Nebraska Monthly Economic Indicators: June 20, 2018

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

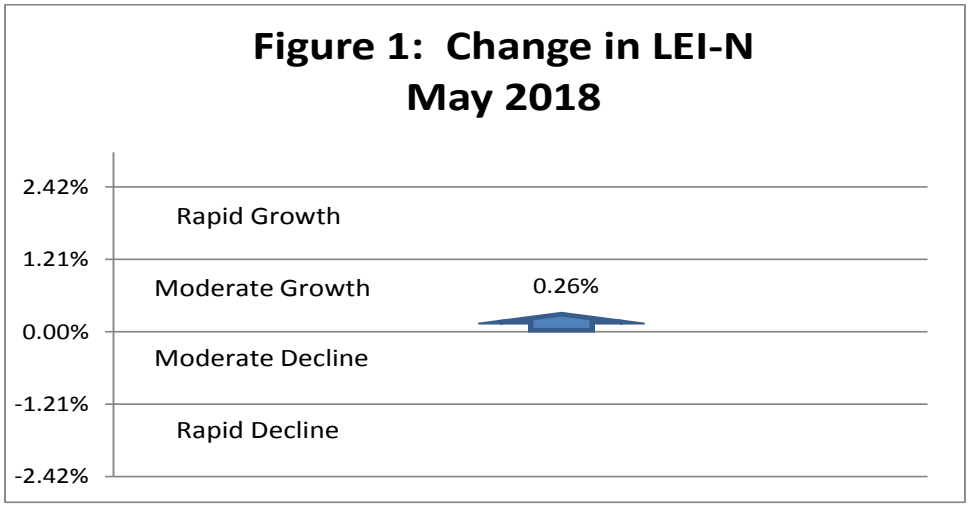
Author: Dr. Eric Thompson

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] *rose by just 0.26% during May of 2018. The increase in the LEI-N, which is designed to predict economic activity six months into the future, suggests that the pace of economic growth will slow in Nebraska during the 4th quarter of 2018. The LEI-N rose due to strong business expectations. In particular, respondents to the* May *Survey of Nebraska Business reported plans to increase both sales and employment at their businesses over the next six months. There also was an increase in manufacturing hours and passenger enplanements during May and a drop in initial claims for unemployment insurance. A sharp increase in the value of the U.S. dollar, however, curtailed the increase in the leading indicator. A rising U.S. dollar puts additional pressure on Nebraska businesses which export. There also was a decline in building permits for single-family homes during May.*

Leading Economic Indicator – Nebraska

Figure 1 shows the change in the Leading Economic Indicator – Nebraska (LEI-N) during May 2018 compared to the previous month. The LEI-N predicts economic growth six months into the future. The LEI-N rose by just 0.26% in May.



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

Figure 2 shows the change in the LEI-N over the last six months. The indicator rose each of the last six months. The pace of growth, however, is declining. The decline suggests that the rate of economic growth in Nebraska will slow in late 2018.

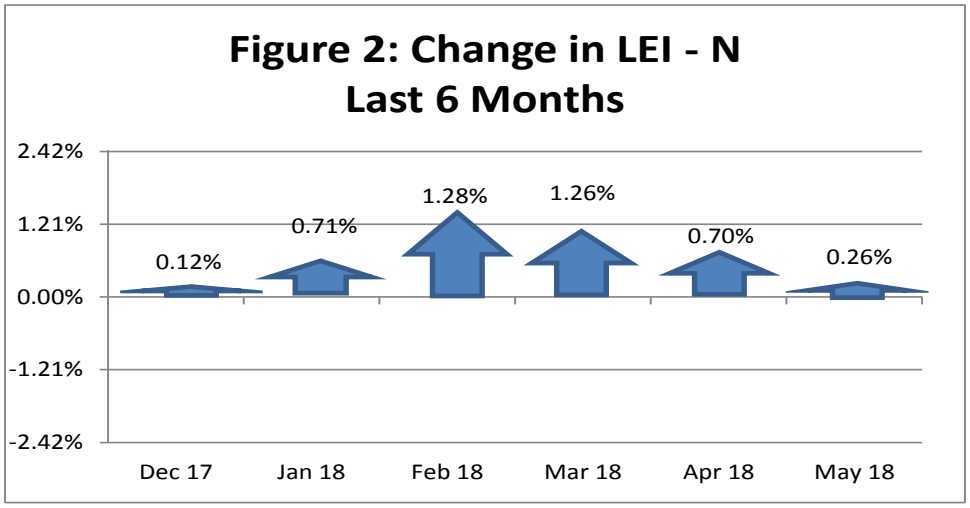
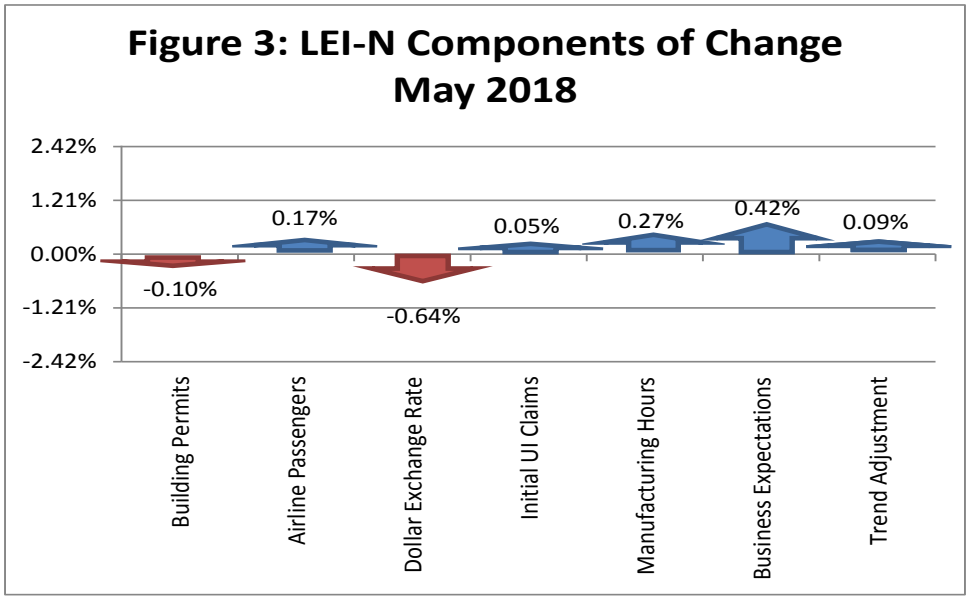


Figure 3 shows the components of change in the Leading Economic Indicator – Nebraska during May 2018. The change in the overall LEI–N is the weighted average of changes in each component (see page 5). Four of six LEI-N components rose during May. Business expectations were strong as respondents to the May *Survey of Nebraska Business* predicted gains in both sales and employment at their businesses over the next six months. There also was an increase in manufacturing hours and passenger enplanements and a decline in initial claims for unemployment insurance during May. A sharp increase in the value of the U.S. dollar curtailed the increase in the LEI-N. A rising dollar creates additional challenges for businesses which export. There was also a decline in building permits for single-family homes in Nebraska. 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 0.82% during May 2018, as seen in Figure 4.

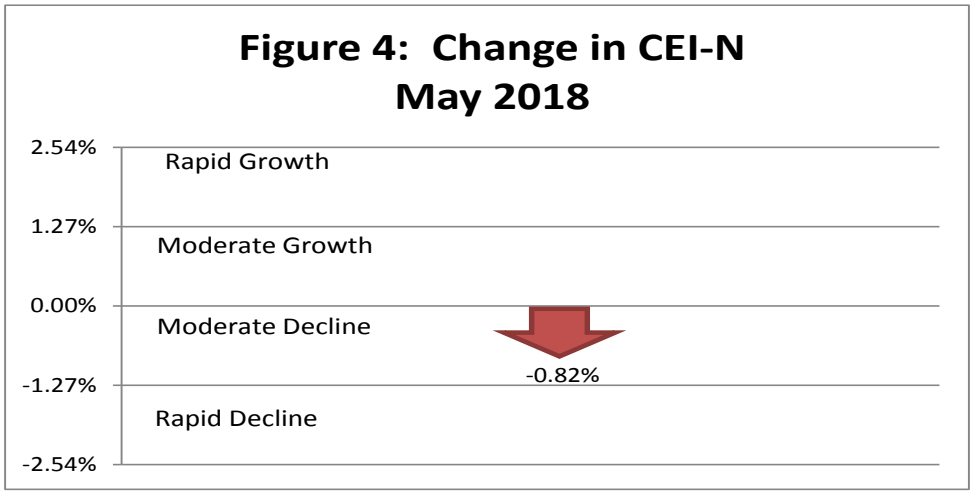
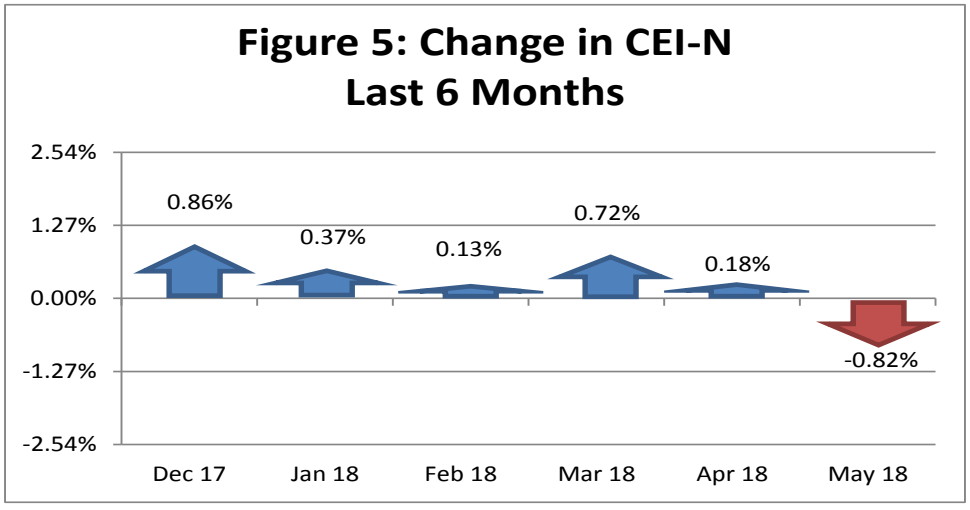


Figure 5 shows the change in the CEI-N over the last 6 months. The May decline followed monthly increases from December 2017 through April 2018.



Three of four CEI-N components fell during May. There was a decline in real private sector wages, reflecting a drop in weekly hours-worked and real hourly wages. Agricultural commodity prices and business conditions also declined. Business conditions were weak according to respondents to the May *Survey of Nebraska Business*, who reported a decrease in sales and employment in recent months. There was a modest increase in electricity sales, after adjusted for weather and seasonality. 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.*

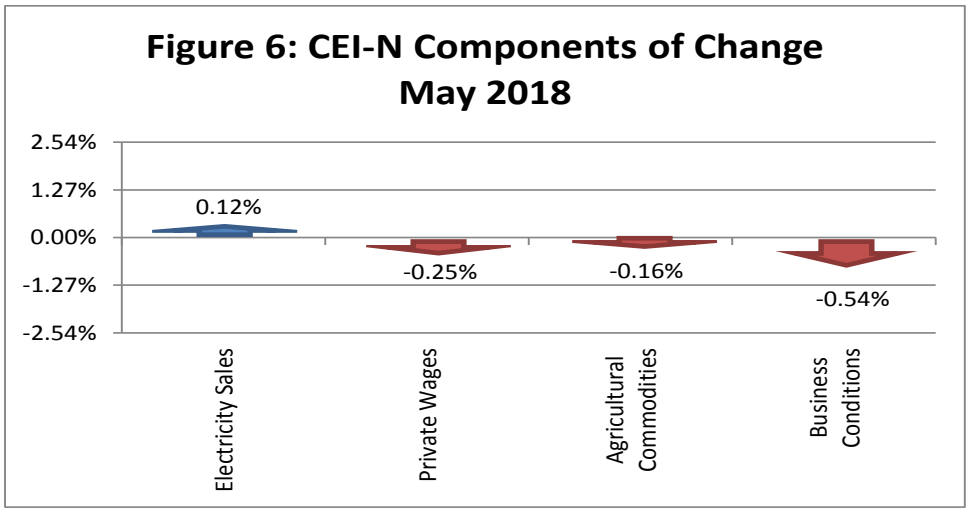
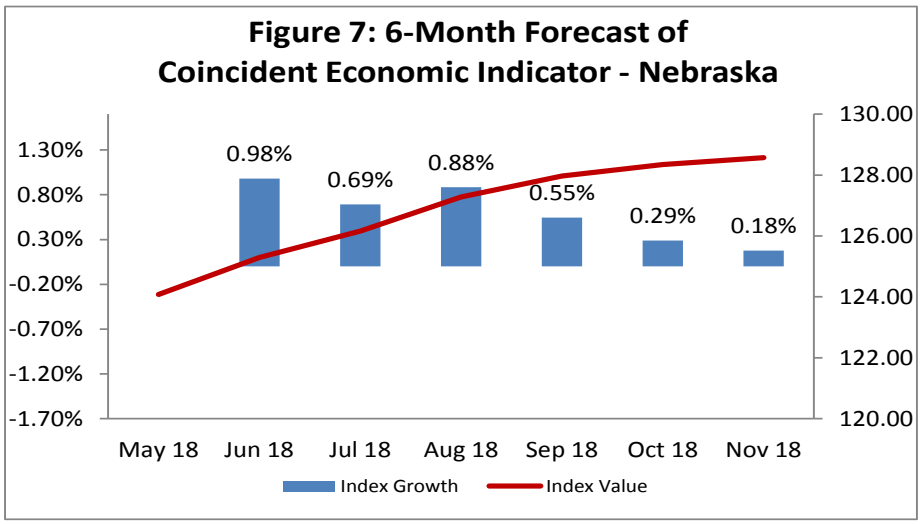


Figure 7 shows the forecast for the CEI-N over the next six months. The Nebraska economy is expected to grow through November of 2018 but the pace of growth will slow throughout the year. This pattern of growth is consistent with the change in the LEI-N over the last six months (Figure 2).



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	13.4341	0.0744	0.0349	Electricity Sales	4.6010	0.2173	0.1600
Airline Passengers	3.3092	0.3022	0.1418	Private Wages	1.7535	0.5703	0.4199
Exchange Rate	1.2017	0.8321	0.3905	Agricultural Commodities	3.3121	0.3019	0.2223
Initial UI Claims	10.9176	0.0916	0.0430	Survey Business Conditions	3.7211	0.2687	0.1979
Manufacturing Hours	1.6768	0.5964	0.2799				
Survey Business Expectations	4.2721	0.2341	0.1099				

Tables 2 and 3 show the calculation for the change in LEI-N and CEI-N between April and May 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	68.87	73.01	-4.14	0.03	-0.14	-0.10%
Airline Passengers	111.23	109.52	1.71	0.14	0.24	0.17%
U.S. Dollar Exchange Rate (Inverse)	86.08	88.47	-2.39	0.39	-0.93	-0.64%
Initial Unemployment Insurance Claims (Inverse)	165.87	164.16	1.71	0.04	0.07	0.05%
Manufacturing Hours	96.15	94.76	1.40	0.28	0.39	0.27%
Survey Business Expectations[1]	55.62		5.62	0.11	0.62	0.42%
Trend Adjustment					0.13	0.09%
Total (weighted average)	146.83	146.45			0.38	0.26%

[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	183.64	182.67	0.98	0.16	0.16	0.12%
Private Wage	112.46	113.20	-0.74	0.42	-0.31	-0.25%
Agricultural Commodities	117.63	118.54	-0.91	0.22	-0.20	-0.16%
Survey Business Conditions[1]	46.58		-3.42	0.20	-0.68	-0.54%
Total (weighted average)	124.08	125.11			-1.03	-0.82%

[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 0.94.

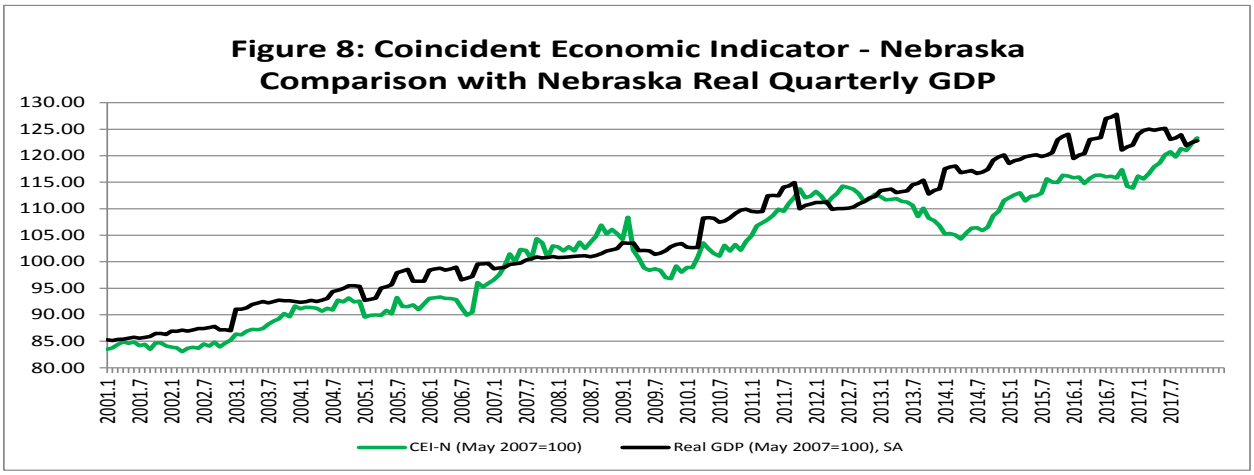


Figure 9 again shows the values for the CEI-N. It also graphs 6-months forward values for the LEI-N. Recall that the LEI-N is intended to forecast the Nebraska economy six months into the future. This implies that Figure 9 is comparing the predicted movement in CEI-N (predicted by LEI-N values six months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