

# RESEARCH UPDATE

Institute for Economic Advancement

UALR

## Arkansas MSAs Grew Last Quarter

**Mark A. Thompson**

The Little Rock–North Little Rock (LR–NLR) MSA economic activity index has now been extended and computed for the seven other MSAs in Arkansas (i.e., Fayetteville–Springdale–Rogers, Fort Smith, Jonesboro, Hot Springs, Memphis, Pine Bluff, and Texarkana). Each economic activity index consists of the following four indicators: real personal income, retail sales, total nonfarm employment, and residential permits specific to the MSA.

Overall, each index went up from last quarter with the largest growth in economic activity being Fort Smith MSA (1.1 % increase from last quarter). The largest growth in economic activity from an in–state MSA is Jonesboro, which increased 0.8 % from last quarter. In addition, Jonesboro had the largest increase in economic activity from this quarter a year ago of 2.9 %. Among border MSAs, Fort Smith, Memphis, and Texarkana grew 2.1 % from this quarter a year ago.

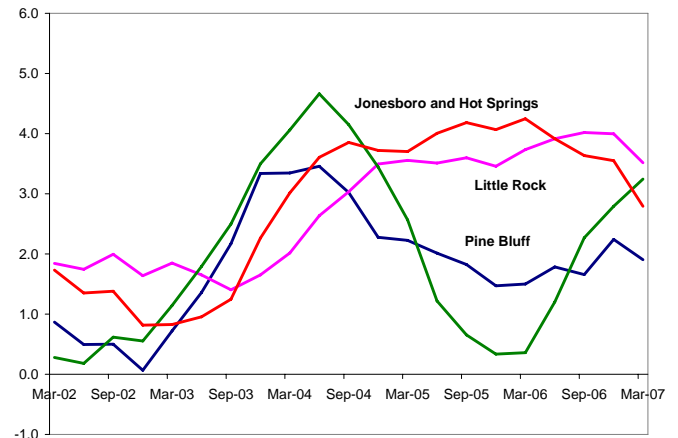
While these indexes use the same indicators for each MSA, some caution should be used when comparing one MSA to another. First, each MSA is indexed to 2004 (=100), and the index increases (decreases) when there is overall growth (contraction) in economic activity. There will be a quarterly release of the Economic Activity Indexes for each of the MSAs in August. The standardization factors will be updated consistent with the annual benchmark revision of The Conference Board.

### MSA ECONOMIC ACTIVITY INDEX (Y/Y %)

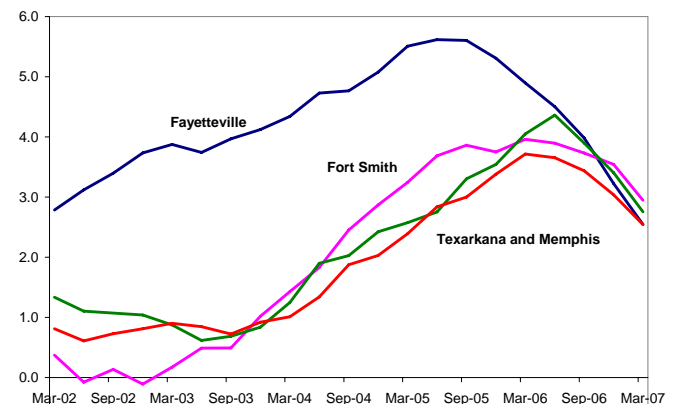
Fayetteville	110.4 (+1.8 %)
Fort Smith	108.9 (+2.1 %)
Little Rock	109.3 (+2.6 %)
Jonesboro	104.4 (+2.9 %)
Hot Springs	108.8 (+1.5 %)
Memphis	108.1 (+2.1 %)
Pine Bluff	104.4 (+1.0 %)
Texarkana	108.6 (+2.1 %)

Note: See Technical Appendix on page 2 for calculation details.

**Figure 1. MSA Economic Activity Indexes (In State MSAs)**



**Figure 2. MSA Economic Activity Indexes (Border MSAs)**



# Technical Appendix

In constructing the composite index of economic activity, the methodology outlined by The Conference Board in the Business Cycle Indicators Handbook (<http://www.conference-board.org/>) was used. This composite index of economic activity is a single summary measure to provide insight into how respective MSA's economy is doing. That is, an increase in the index indicates an overall expansion in economic activity, while a decrease is indicative of a contraction in economic activity. This index is computed using quarterly data on real personal income, total nonagricultural employment, total residential permits, and total retail sales for the region. The steps are outlined as follows:

The first step is to calculate quarter-to-quarter symmetric changes for each seasonally-adjusted component (i.e., employment, personal income, permits, and retail sales).

$$(1) \quad \Delta x_i = \frac{200 * (x_{i,t} - x_{i,t-1})}{(x_{i,t} + x_{i,t-1})}$$

The next step is to adjust the quarter-to-quarter changes via the component's standardization factor,  $s_i$ .

The adjustment is designed to give each component a similar opportunity to contribute to the change in the index. To equalize the volatility of each component, calculate the inverse of the standard deviation and normalize to one. These standardization factors are updated once a year consistent with the annual benchmark revision of The Conference Board. This annual benchmark also allows for data revisions that occur during the four previous quarters.

A preliminary index using the symmetric percent change formula is calculated recursively. The index starts at a value of 100 in the first quarter of 2000. That is, let  $I_1 = 100$  so the second quarter of the preliminary index is calculated as follows:

$$(2) \quad I_2 = I_1 * \frac{(200 + s_2)}{(200 - s_2)}$$

Finally, the index is rebased to average 100 in the base year (i.e., 2004). The preliminary index is multiplied by 100 and divided by the mean of the preliminary levels of the index in the base year.



Dr. Joel E. Anderson, Chancellor  
 Dr. Hugh D. Sherman, Dean of the College of Business

**IEA Director and Senior Staff**

- Dr. Ashvin P. Vibhakar, Director ..... 501-569-8476
- Ms. Sarah G. Breshears, Census State Data Center ..... 501-569-8530
- Mr. Davis A. Bullwinkle, Research Library..... 501-569-8540
- Dr. Gregory L. Hamilton, Research Group ..... 501-569-8571
- Dr. Ronald J. Swager, Center for Economic Development Education ..... 501-683-7347
- Ms. Diane Thomas-Holladay, Labor Education Program..... 501-569-8483