Nebraska Monthly Economic Indicators: May 24, 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] fell by 0.88% during April of 2017. The decline followed three months of rapid increase in January through March, implying a moderation in the outlook for the Nebraska economy in late 2017. Among the components of the indicator, business expectations were strong during April while the value of the U.S. dollar fell, which is a positive sign for Nebraska's export-oriented businesses. However, manufacturing hours, building permits and airline passenger counts all declined during April, while initial claims for unemployment insurance rose.*

Leading Economic Indicator – Nebraska

Figure 1 shows the change in the Leading Economic Indicator – Nebraska (LEI-N) during April 2017 compared to the previous month. The LEI-N predicts economic growth six months into the future. The LEI-N fell by 0.88% in April.
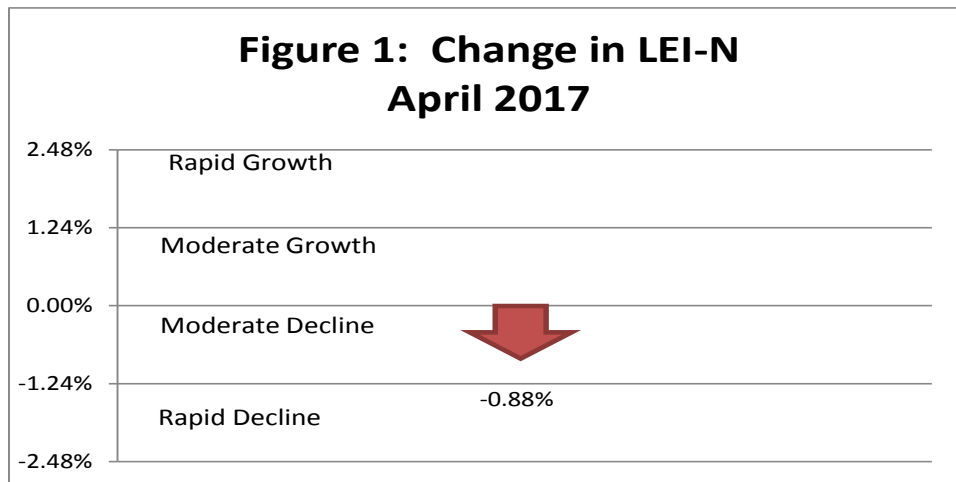

Figure 2 shows the change in the LEI-N over the last six months. The indicator declined at the end of 2016 but increased sharply during the first quarter of 2017. The rapid increase, however, came to an end in April. Taken together, indicator values over the last six months suggest that economic activity will accelerate in Nebraska during the summer of 2017 but will moderate at the end of the year.

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

Figure 2: Change in LEI - N
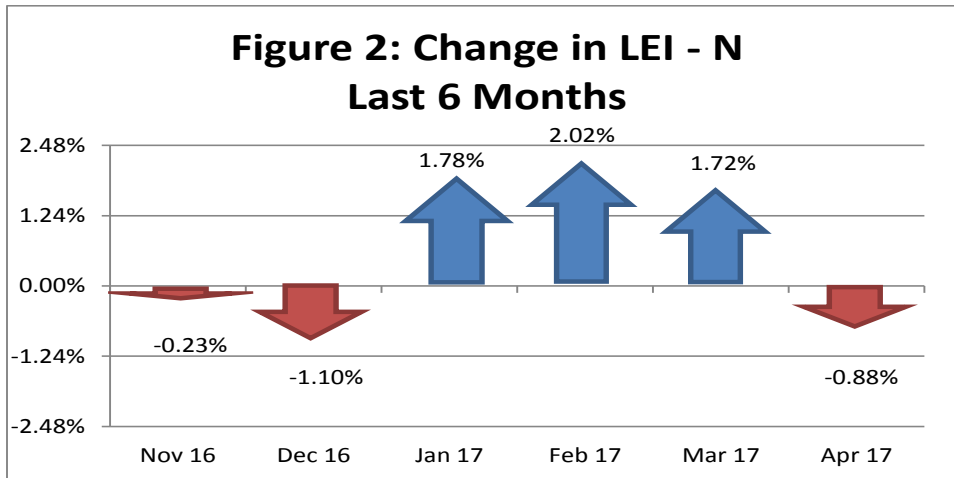**Last 6 Months**

Figure 3 shows the components of change in the Leading Economic Indicator – Nebraska during April 2017. The change in the overall LEI–N is the weighted average of changes in each component (see page 5). Four of the six components of the LEI-N declined during April. There was a decline in building permits, airline passenger counts and manufacturing hours during April on a seasonally adjusted basis. Initial claims for unemployment insurance also rose during the month, signaling a softening of the labor market. However, two components of the LEI-N were positive in April. Business expectations were very strong. Respondents to the April *Survey of Nebraska Business* predicted strong growth in both sales and employment at their businesses over the next six months. In addition, the value of the U.S. dollar fell during April, a positive development for export-oriented businesses in Nebraska, including in agriculture and manufacturing. Note that the trend adjustment component pictured in Figure 3 is discussed on page 5.

Figure 3: LEI-N Components of Change
April 2017
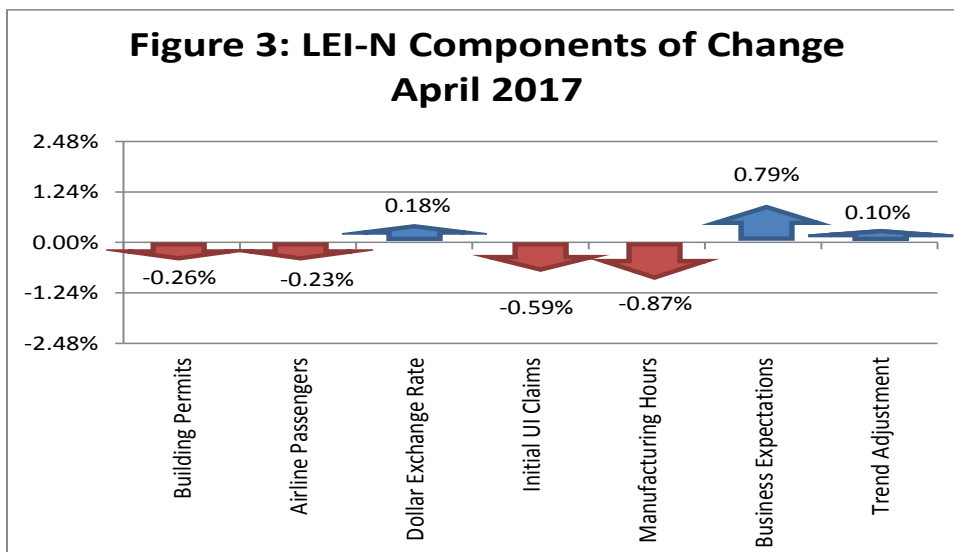
Coincident Economic Indicator – Nebraska

The Coincident Economic Indicator - Nebraska (CEI-N) is a measure of the current size of the Nebraska economy. The CEI-N rose at a rapid 1.84% pace during April 2017, as seen in Figure 4.
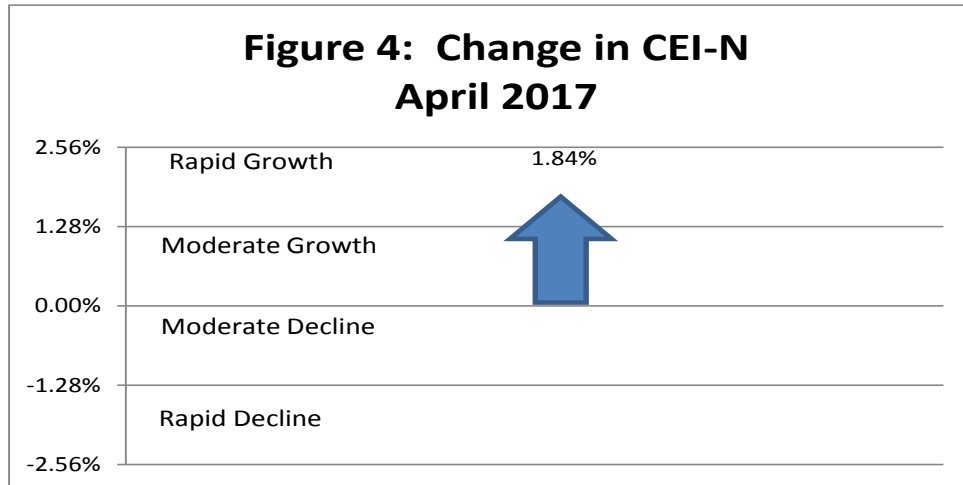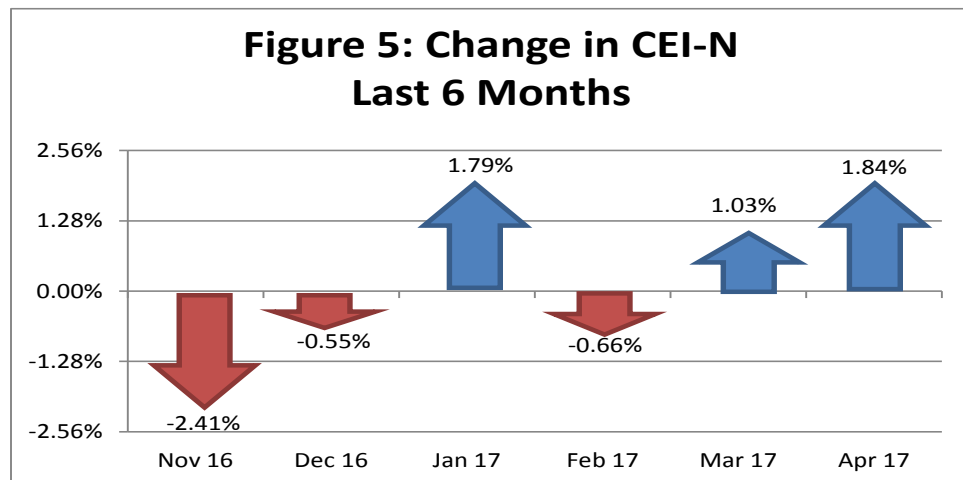
Figure 4: Change in CEI-N
April 2017

Figure 5 shows the change in the CEI-N over the last 6 months. Economic conditions appear to be improving in Nebraska. After declining in late 2016, the indicator has risen three of the last four months.

Figure 5: Change in CEI-N
Last 6 Months

Two components contributed to the sharp increase in the CEI-N rose during April (Figure 6). Real private wages rose rapidly during the month, with increases in employment, weekly hours and real wages. Agricultural commodity prices also improved during April. Business conditions were a slight positive, with respondents to the *Survey of Nebraska Business* indicating that sales fell and employment grew at their businesses in recent months. Electricity sales were down slightly, after adjusting 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.*

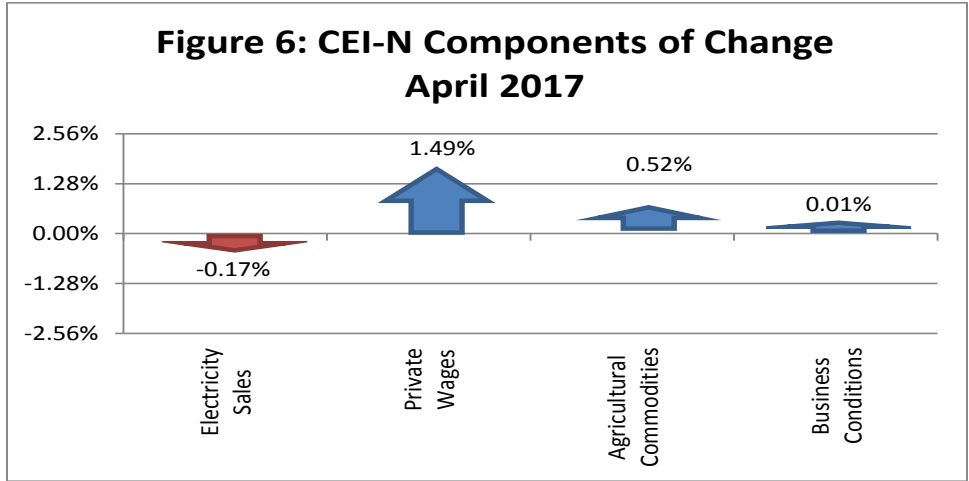**Figure 6: CEI-N Components of Change April 2017**

Figure 7 shows the forecast for the CEI-N over the next six months. Growth is expected to be strong during the summer but tepid later in the year. These expectations are consistent with the first quarter increases in the value of the LEI-N as well as its April decline (Figure 2).

Figure 7: 6-Month Forecast of Coincident Economic Indicator - Nebraska
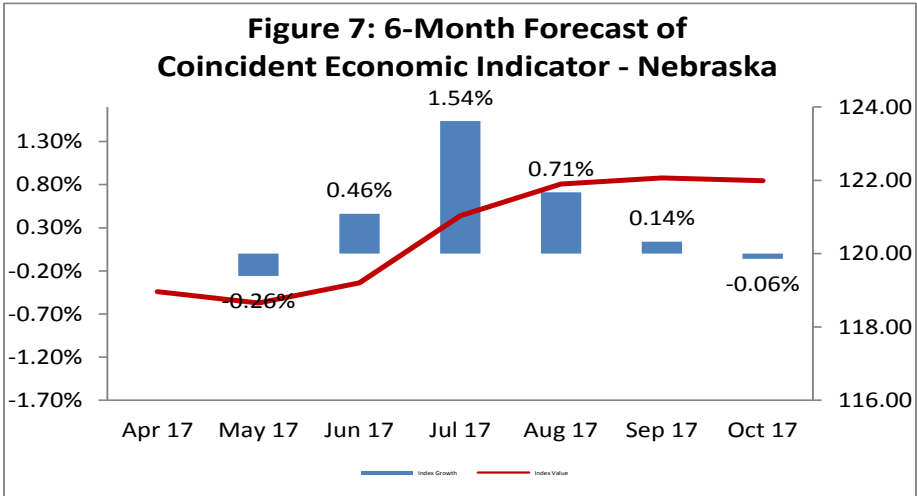
Weights and Component Shares

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 that regularly has large movements.

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	13.3222	0.0751	0.0352		Electricity Sales	4.7292	0.2115	0.1589
Airline Passengers	3.3393	0.2995	0.1406		Private Wages	1.8216	0.5490	0.4126
Exchange Rate	1.2050	0.8299	0.3897		Agricultural Commodities	3.2815	0.3047	0.2290
Initial UI Claims	10.5931	0.0944	0.0443		Survey Business Conditions	3.7676	0.2654	0.1995
Manufacturing Hours	1.6693	0.5990	0.2813					
Survey Business Expectations	4.3126	0.2319	0.1089					

Tables 2 and 3 show the calculation for the change in CEI-N and LEI-N between March and April 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	69.27	79.25	-9.98	0.04	-0.35	-0.26%
Airline Passengers	99.74	101.90	-2.16	0.14	-0.30	-0.23%
U.S. Dollar Exchange Rate (Inverse)	84.07	83.46	0.61	0.39	0.24	0.18%
Initial Unemployment Insurance Claims (Inverse)	134.23	151.95	-17.73	0.04	-0.79	-0.59%
Manufacturing Hours	96.48	100.58	-4.09	0.28	-1.15	-0.87%
Survey Business Expectations[1]	59.68		9.68	0.11	1.05	0.79%
Trend Adjustment					0.13	0.10%
Total (weighted average)	131.66	132.83			-1.17	-0.88%

[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	157.32	158.60	-1.28	0.16	-0.20	-0.17%
Private Wage	113.63	109.40	4.23	0.41	1.75	1.49%
Agricultural Commodities	117.35	114.72	2.64	0.23	0.60	0.52%
Survey Business Conditions[1]	50.04		0.04	0.20	0.01	0.01%
Total (weighted average)	118.96	116.81			2.15	1.84%

[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 2012. 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 0.96.

Figure 8: Coincident Economic Indicator – Nebraska Comparison with Nebraska Real Quarterly GDP
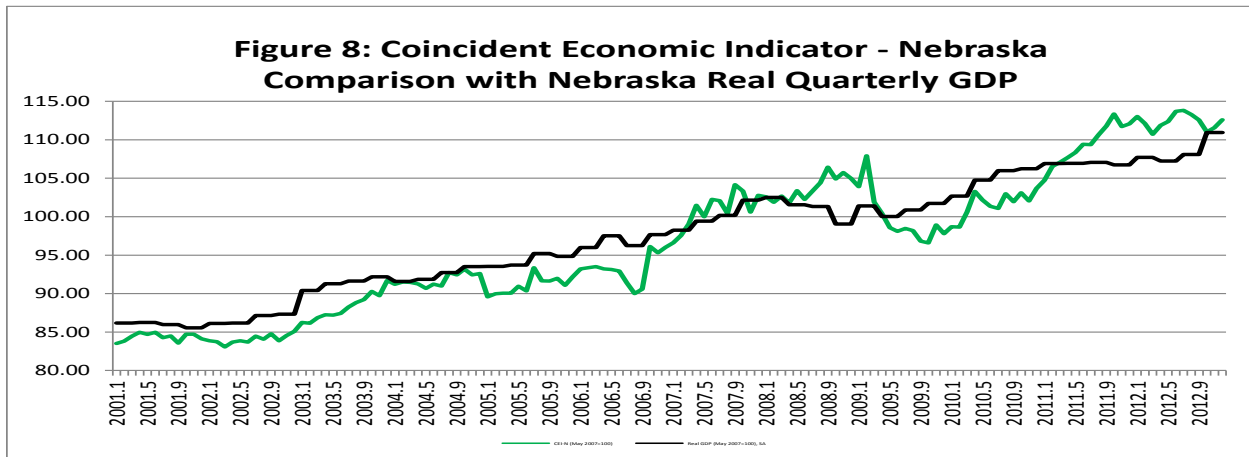
Figure 9 again shows the values for the CEI-N. It also graphs 6-months forward values for the LEI-N. Recall that the LEI-N is intended to forecast the Nebraska economy six months into the future. This implies that Figure 9 is comparing the predicted movement in CEI-N (predicted by LEI-N values six months 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.

Figure 9: 6-Month Forward Value of Leading Economic Indicator - Nebraska Comparison with Coincident Economic Indicator - Nebraska