

CONSTRUCTION OF THE ARKANSAS TECH BUSINESS INDEX

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Abstract

The Arkansas Tech Business Index (ATBI) is an indicator of economic conditions across the state of Arkansas. It measures economic performance in 17 cities at a monthly frequency. The index is composed of four sector sub-indices measuring labor markets, housing markets, construction activity, and retail sales. To calculate the index we gather data from secondary and primary sources, at the city or county level, on a monthly frequency. The data, and thus the index, begins in January 2009. We use regression analysis to isolate the movement in a variable independent from population, state level economic activity, and the other indicators. The four sub-indices are weighted in order ensure that each sub-index has a similar impact on the final index, up-weighting low variation components and down-weighting high variation components. The index is centered at 100, with that being a neutral reading. Index values above 100 represent higher than average economic activity, while values below 100 show the opposite. The reference is the contemporaneous state economy, not just the total of all 17 cities. The index illuminates movement over time, intra-city differences, and across-sector disparities. Each month, as new data is received we recalibrate the underlying economic model and then recalculate the full index – 2009 to the present. Thus one should not expect the current release of last month's index value to match the index value for last month that was released last month. The advantage of such a system is that the index model is always up-to-date and the index time series is always internally consistent.

Construction of the Arkansas Tech Business Index

The Arkansas Tech Business Index (ATBI) is designed to provide a summary statistic for the economy in a world where differing economic statistics often provide conflicting information. The ATBI consists of economic indicators for seventeen cities in Arkansas. Each index is derived from four economic sub-indices which are the Labor Market Index, the Retail Activity Index, the Construction Index, and the Real Estate Index. Each index value is a number centered around 100, where 100 points is the average value for the state as a whole. A city with an index reading above 100 is outperforming the state average. A city with a reading under 100 is underperforming the state average. Each of these four monthly sub-indices is averaged to get a monthly ATBI. Each city index then shows how each city's economy is performing. One could look at the city indices to see how the cities relate to each other and to the state as a whole. One could look at the sub-indices to evaluate which sectors are contributing to and which sectors are detracting from a city's index performance. One could evaluate the performance of a city over time; the index extends back to January 2009. The index can also be used to gauge the performance of the state overall by looking at how many cities are above/below 100 and by looking at those that are increasing versus those that are falling.

The Data

As stated above, there are four component indices that are combined to create the Arkansas Tech Business Index for a particular city at a given time. These four indices are Retail Sales, Labor Markets, Housing, and Construction.

The retail sales component is measured by sales tax data collected from the Department of Finance and Administration under local tax distribution reports for the given year. We collect the sales tax in each city and divide it by the city tax rate to recover the tax base which is retail sales. We use labor market data obtained from the Department of Workforce services which includes the unemployment rate and the number of individuals in the labor force. The data are city level statistics, except for Searcy, Van Buren, and Mountain Home, which are observed at the county level. Real Estate data consists of average price of units sold and number of units sold. The data is derived from housing market reports provided by the Arkansas Realtors Association, which is collected at the county level. Lastly, Construction includes new single family residential and new commercial permit data. The data is collected from the city government in each city. The data used are the sum of the project costs for all permits issued for new single family residential construction. The aggregate level data are the sum of all 17 cities' project costs. We calculate the same total for new commercial permits. Table 1 lists the variables that enter our analysis and their names.

We use population variables at both the city and county level, because some dependent variables are observed at the city level while others are observed at the county level. The Real Estate data are collected at the county level. Thus, we used the county population for in the home price and home sales regressions. Sales tax and permits are observed at the city level so city population is used in those regressions. Labor market data is observed at the city level with the exception of Searcy, Van Buren, and Mountain Home. For these three cities, we use the county labor force data for the counties in which they are situated. Thus, we construct a new population series

(*population-lf*) which contains the city population for most observations, but the county population for Searcy, Van Buren, and Mountain Home observations.

Table 1		
List of Variables		
Variable Name	Variable Description	Units
Ll	Labor force	Count
Lu	Unemployment rate	Percentage
Hq	Number of housing units sold	Count
Hp	Average sale price of homes	Dollars
Cc	Commercial construction	Dollars
Cr	Residential construction	Dollars
S	Retail sales	Dollars
Population-city	City population	Count
Population-county	County population	Count
Population-lf	Population for labor regressions	Count

Building An Index

In order to build an index of economic activity we first build an index of each of the seven component data series and then average them to get an overall index. In order to create an index for each component data series, the labor force for example, we want to separate the strength/weakness of that series from strength/weakness in other sectors of the economy. We would also like to separate strength/weakness in that city from strength/weakness in the state as a whole. Finally, with a quantity measure, such as the size of the labor force, which we would expect to be scalable with the population, we would account for this scale.

In order to account for these factors, we start with a least squares regression model to forecast the data series. Consider the following regression model:

$$Ll_{ct} = \alpha^0 + \alpha^p pop_c + \varepsilon_{ct}$$

where Ll_{ct} is the number of people in the labor force in city c at time t , pop_c is the 2010 census population for city c . The estimated residual ε_{ct} is then used to form the index. In this case the

index is clearly the amount that the labor force deviates from what we would expect of a city its size. The larger the labor force, the higher the index would be. A labor force which is abnormally small for a given population would produce a negative residual and would then show up as an index value below 100.

We would like to incorporate not just population but also state level labor force in the index. The index should be the deviation from the prediction based not just on population but on both population and state level labor force. Thus consider adding state level labor force to the regression as such:

$$Ll_{ct} = \alpha^0 + \alpha^{ll} Ll_t + \alpha^p pop_c + \varepsilon_{ct}$$

where Ll_t is the size of the labor force statewide. Now the residual, and thus the index, represent the degree to which the city's labor force deviates from the level we would expect given the population and the size of the labor force.

We have one more amendment to add to this regression. Given that we are tracking seven economic indicators in four categories, and given that these seven indicators could be correlated with one another, we would like each index to reflect only the degree to which its performance behaves independently from the movement witnessed in the other six indicators. Our regression analysis is the perfect methodology to control for the levels of the other indicators. For instance in measuring the labor force, recognizing that unemployment is a closely related economic indicator, we would want to control for its influence.

$$Ll_{ct} = \alpha^0 + \alpha^{lu} Lu_t + \alpha_c^{lu} Lu_{ct} + \alpha^{ll} Ll_t + \alpha^p pop_c + \varepsilon_{ct}$$

where Lu_t and Lu_{ct} are the time t unemployment rates of the state and of city c , respectively.

For the sake of illustration suppose that the coefficient on unemployment, α_c^{lu} , is positive meaning that there is a tradeoff between the unemployment and the labor force. Under this supposition, downward movements in the unemployment rate happen with people exiting the labor force. Now consider two scenarios in city c . In scenario 1 the discouraged workers cause a low reading for the labor force and a lowered unemployment rate. While in scenario 2, the labor force looks weak all around with a similarly small labor force and the unemployment rate increases. All other factors are the same in the two scenarios. In scenario 1, the low unemployment rate leads to a relatively low forecast for the labor force. Thus the residual will be small and the labor force index will be modest, maybe close to 100. But in scenario 2 the elevated unemployment rate leads to an elevated prediction of the labor force. Thus the low actual unemployment rate means that the residual is well below zero implying an index reading well below 100.

What we see from these two hypotheticals is when an indicator is positive, but so are the others, then it will produce a relatively moderate reading. This contrasts to the scenario where the indicator is positive in contrast to the other indicators, which will produce a stronger index reading. In the full model, as outlined below, we use not just similar indicators, but all six indicators as control variables in the regression.

This regression methodology produces seven indices each corresponding to one of the data series that we track. These must be combined into four sector indices and ultimately into a single index. In order to accomplish this, we average the indices. We average the labor force with the

unemployment indices to create a labor market index, the home sales and home price to create a real estate index, and the residential and commercial permits to create a construction index. The retail index stands alone. The four sector indices are averaged into the ATBI.

However, there is a problem with a simple, unweighted average. Movements in index quantify variability in the economy. In an unweighted average, the more variable term of those being averaged will disproportionately impact the variation in the average. Thus the index will look most like its most variable component. We consider this to be a problem because we would like the index to represent each of its components to an equal degree. Therefore we weight each sub-index according to its standard deviation. Sub-indices with high variation are down-weighted while those with low variation are up-weighted.

Having built the intuition behind the construction of the ATBI, we now proceed to a stylized definition of the index calculation.

Methodology

Once the data is collected, our next step is to generate the component level indices, one for each of the seven indicators listed above. To do this, we run the following random effects regressions:

$$Ll_{ct} = \alpha^0 + \alpha^{lu}lu_t + \alpha_c^{lu}lu_{ct} + \alpha^{Ll}Ll_t + \alpha_c^{Ll}Ll_{ct} + \alpha^{Hq}Hq_t + \alpha_c^{Hq}Hq_{ct} + \alpha^{Hp}Hp_t + \alpha_c^{Hp}Hp_{ct} + \alpha^{Cc}Cc_t + \alpha_c^{Cc}Cc_{ct} + \alpha^{Cr}Cr_t + \alpha_c^{Cr}Cr_{ct} + \alpha^S S_t + \alpha_c^S S_{ct} + \alpha^p pop_c + \varepsilon^1_{ct}$$

and

$$Lu_{ct} = \beta^0 + \beta^{lu}lu_t + \beta^{Ll}Ll_t + \beta_c^{Ll}Ll_{ct} + \beta^{Hq}Hq_t + \beta_c^{Hq}Hq_{ct} + \beta^{Hp}Hp_t + \beta_c^{Hp}Hp_{ct} + \beta^{Cc}Cc_t + \beta_c^{Cc}Cc_{ct} + \beta^{Cr}Cr_t + \beta_c^{Cr}Cr_{ct} + \beta^S S_t + \beta_c^S S_{ct} + \beta^p pop_c + \varepsilon^2_{ct}$$

etc...

where the α and β are coefficients, t indexes time, and c indexes cities, and a lack of a subscript c indicates state level information. Appendix A contains the regression results using data from Jan-2009 to Jun-2014. From each regression we take the residual and the root mean squared error (RMSE) to calculate the corresponding index as such:

$$ATBI_L_l = (\varepsilon^1_{ct}/RMSE^1)10 + 100$$

using the estimated regression residual and RMSE from the first regression and

$$ATBI_L_u = (-\varepsilon^2_{ct}/RMSE^2)10 + 100$$

uses the estimated regression residual and RMSE from the unemployment rate equation. We continue computing the other indices in an analogous manner. The purpose of RMSE is to normalize the index so that all indices have similarly scaled variation. The unemployment rate index is the only index with a negative sign before the residual; this is because unemployment is a negative indicator. Appendix B, table B3 shows the index values for June 2014 derived from Jan-2009 to Jun-2014 data.

In order to create the labor index (ATBI_L) we combine the following two indices: ATBI_L_u and ATBI_L_l, using a weighted average, where the weights are proportional to the inverse of the standard deviation of each index. In particular, the weights are:

$$\frac{\sigma_u^{-1}}{\sigma_u^{-1} + \sigma_l^{-1}} \text{ and } \frac{\sigma_l^{-1}}{\sigma_u^{-1} + \sigma_l^{-1}}$$

We then average:

$$ATBI_L = ATBI_L_u \frac{\sigma_u^{-1}}{\sigma_u^{-1} + \sigma_l^{-1}} + ATBI_L_l \frac{\sigma_l^{-1}}{\sigma_u^{-1} + \sigma_l^{-1}}$$

ATBI_H is created analogously from ATBI_H_q and ATBI_H_p. ATBI_C similarly is the average of the two construction permit indices. ATBI_S does not require averaging since it only has one data source and thus is created directly from the retail sales regression. The standard deviations and weights derived from Jan-2009 to Jun-2014 data are reported in Appendix B table B1. The resulting indices are reported for 2014 January to June in table B4.

Repeating the above averaging method will give us the ATBI:

$$ATBI = ATBI_L(W_L) + ATBI_H(W_H) + ATBI_C(W_C) + ATBI_S(W_S)$$

where the weights are defined similarly to those shown above. Appendix B, table B2 presents the standard deviations and weights constructed from Jan-2009 to Jun-2014. The ATBI is reported in table B5. As above the Jan-2009 through Jun 2014 data are used to construct the index. However, only February-2011 to June-2014 index values are reported in the table.

In the monthly data release we also present a quarterly average, which is a simple average of the three monthly readings contained in the quarter. The annual index is similarly the simple average of the 12 months in the year.

Conclusion

Given the index construction what does it tell us? Is it forward looking? Will it rise over time like a price index (e.g. DJIA, CPI)? Is the index revised? What does the 100 point baseline really mean? The answers to these questions are to be found in the index construction.

The ATBI compares each city to the state as a whole. Notice that the index is centered around 100. A city with a reading of 100 means that the city's economic performance is on par with the state average. A reading of 103 is 3% above the average state performance. A reading of 95 is 5% below the state average.

Consider the timing of the reference. Suppose that a city has a reading of 100 in a particular month. Does that mean that the city is performing consistently with the state average in that month, or with the state average from 2009 to the present? The technical answer is that the coefficients are estimated from all cities in all time periods but the data used to calculate the index is all contemporaneous. This means that while all data from 2009 to the present is used to educate us on the relationship between each variable and the index, only contemporaneous data is used to calculate each month's index value. Suppose that from month-1 to month-2 the state housing price increases, but a particular city's housing price remains flat. Thus we would see that city's house price index fall from month-1 to month-2. The coefficient would tell us that when state housing prices rise, the city's housing price should also rise; if it does not, then the index reading would in turn fall.

A similar issue is whether, in the index, each city is being compared to the other cities or to the state as a whole. Again, the coefficients are estimated from all cities but the right-hand-side variables in the regression are state level variables, the city population, and the city's own reading of the other variables (as a control). This means that while all city data is used to

educate us on the relationship between state level information and the index, only state level data is used to calculate each city's index value. Suppose that all of the cities experience an increase in retail sales from month-1 to month-2, but it is offset by a similar fall in retail sales in rural areas so that the state total retail sales remain unchanged from month-1 to month-2. In this case the index values of all of the cities would rise from month-1 to month-2. But the only way for the ATBI to consistently rise over time, would be for the cities to progressively take a higher and higher share of overall state retail sales, housing sales, and construction permits, to progressively have increasing housing prices relative to the rural areas, to progressively acquire a larger and larger labor force relative to the rural and suburban areas without a commensurate increase in population, and to progressively have lower unemployment rates relative to the rural areas and suburbs. Thus in general, we would not expect the ATBI to drift away from its grounding around 100 points.

Is the index revised, or will it remain unchanged after being published? Each month when new data is added, the regression model is re-run. Thus each month when one more month of data is added to the database, the regression coefficients could change, though likely the change will be small. Thus when looking at last month's index value for a city, while the data generating that index value is unchanged, you may notice that last month's index value is a little different now than when it was released last month. While it can be frustrating to not find the number one remembers from last month, we believe that it means that the index time series found at any one time is always internally consistent – it is derived from a single set of regression coefficients. If one were to prefer to see the index values that were originally released at their respective release dates then one can find this variable (ATBI_OR) in the downloadable database. In addition, we maintain a complete archive of all past data which contains the downloadable database released each month including the ATBI, the four component indices, the six sub-component indices, and the raw seven data series.

The data in any given month reflects economic activity in that month, and thus the index is generally not forward looking, but rather contemporaneous. However, at least one of the four component indices is a leading indicator of future economic activity. Construction permits indicate building that will happen in the near future. When this permitted construction begins it will mean jobs, these employees will probably buy retail goods, and they may even buy houses. Thus we might look to the construction component index as a leading indicator of the other four component indices and thus of the ATBI.

From the index construction, one could see that a reading of 100 indicates that the left hand side variable is exactly where we would expect it to be, given population, the levels of the other six variables and the state level information for the same variables. In other words, it is consistent with the state average for that variable. But, does this mean we interpret a reading above 100 as outperforming the level that one would expect given the state data, controlling for the other factors and population?

The ATBI is designed to provide a snapshot of current economic activity around the state of Arkansas. Each month numerous economic indicators are tracked by economists and reported by the media. These indicators often provide conflicting information. The ATBI collects and

averages these disparate data flows to provide a single reference point for each of the selected cities on a monthly basis.

Appendix A

Table A1

Random Effects Regression Results Using Jan-2009 to Jun 2014 Data

	Unemployment	Labor Force	Residential Permit Value	Commercial Permit Value	Retail Sales	Real Estate Average Price	Real Estate Units Sold
Constant	-3.165 (2.462)	-23374.9 (4701.5)	-1.09e-06 (5655596)	-3783486 (2.68e+07)	-30424.99 (27295.93)	-102297.3 (41972.74)	-95.00027 (31.47)
Unemployment		-316.4 (58.55)	-275574.2 (69721.23)	79463.38 (193065.6)	-320.7694 (342.2907)	-2657.026 (527.1318)	-1.371 (.3763)
State Unemployment	.9796 (.0452)	273.9 (108.3)	284251 (129736.1)	-65273.1 (562673.5)	-63.83 (628.5)	2802.6 (966.1)	2.518 (.7193)
Labor Force	-0.00008 (.00001)		120.5 (30.27)	-9.680 (46.70)	-1.017 (.1496)	.0145 (.1915)	-0.0002 (.00009)
State Labor Force	1.67e-06 (9.60e-07)	.0133 (.0019)	-.3867 (2.329)	1.516 (11.01)	-.0140 (.0112)	.0302 (.0172)	.00003 (.00001)
Number of Residential Permits	.0058 (.004037)	3.272 (8.177)		66821.79 (43594.75)	-145.34 (47.14)	10.660 (72.89)	.1180 (.0549)
Residential Permit Value	-6.81e-08 (2.06e-08)	.0001 (.00004)		-.3183 (.2130)	.0011 (.0002)	-.0003 (.0004)	-7.95e-07 (2.80e-07)
Total Number Residential Permits	.0003 (.0011)	-4.209 (2.284)	1356.8 (2689.8)	-3191.9 (13145.9)	-27.27 (13.21)	30.36 (20.33)	-0.0003 (.0154)
Total Residential Permit Value	-4.71e-09 (5.62e-09)	.00002 (.00001)	.0460 (.0134)	.0125 (.0652)	.0002 (.00007)	-.0001 (.0001)	2.23e-08 (7.68e-08)
Number of Commercial Permits	.0076 (.0082)	20.90 (16.69)	-12570 (20047.4)		177.5 (96.53)	-139.9 (148.7)	-.0148 (.1125)
Commercial Permit Value	2.35e-09 (2.74e-09)	-9.11e-06 (5.55e-06)	-.0078 (.0067)		7.65e-06 (8.24e-06)	-.00002 (.00005)	-2.44e-08 (3.75e-08)
Total Number of Commercial Permits	-.0007 (.0021)	3.912 (4.334)	1088.3 (5209.67)	1754.9 (24350.65)	2.561 (25.10)	29.48 (38.59)	-.0115 (.0293)
Total Commercial Permit Value	1.72e-10 (7.02e-10)	5.78e-07 (1.42e-06)	-.00005 (.0017)	.0580 (.0080)	7.72e-06 (8.24e-06)	-1.25e-06 (.0000127)	1.72e-09 (9.62e-09)
Arkansas Sales Tax	-6.81e-10 (1.19e-09)	-2.10e-06 (2.42e-06)	-.0001 (.0029)	-.0001 (.0139)	-.00002 (.00001)	.00002 (.00002)	-5.99e-09 (1.63e-08)
Retail Sales	-1.16e-06 (2.61e-06)	-.0341 (.0051)	22.50 (6.151)	18.50 (20.43)		-.0724 (.0456)	-.00009 (-.00003)
Real Estate Average Price	-7.85e-06 (1.66e-06)	.0023 (.0033)	-4.340 (3.982)	-9.404 (14.63)	-.0272 (.0193)		-.0004 (.00002)
Real Estate State Price	.00002 (.00001)	.03483 (.0271)	4.713 (32.53)	13.23 (155.1)	.4799 (.1561)	1.176 (.2384)	.0006 (.0001)
Real Estate Total Sales	2.96e-08 (1.13e-08)	.00008 (.00002)	.1103 (.0269)	.1776 (.1099)	.0007 (.0001)	.0039 (.0001)	4.83e-06 (4.01e-08)
Real Estate State Sales	-9.20e-09 (6.00e-09)	-.00001 (.00001)	-.01284 (.0146)	-.01799 (.06984)	-.0002 (.00007)	-.0043 (.0001)	-4.48e-07 (8.12e-08)
Real Estate Units Sold	-.0054 (.0023)	-10.98 (4.452)	-11526.58 (5321.77)	-21088.22 (20320.43)	-115.10 (25.71)	-739.4 (34.03)	
Real Estate Total Units Sold	.0016 (.0009)	1.345 (1.809)	1564.63 (2173.34)	2125.49 (10350.85)	22.63 (10.45)	71.14 (15.97)	.0823 (.00002)
Population- <i>lf</i> ^a	.00003 (.00001)	.4995 (.0096)					
City Population			-1087079 (16.92)	16.73 (25.18)	.7684 (.0845)		
County Population						.1958 (.0458)	.0002 (.00002)
Rho	.8941	.5693	.4839	.0140	.5566	.6796	.3194

^a Observation-by-observation, *Population-lf* is either city or county level data depending on whether labor force data is measured at the city or county level for that city.

Appendix B

Tables B1, B2, B3, B4, and B5 contain index results using data for 17 cities and the date range Jan-2009 to Jun-2014.

Table B1
Standard Deviations and Averaging Weights

	ATBI_L		ATBI_H		ATBI_C	
	ATBI_L_l	ATBI_L_u	ATBI_H_p	ATBI_H_q	ATBI_C_r	ATBI_C_c
Std Dev	6.257	4.367	3.266	8.322	14.758	14.476
Weight	0.411	0.589	0.718	0.282	0.495	0.505

Table B2
Standard Deviations and Averaging Weights

	ATBI_L	ATBI_H	ATBI_C	ATBI_S
Std Dev	1.471	4.380	10.107	3.690
Weight	0.532	0.179	0.077	0.212

Table B3
ATBI Component Data Series Indices, June 2014

	ATBI_L_l	ATBI_L_u	ATBI_H_p	ATBI_H_q	ATBI_C_r	ATBI_C_c
Bentonville	99.64	111.85	100.21	92.66	113.70	110.81
Russellville	89.88	102.30	104.50	109.52	99.35	98.79
El Dorado	96.18	96.30	91.71	94.54	103.62	97.97
Fayetteville	80.38	103.70	108.00	105.67	107.61	98.18
Hot Springs	104.67	98.73	117.59	108.10	101.89	96.51
Jonesboro	82.32	102.48	112.25	107.23	108.09	107.10
West Memphis	96.63	74.53	101.75	104.07	108.18	97.39
Springdale	96.88	111.42	105.23	102.44	86.70	92.73
Conway	81.97	104.45	108.28	114.10	101.22	96.19
Rogers	103.37	110.37	100.38	92.51	98.64	93.90
N. Little Rock	109.04	103.23	87.14	79.95	85.09	117.32
Texarkana	95.42	102.08	80.35	90.10	106.27	98.04
Fort Smith	102.85	102.16	107.15	113.19	102.17	109.37
Pine Bluff	109.82	83.66	77.51	86.52	106.02	96.74
Little Rock	108.06	93.89	89.47	93.61	81.88	89.48
Searcy	118.99	96.10	102.43	107.75	93.11	100.21
Van Buren	111.88	104.90	98.10	95.51	90.76	98.06

Table B4
Sector Indices, January-June 2014

City	Component	January	February	March	April	May	June
Bentonville	ABTI_L	105.54	104.28	104.54	104.57	104.87	106.83
	ATBI_H	110.89	110.23	107.3	105.77	102.91	98.08
	ATBI_C	123.94	119.04	109.79	116.64	110.15	112.24
	ATBI_S	102.36	102.41	100.56	92.40	102.37	99.88
Russellville	ABTI_L	99.73	98.32	96.99	99.30	96.77	96.12
	ATBI_H	93.73	96.52	88.61	97.62	97.61	106.96
	ATBI_C	96.62	99.51	94.80	95.63	93.39	99.08
	ATBI_S	97.39	99.31	100.50	97.19	99.37	101.23
El Dorado	ABTI_L	95.93	96.52	98.30	98.42	98.20	96.23
	ATBI_H	89.37	89.55	91.04	97.59	87.16	93.55
	ATBI_C	99.99	99.24	97.04	98.09	95.94	101.02
	ATBI_S	90.56	91.85	90.78	89.01	90.35	91.83
Fayetteville	ABTI_L	100.57	97.66	94.94	96.67	94.07	96.11
	ATBI_H	106.54	106.12	109.74	106.14	105.92	107.18
	ATBI_C	103.16	101.09	105.89	103.55	94.90	102.38
	ATBI_S	112.61	117.05	116.00	114.90	118.08	117.37
Hot Springs	ABTI_L	100.22	99.52	98.73	102.19	100.48	100.49
	ATBI_H	116.21	111.28	107.46	107.19	109.47	111.33
	ATBI_C	100.37	98.19	100.18	95.73	93.04	99.45
	ATBI_S	94.43	97.30	99.45	95.72	97.29	98.98
Jonesboro	ABTI_L	100.84	100.84	99.30	99.38	98.87	98.39
	ATBI_H	100.81	104.87	101.76	106.86	111.15	109.73
	ATBI_C	104.95	108.94	102.54	109.25	105.13	107.85
	ATBI_S	96.92	99.78	100.50	96.40	98.52	99.52
West Memphis	ABTI_L	87.81	84.21	90.42	89.41	93.54	85.81
	ATBI_H	94.75	99.39	90.02	89.26	101.79	103.21
	ATBI_C	101.25	102.12	99.38	99.72	98.80	104.00
	ATBI_S	90.61	92.30	91.43	88.90	90.30	92.51
Springdale	ABTI_L	110.52	110.83	107.31	107.14	105.18	109.35
	ATBI_H	104.89	102.50	106.91	104.48	105.91	104.29
	ATBI_C	100.04	88.53	100.83	102.34	113.87	90.20
	ATBI_S	98.22	105.38	100.86	99.67	96.81	103.92
Conway	ABTI_L	93.72	94.29	94.28	95.56	94.97	96.75
	ATBI_H	104.58	108.81	105.21	109.49	106.92	110.76
	ATBI_C	97.00	95.47	100.10	99.31	94.91	99.32
	ATBI_S	106.31	103.46	105.17	99.35	105.28	104.34
Rogers	ABTI_L	105.39	103.73	105.77	106.15	107.63	107.66
	ATBI_H	111.14	109.82	108.15	105.30	102.61	98.44
	ATBI_C	101.16	96.69	100.40	97.95	86.96	96.05
	ATBI_S	108.03	111.73	109.42	106.05	110.50	108.38

Table B4 continued
Sector Indices, January-June 2014

City	Component	January	February	March	April	May	June
North Little Rock	ABTI_L	103.31	103.13	104.06	105.03	107.03	105.22
	ATBI_H	101.40	89.64	89.88	95.21	78.87	85.22
	ATBI_C	95.55	89.68	86.00	81.82	101.38	94.66
	ATBI_S	113.17	87.60	86.63	83.96	78.70	83.75
Texarkana	ABTI_L	95.91	96.92	99.47	100.18	99.07	98.11
	ATBI_H	82.98	94.08	87.82	80.70	84.78	86.37
	ATBI_C	97.47	98.60	107.60	98.23	95.64	101.86
	ATBI_S	90.52	91.92	86.71	88.30	90.74	91.30
Fort Smith	ABTI_L	103.11	100.78	102.46	103.68	102.11	102.38
	ATBI_H	101.40	102.23	106.25	106.17	111.80	110.16
	ATBI_C	95.55	98.26	103.77	103.59	93.42	106.18
	ATBI_S	113.17	118.18	118.89	112.32	123.25	117.96
Pine Bluff	ABTI_L	92.24	91.85	93.56	95.02	96.15	93.63
	ATBI_H	82.87	82.83	83.02	83.63	84.43	83.02
	ATBI_C	99.06	99.20	97.31	98.40	97.02	101.16
	ATBI_S	88.90	91.20	89.78	87.48	89.30	90.45
Little Rock	ABTI_L	99.36	97.26	95.98	95.03	96.81	96.38
	ATBI_H	99.54	95.45	96.25	102.41	85.36	90.56
	ATBI_C	97.66	106.91	100.67	105.99	125.58	85.49
	ATBI_S	105.95	107.54	111.58	101.45	106.02	108.74
Searcy	ABTI_L	101.53	102.27	102.56	105.20	104.48	105.21
	ATBI_H	101.87	97.73	96.44	93.63	103.90	105.52
	ATBI_C	91.71	92.75	91.30	91.43	90.84	96.16
	ATBI_S	106.59	107.52	106.01	104.17	105.28	107.12
Van Buren	ABTI_L	108.00	107.53	108.61	109.91	109.99	108.14
	ATBI_H	92.76	95.22	93.72	91.47	93.39	96.64
	ATBI_C	97.45	94.48	94.63	104.35	89.88	95.00
	ATBI_S	104.49	106.33	105.69	99.71	105.24	106.13

Table B5
Arkansas Tech Business Index

	Bentonville	Russellville	El Dorado	Fayetteville	Hot Springs	Jonesboro
Feb '11	105.62	100.52	95.69	104.95	99.88	102.28
Mar '11	107.21	98.42	92.96	104.35	98.22	108.18
Apr '11	107.87	99.36	94.54	107.25	100.96	102.95
May '11	108.44	100.15	95.98	106.60	100.16	102.49
Jun '11	109.76	98.92	94.37	107.11	99.80	104.87
Jul '11	108.19	99.90	95.74	107.58	99.74	101.28
Aug '11	107.40	99.91	96.09	107.51	99.12	103.25
Sep '11	107.67	100.56	95.39	105.55	102.16	102.31
Oct '11	107.03	99.31	95.62	105.18	102.62	102.02
Nov '11	109.37	98.90	92.93	105.15	99.65	103.19
Dec '11	107.72	100.79	96.45	107.39	102.07	104.42
Jan '12	107.17	98.29	95.91	104.29	101.43	102.55
Feb '12	107.07	99.40	95.79	104.27	101.14	105.74
Mar '12	107.56	99.42	94.54	105.64	101.30	102.54
Apr '12	106.83	98.16	94.10	105.99	99.62	102.78
May '12	106.82	98.46	93.89	106.74	100.25	101.84
Jun '12	105.30	99.61	95.67	108.68	100.81	100.77
Jul '12	105.27	98.66	97.42	105.36	101.11	99.91
Aug '12	105.90	98.96	95.32	104.96	101.36	102.41
Sep '12	105.41	98.71	93.93	105.60	100.70	100.40
Oct '12	106.23	98.34	95.01	104.72	99.54	100.20
Nov '12	105.65	99.26	94.29	104.83	100.51	101.10
Dec '12	106.97	99.72	93.50	106.66	101.97	101.70
Jan '13	108.32	98.45	94.08	105.99	99.59	101.03
Feb '13	105.85	98.87	94.95	105.46	100.59	101.43
Mar '13	106.65	98.40	93.29	106.39	100.35	100.69
Apr '13	108.30	98.50	92.57	103.57	100.15	101.97
May '13	107.25	99.19	93.04	106.52	99.80	101.09
Jun '13	106.84	99.74	98.39	106.25	101.15	101.33
Jul '13	105.27	99.59	94.80	106.69	100.39	100.44
Aug '13	106.38	102.14	94.22	105.55	101.35	102.55
Sep '13	105.20	98.94	95.36	105.22	100.06	101.40
Oct '13	105.84	97.63	95.82	105.39	100.44	101.66
Nov '13	105.66	98.38	95.43	105.29	99.50	102.19
Dec '13	104.85	97.93	96.36	106.30	100.90	103.01
Jan '14	107.25	97.43	94.09	105.65	101.96	100.35
Feb '14	106.09	98.76	94.55	105.41	101.03	102.04
Mar '14	104.60	96.70	93.74	105.96	101.25	100.28
Apr '14	103.14	97.44	93.87	104.90	99.50	100.95
May '14	104.4	96.93	92.83	103.58	99.41	101.59
Jun '14	104.21	99.92	95.42	105.47	102.1	101.51

Table B5 Continued
Arkansas Tech Business Index

	West Memphis	Springdale	Conway	Rogers	North LR	Texarkana
Feb '11	96.06	103.84	104.26	105.14	98.41	96.55
Mar '11	92.32	103.29	103.18	104.99	97.02	93.54
Apr '11	95.07	106.34	103.44	106.50	98.65	96.23
May '11	94.26	105.81	104.04	106.63	97.64	96.56
Jun '11	94.48	105.14	103.69	107.02	97.24	95.36
Jul '11	94.71	105.84	103.01	106.93	97.6	94.99
Aug '11	95.22	105.18	104.22	108.03	97.45	95.71
Sep '11	94.75	104.16	103.49	106.3	97.6	95.4
Oct '11	94.86	104.94	103.66	105.12	97.28	95.09
Nov '11	94.02	106.79	103.04	104.66	96.69	94.45
Dec '11	95.16	105.10	106.37	107.87	98.16	96.44
Jan '12	94.71	104.58	101.46	105.26	97.18	95.62
Feb '12	95.21	104.68	103.73	105.1	97.55	95.51
Mar '12	97.55	104.86	104.15	106.85	96.6	94.49
Apr '12	94.74	103.33	102.81	104.24	97.45	94.57
May '12	95.22	104.91	103.53	105.7	95.66	95.1
Jun '12	96.24	104.77	104.46	104.03	96.06	93.94
Jul '12	95.12	104.26	107.04	105.84	95.31	94.36
Aug '12	95.19	104.18	103.51	104.2	96.28	94.75
Sep '12	95.97	104.22	102.95	103.8	96.8	95.76
Oct '12	94.05	103.46	101.71	104.11	95.87	95.04
Nov '12	95.46	104.12	102.86	104.49	96.5	94.59
Dec '12	94.45	104.33	104.62	106.27	96.77	94.14
Jan '13	95.77	104.63	103.57	104.68	99.04	94.32
Feb '13	94.92	103.88	104.52	105.73	96.81	96.11
Mar '13	94.49	104.18	104.4	105.29	96.88	96.08
Apr '13	93.86	102.52	103.25	104.58	94.08	92.93
May '13	93.68	105.05	103.27	105.13	97.09	93.43
Jun '13	95.97	104.90	104.85	104.74	93.59	95.87
Jul '13	94.70	104.32	103.33	103.40	94.86	95.14
Aug '13	97.62	103.86	103.38	103.75	95.61	92.93
Sep '13	95.58	104.30	102.36	106.47	95.54	95.20
Oct '13	95.21	105.44	103.22	104.86	95.91	95.46
Nov '13	94.70	103.19	101.54	105.88	95.08	95.02
Dec '13	96.96	104.57	105.52	106.01	97.57	93.95
Jan '14	93.93	104.81	102.69	106.22	97.44	92.67
Feb '14	94.91	104.91	102.83	105.31	95.95	94.77
Mar '14	93.44	104.79	102.93	106.04	95.68	94.69
Apr '14	92.28	104.02	102.09	104.53	95.79	92.28
May '14	95.08	104.18	102.96	103.73	96.17	92.89
Jun '14	96.38	104.55	104.67	104.16	96.27	94.92

Table B5 Continued
Arkansas Tech Business Index

	Fort Smith	Pine Bluff	Little Rock	Searcy	Van Buren
Feb '11	104.18	93.34	92.66	102.76	101.27
Mar '11	105.39	89.74	91.45	101.29	100.06
Apr '11	105.69	92.11	93.12	101.84	101.66
May '11	105.17	91.65	94.02	101.9	101.48
Jun '11	105.51	90.75	90.12	101.84	101.97
Jul '11	106.59	93.14	90.79	102.65	101.80
Aug '11	107.45	93.32	91.92	102.46	101.95
Sep '11	105.79	93.4	91.65	102.94	101.45
Oct '11	105.62	92.97	93.35	102.24	101.27
Nov '11	104.72	92.51	91.57	101.78	101.49
Dec '11	109.47	92.61	93.64	103.97	101.06
Jan '12	106.57	91.60	94.77	99.93	101.78
Feb '12	103.66	94.39	94.04	102.12	103.06
Mar '12	106.02	93.73	96.09	102.08	101.62
Apr '12	105.28	92.83	93.97	101.37	101.37
May '12	107.48	93.06	92.56	101.45	102.11
Jun '12	108.75	93.09	91.21	102.65	101.96
Jul '12	105.19	91.99	89.90	102.42	101.39
Aug '12	107.47	93.79	90.81	101.44	101.84
Sep '12	107.08	93.03	93.61	102.24	101.57
Oct '12	105.47	93.25	96.71	101.52	100.97
Nov '12	109.57	92.87	94.84	102.22	100.49
Dec '12	107.55	93.06	96.22	102.70	101.45
Jan '13	103.58	93.75	99.13	102.28	101.36
Feb '13	106.46	93.04	95.32	101.36	100.30
Mar '13	108.82	92.17	99.24	100.73	101.23
Apr '13	104.27	95.74	93.8	102.39	101.88
May '13	106.49	91.70	91.62	100.65	102.03
Jun '13	106.76	92.78	90.84	102.43	103.56
Jul '13	110.39	91.27	94.4	102.11	102.07
Aug '13	108.00	92.27	92.68	102.88	102.28
Sep '13	110.14	94.09	95.63	102.80	105.09
Oct '13	104.82	92.37	97.40	102.70	102.34
Nov '13	107.71	91.84	96.75	101.4	102.61
Dec '13	107.34	94.36	100.88	102.28	101.00
Jan '14	104.27	91.48	99.64	100.84	102.75
Feb '14	105.82	92.39	98.85	101.08	103.15
Mar '14	108.53	91.73	97.82	100.16	103.08
Apr '14	106.89	91.43	99.03	100.04	102.59
May '14	109.60	92.19	98.35	101.38	102.58
Jun '14	109.78	92.98	94.15	103.69	103.59