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RESEARCH UPDATE

Institute for Economic Advancement UALR

Does Arkansas Lead or Lag the US Economy?

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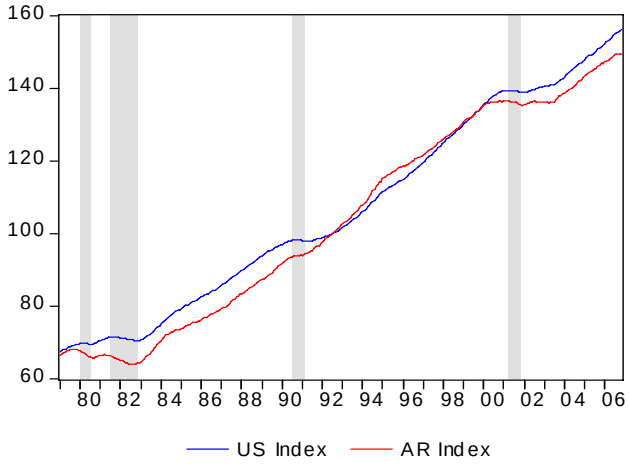
While economists, forecasters, and policymakers are interested in fluctuations in national business cycles, state business cycles are just as important, and maybe more so when local businesses are planning future production, investments, and budgets. In fact, Crone (2003, 2006) indicated that business cycles differ among the states. Using the Federal Reserve Bank of Philadelphia's State Economic Activity Indexes (see Crone and Clayton-Matthews, 2005 for further description of indexes), this update describes Arkansas' economic activity in relation to the US. In doing so, state and national business cycles are examined in terms of past recessions as well as the lead/lag relationship between Arkansas and the US.

Figure 1. Arkansas and US Economic Activity Index



The economic activity index for Arkansas is plotted on a monthly basis from January 1979 to November 2006 along with the comparable US index (in Figure 1). The shaded areas of Figure 1 are the national recessions over the time period as dated by the National Bureau of Economic Research (NBER) dating committee. The dates are January 1980-July 1980, July 1981-November 1982, July 1990-March 1991, and March 2001-November 2001. Interestingly, Arkansas did not experience a state recession in each of the four official national recessions.

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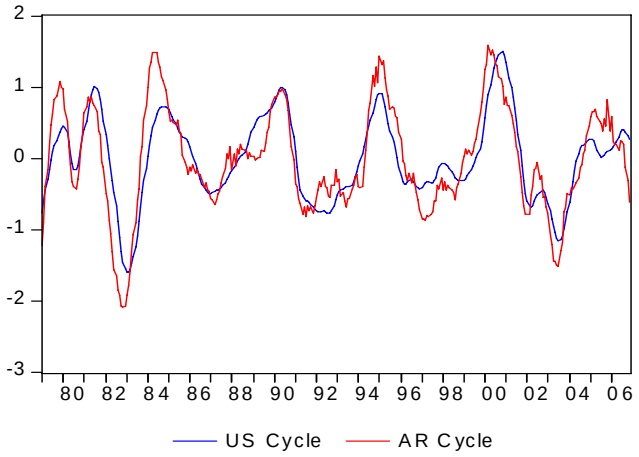
There are two questions that this update attempts to answer: (1) Does the Arkansas economy lead or lag the US economy? (2) Is the Arkansas economy more or less cyclical than the US economy? The answers to these questions are important when you consider that there is a widely-held belief by many Arkansans that Arkansas' economy lags the US as well as is less cyclical.

In order to answer these questions, the cyclical movement in economic activity needs to be separated from the trend growth. To do so, this update employs the well-known Hodrick-Prescott filter (Hodrick and Prescott, 1997) to separate the trend from the cyclical component in both the Arkansas and US indexes. The cyclical component of both indexes is shown in Figure 2. At first glance, the Arkansas cycle appears to be leading the US cycle but also appears to be more cyclical. The calculated standard deviation of the cyclical component is higher for Arkansas than for the US, indicating more variability in Arkansas cycles than US cycles.

Figure 2. Cyclical Component of the AR and US Index



The cyclical correlations for the US and Arkansas are reported in Table 1. To interpret the results from the table, time, t (i.e., the center of Table 1) illustrates the correlation between changes in the same month for the US and Arkansas. The right of t (i.e., t+1…t+6) indicates the correlation between the US and future changes in Arkansas, whereas the left side of the table indicates the correlation between changes in the US and previous changes in Arkansas. The current US change is more closely correlated with the previous two-month change in Arkansas. While all correlations are positive, the highest correlation (in Bold) is with Arkansas preceding US cyclical changes. The evidence here suggests that Arkansas leads the US.

Of course, the results here contradict the widely-held notion that Arkansas lags the US (and less cyclical). In fact, the evidence presented in this update indicates that Arkansas leads the US but is more cyclical. However, caution should be used as this index is one measure of economic activity, whereas other individual components or series may behave differently.

REFERENCES

Crone, T. "The Long and the Short of It: Recent Trends and Cycles in the Third District States," Federal Reserve Bank of Philadelphia *Business Review*, Third Quarter 2003, pp. 29-37.

Crone, T. "What a New Set of Indexes Tells Us About State and National Business Cycles," Federal Reserve Bank of Philadelphia *Business Review*, First Quarter 2006, pp. 11-24.

Crone, T. and A. Clayton-Matthews. "Consistent Economic Indexes for the 50 States," *Review of Economics and Statistics*, 87(4), 2005, pp. 593-603.

Hodrick, R. and E. Prescott. "Post-War US Business Cycles: A Descriptive Empirical Investigation," *Journal of Money, Credit, and Banking*, 29(1), 1997, pp. 1-16.

Table 1. Cyclical Correlations of US and AR Index

	t-6	*t-5*	*t-4*	*t-3*	*t-2*	*t-1*	*t*	*t+1*	*t+2*	*t+3*	*t+4*	*t+5*	*t+6*
AR	0.740	0.800	0.844	0.873	**0.884**	0.876	0.848	0.800	0.730	0.651	0.564	0.472	0.378