N predicts economic growth six months into the future. The LEI-N fell during August, by 1.89%.

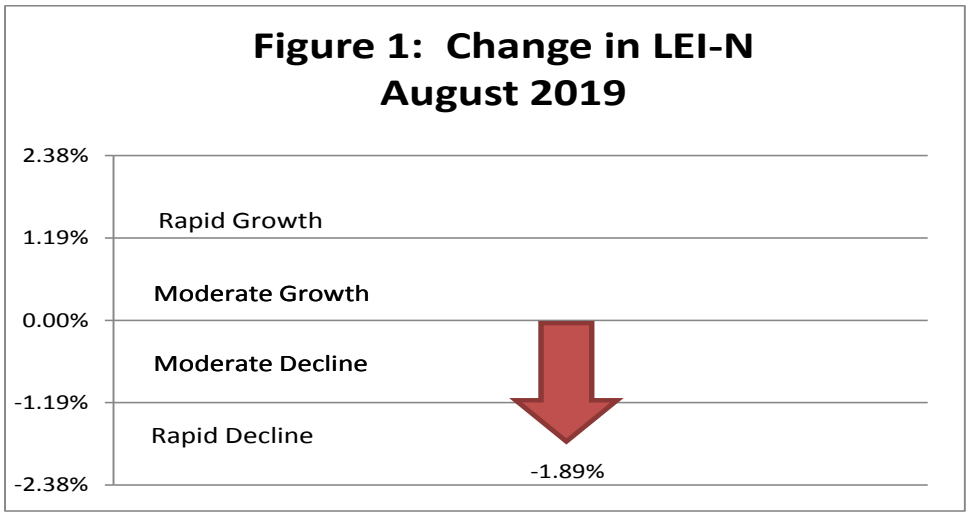


Figure 2 shows that the August decline largely reversed a sharp increase in the LEI-N during July. While the leading indicator rose steadily from March through May, it has been mixed over the last three months.

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

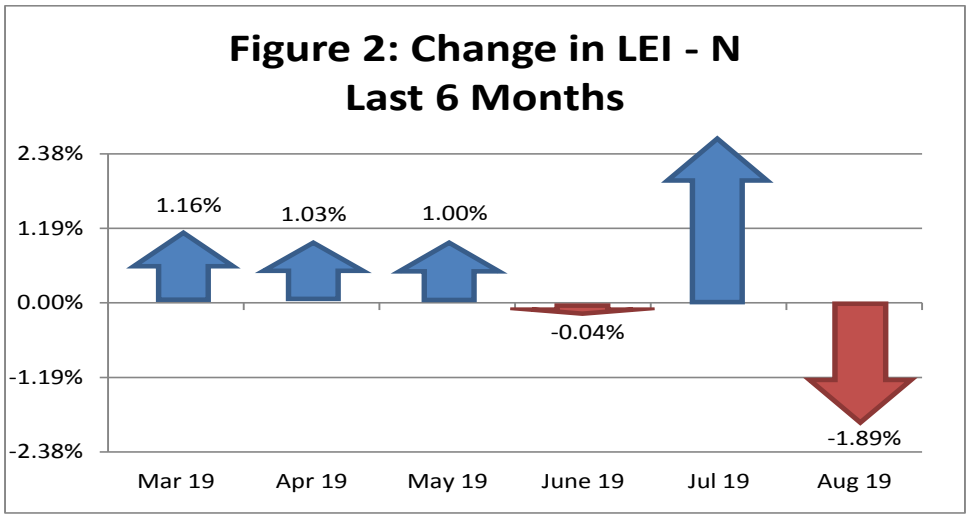
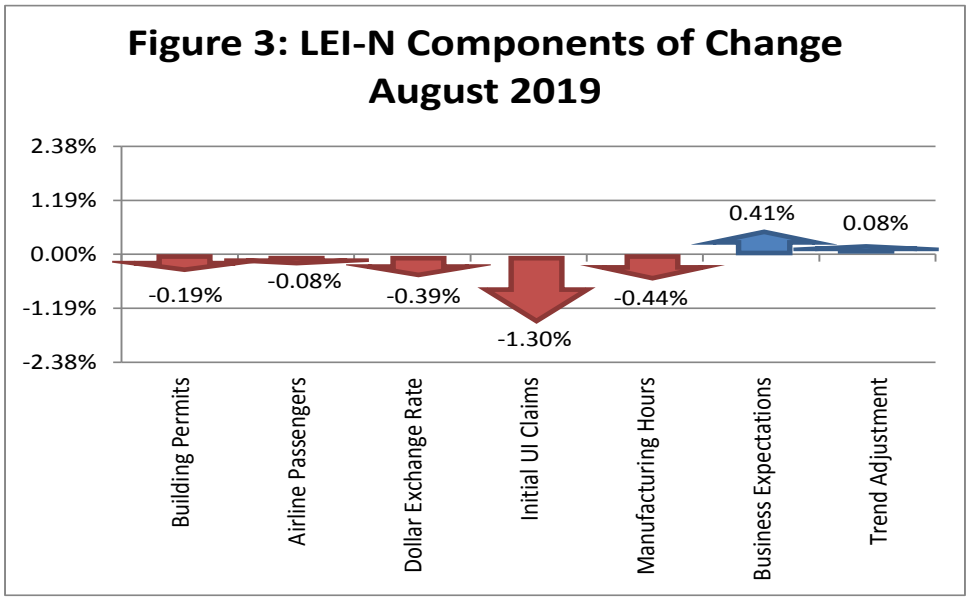


Figure 3 shows the components of change in the Leading Economic Indicator – Nebraska during August of 2019. The change in the overall LEI–N is the weighted average of changes in each component (see page 5). Five of six components of the leading indicator worsened during August. There was a decline in manufacturing hours-worked and a modest decline in airline passenger counts and building permits for single-family homes. There also was an increase in the value of the U.S. dollar, which is challenging for businesses which export, as well as a large jump in initial claims for unemployment insurance. The only positive component was business expectations. Respondents to the August *Survey of Nebraska Business* reported plans to increase sales and employment at their business over the next six months. 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 1.40% during August of 2019, as seen in Figure 4.

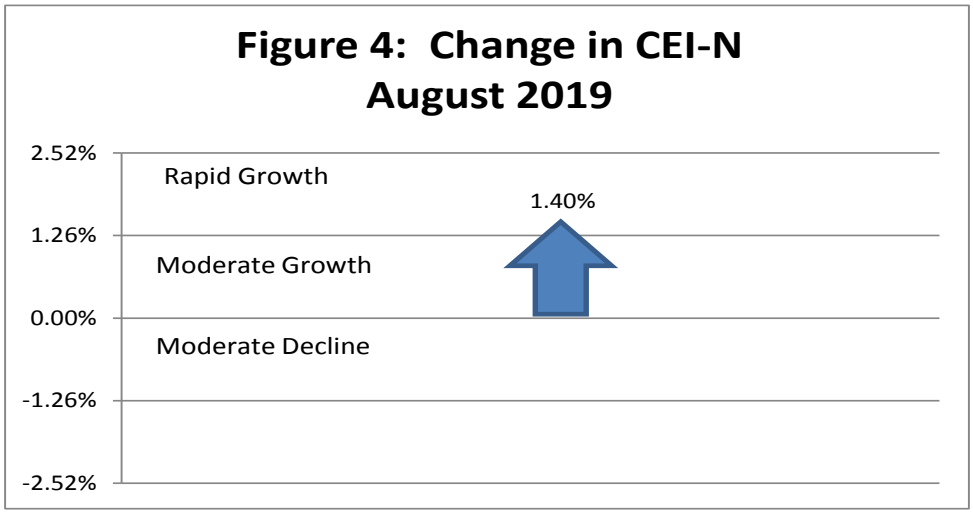
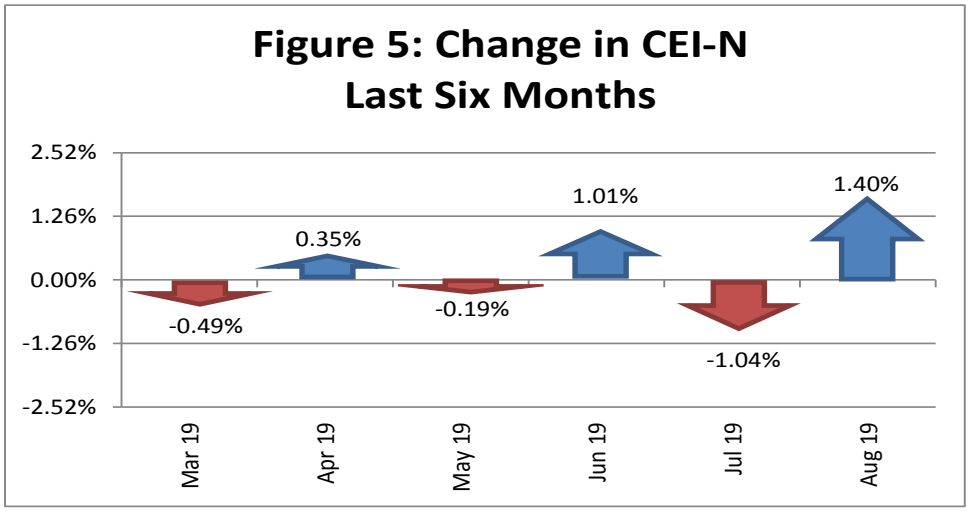


Figure 5 shows the change in the CEI-N over the last 6 months. The CEI-N has alternated between growth and decline. Cumulatively, the CEI-N has risen modestly over the period.



The CEI-N rose during August due to an increase in real private wages and electricity sales. Business conditions also were strong during the month. Respondents to the August *Survey of Nebraska Business* reporting an increase in employment in recent months. Agricultural commodity prices were little changed during August. 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.*

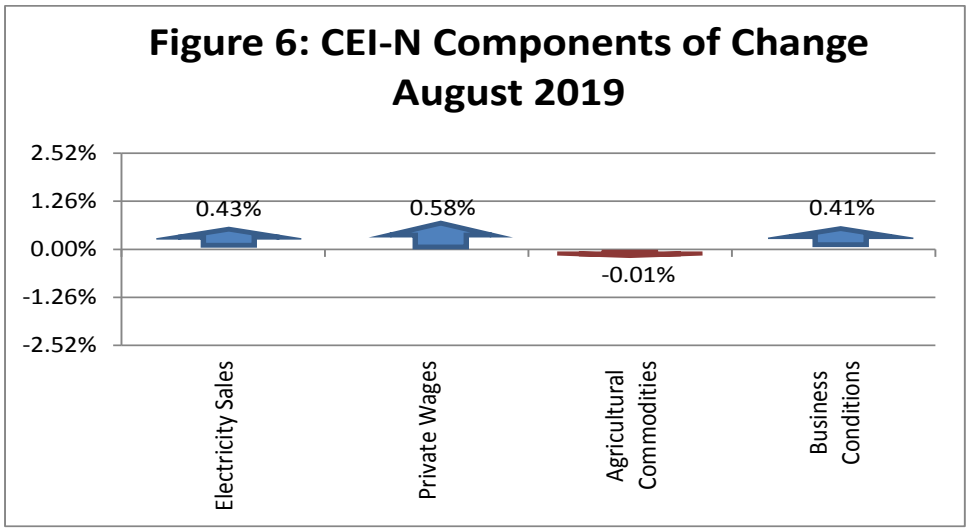
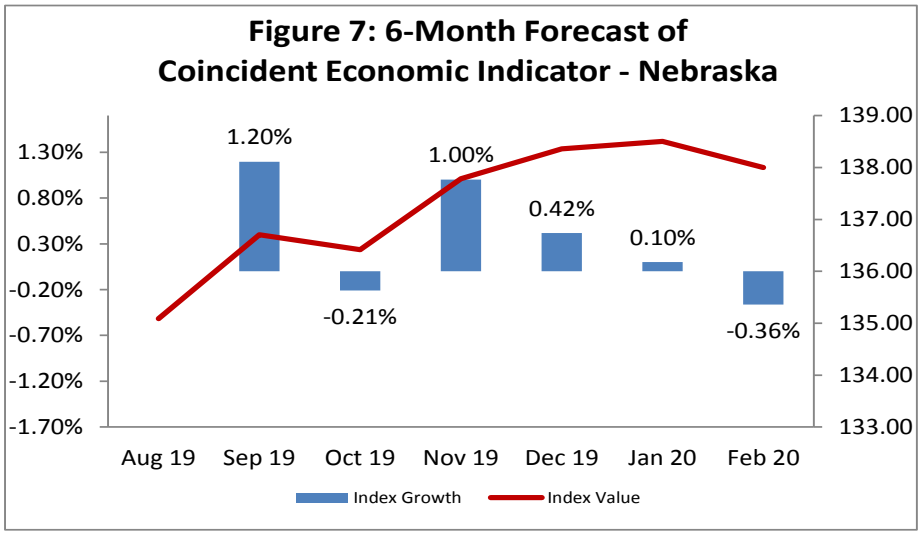


Figure 7 shows the forecast for the CEI-N over the next six months. Solid economic growth is expected through November but the rate of growth in Nebraska will slow at the end of 2019. Slowing growth in the CEI-N is consistent with a weaker LEI-N in recent months (Figure 2).



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	13.3589	0.0749	0.0348	Electricity Sales	4.5039	0.2220	0.1669
Airline Passengers	3.2343	0.3092	0.1437	Private Wages	1.8776	0.5326	0.4005
Exchange Rate	1.1786	0.8485	0.3945	Agricultural Commodities	3.2378	0.3088	0.2322
Initial UI Claims	11.7113	0.0854	0.0397	Survey Business Conditions	3.7531	0.2664	0.2003
Manufacturing Hours	1.6755	0.5968	0.2775				
Survey Business Expectations	4.2332	0.2362	0.1098				

Tables 2 and 3 show the calculation for the change in LEI-N and CEI-N between July and August of 2019. 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 0.08% 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	58.38	66.91	-8.53	0.03	-0.30	-0.19%
Airline Passengers	110.86	111.70	-0.84	0.14	-0.12	-0.08%
U.S. Dollar Exchange Rate (Inverse)	80.19	81.77	-1.58	0.39	-0.62	-0.39%
Initial Unemployment Insurance Claims (Inverse)	150.84	203.15	-52.31	0.04	-2.08	-1.30%
Manufacturing Hours	95.37	97.90	-2.53	0.28	-0.70	-0.44%
Survey Business Expectations[1]	55.99		5.99	0.11	0.66	0.41%
Trend Adjustment					0.13	0.08%
Total (weighted average)	157.00	160.03			-3.03	-1.89%

[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	200.21	196.81	3.40	0.17	0.57	0.43%
Private Wage	115.57	113.66	1.92	0.40	0.77	0.58%
Agricultural Commodities	118.05	118.12	-0.07	0.23	-0.02	-0.01%
Survey Business Conditions[1]	52.71		2.71	0.20	0.54	0.41%
Total (weighted average)	135.09	133.22			1.86	1.40%

[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 2017. 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 0.95.

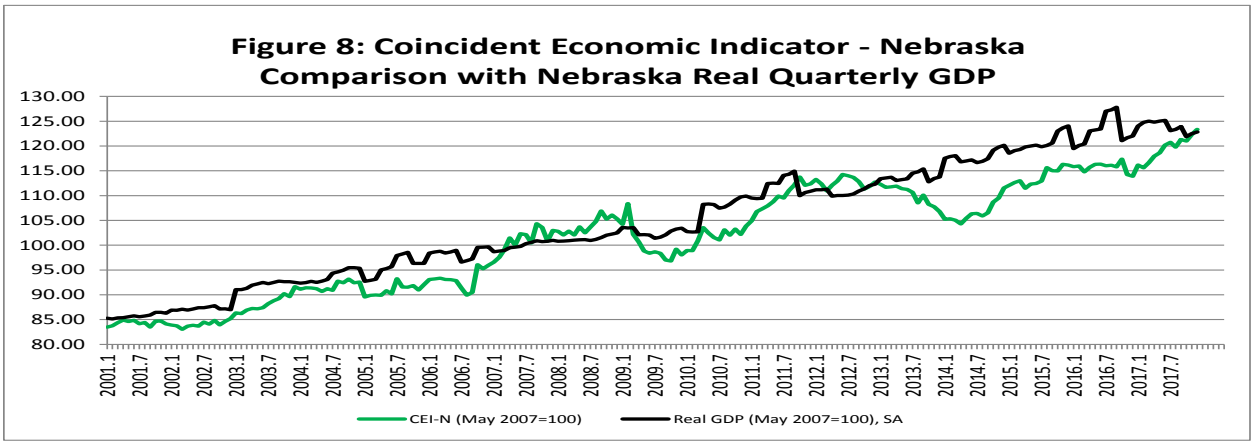


Figure 9 again shows the values for the CEI-N. It also graphs 6-months forward values for the LEI-N. Recall that the LEI-N is intended to forecast the Nebraska economy six months into the future. This implies that Figure 9 is comparing the predicted movement in CEI-N (predicted by LEI-N values six months 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 0.93.