Recent Trends in the Supply of Labor in Oklahoma

by Dan S. Rickman

Is there a limit to how long the recent strong growth in output and employment in Oklahoma can continue? The answer is yes! With unemployment rates hitting their lowest levels in recent history, overall economic growth in both Oklahoma and the nation will be constrained by the growth of their labor forces. At the national level, labor force growth consists of natural population growth, foreign immigration, and increases in the share of the population that is part of the labor force. The additional potential source of labor force growth in Oklahoma derives from migration of individuals from other states. However, the potential for in-migration depends upon the economic opportunities in Oklahoma relative to those in other states. Therefore, because of its importance for continued economic growth, this article examines the historical sources of labor supply for Oklahoma employment growth.

Labor Supply Decomposition of Employment Growth

Following Eberts and Stone (1992), employment (E) in an area can be decomposed into its labor supply components as

$$E = P * LFPR * (1-U),$$

where P is population, LFPR is the share of the population in the labor force (labor force participation rate), and U is the unemployment rate. That is, population (P) multiplied by the labor force participation rate (LFPR) yields the labor force, and that multiplied by (1-U) gives the amount of the labor force which is employed. From this expression, we derive the approximate

magnitudes of the supply sources for employment growth (e) as

$$e = p + lfpr - u,$$

where, except for u, the lowercase letters denote year-over-year percent change. The lowercase letter for unemployment (u) denotes the change in unemployment in percentage points. Therefore, the employment growth rate is composed of three parts: (1) the population growth rate; (2) the rate of change of the labor force participation rate; and (3) the change in the unemployment rate.

The labor supply decomposition of Oklahoma employment growth for 1971-1996 is given in Table 1. From the first column of Table 1, we see that employment on average grew significantly in the 1970s and early 1980s, declined in the late 1980s in response to the decline in the energy sector, and further declined during the recession of 1990-1991. However, concurrent with the U.S. economic recovery, Oklahoma employment has since grown.

The employment growth of the 1970s and early 1980s was supplied by sizeable increases in population (second column) and labor force participation (third column). To be sure, the population and labor force participation rate responses in the early 1980s were sufficiently large such that unemployment increased during this period. Fortunes were reversed in the late 1980s, where employment declined by 0.25 percent on average during the 1986-1989 period. Accompanying the employment decline was a reduction in population. Labor force participation increased slightly, but overall unemployment declined. Presumably, this occurred as those who were unemployed, or had exited the labor force, migrated out of the state.

The employment growth that has occurred since 1992 has been accompanied by consistent increases in population. In addition, except 1993, unemployment has declined each year. Labor force participation increased in three of the five years. In particular, note the significant increase in labor force participation and reduction in the unemployment rate in 1996.

To determine the proportion of employment growth typically satisfied by each of the supply components, a technique known as regression analysis is used. Specifically, for 1971-1996, employment growth (e) each year is regressed on population growth (p), the change in labor force participation (lfpr), and the change in the unemployment rate (u), while constraining the sum of the proportions to equal one. Note, that constraining the coefficients to be proportions that sum to one precludes the regression equation from simply becoming an identity. From the regression analysis (not shown), we find that on average, 71 percent of changes in employment occur through changes in labor force participation, while 29 percent occur through changes in population. Unemployment on average has not changed in a consistent direction with employment growth.

Despite the strong employment growth, being above the U.S. average in 1992, 1995 and 1996, Oklahoma's population growth was lower than the average annual 0.9 percent U.S. population growth during the 1990s. There are two primary reasons for the lower population growth in Oklahoma. First, because of a relatively older population, natural increases in population (i.e., births minus deaths) in Oklahoma are significantly lower. Secondly, the

rate of foreign immigration in Oklahoma is well below the overall rate for the nation. To be sure, natural increases in population and foreign immigration in Oklahoma only produced an annual average of 0.5 percent population growth during the 1990s. Any population growth above this figure represents net in-migration into Oklahoma of individuals from other states. Stated alternatively, for Oklahoma to simply attain the U.S. population growth rate, significant net in-migration from other states must occur.

Oklahoma Migration Patterns

Table 2 presents estimates of net migration into Oklahoma. For example, from April 1980 to July 1983, a total of 59,586 more people moved into Oklahoma than moved out. The opposite occurred during the rest of the decade. Nevertheless, beginning in 1991, Oklahoma experienced a net migration inflow. In particular, the strong employment growth periods in Oklahoma relative to the United States (1992, and 1995-1996), were accompanied by higher rates of net in-migration.

It appears, therefore, that for Oklahoma to attract people into the state, employment growth needs to be stronger than that in the nation. Again using regression analysis, we can examine the link between Oklahoma employment growth and in-migration. Specifically, the migration rate, measured as migration divided by population at the beginning of the period, is regressed on Oklahoma employment growth minus U.S. employment growth. Based on the period, 1980-1996, the result of regression analysis suggests that for every 1 percent employment growth above (below) the U.S.

average, migration increased (reduced) population by 0.3 percent. (Recall that changes in labor force participation rates and unemployment rates account for the remainder of the change in employment.) Since recent Oklahoma population growth in the absence of domestic migration averages 0.5 percent (as indicated earlier), 1 percent employment growth above the U.S. average would be predicted to be on average associated with 0.8 percent population growth (i.e., 0.5+0.3).

To further understand the reasons for recent Oklahoma migration patterns, Table 3 presents Oklahoma state-to-state migration statistics. The first column contains statistics on the sources of in-migrants to Oklahoma. In-migrants from each state are expressed as a share of total in-migrants. The ranking of importance as a source of inflows appears in parentheses to the right of the calculated share. In the second column, out-migrants from Oklahoma to another state are expressed as a share of total out-migrants from Oklahoma. The final column contains net migration statistics. Positive values reflect the net of in-to-out migration as a share of all net inflows, while negative values reflect the net of in-to-out migration as a share of all net outflows. Again, the ranking of the state according to its importance as a source of net inflows appears to the right in parentheses. (Negative values are not ranked since they represent net outflows). The states included in Table 3 are those that were in the top ten according to importance as a source of gross inflows, and top twelve according to importance as a source of net inflows, for a total of sixteen states.

From Table 3, we see that from 1995-1996, Texas was the largest source of gross in-migrants into Oklahoma. Yet, Texas was also the largest beneficiary of out-migration from Oklahoma, producing a net outflow from Oklahoma to Texas. California was the second largest source of in-migration, and largest source of net in-migration. To be sure, California supplied 40 percent of Oklahoma's net migration gain from 1995 to 1996. Kansas was the third largest source of in-migrants and second largest source of net migrants. Overall, six of the top ten states in terms of gross in-migration were also among the largest providers of net migrants. The last five states in Table 3, Washington, New York, Iowa, Utah, New Jersey, and Wyoming, ranked lower in terms of gross inflows, but because of low outflows to these states, they ranked high in terms of net migration from the state to Oklahoma.

The reasons for the pattern of state-to-state flows shown in Table 3 appear to differ depending upon whether they are gross flows or net flows. As might be expected, large gross flows occurred between Oklahoma and its surrounding states. However, these states were not necessarily the largest sources of net migration flows into Oklahoma. In fact, there were net outflows from Oklahoma to Arkansas, Missouri and Texas. California, New Jersey, and New York, all coastal states, were three of the top sources of net in-migrants. This suggests that, in addition to geographic proximity to Oklahoma, economic factors may underlie the pattern of net migration flows.

Economic Conditions and Oklahoma Migration Flows

To explore the possibility that economic explanations

underlie the net migration patterns, Table 4 presents unemployment rates for the states listed in Table 3. From the first column, we see that of the twelve states that were the greatest contributors of net migrants to Oklahoma in 1995, eight of them had higher unemployment rates than Oklahoma. In particular, unemployment was highest in California, which was the largest contributor of net migrants to Oklahoma. Similarly, New York, New Jersey, and New Mexico had significantly higher unemployment.

However, unemployment rates were also higher in Florida and Texas, two states that gained net migrants from Oklahoma during 1995. Thus, higher unemployment is not always associated with out-migration. In a study of state unemployment rates, Partridge and Rickman (1997) found that after accounting for employment growth differences, states that possessed more desirable climates and location-specific amenities had higher unemployment rates. That is, because of their desirable attributes, more individuals move to the state, even at a greater risk of being unemployed. They also examined the unemployment effects of other characteristics, calculating how much state unemployment rates would be expected to be above or below the national average based on their characteristics assuming equal employment growth across the nation (Partridge and Rickman, 1997, p. 602). Given equal employment growth rates across states, both Florida and Texas were calculated to have higher unemployment rates. Thus, net out-migration would not necessarily be expected. California was estimated to have a higher expected unemployment rate, but not by as much as their unemployment rate exceeded Oklahoma's in 1995.

One of the characteristics mentioned by Partridge and Rickman as increasing unemployment rates was immigration. That is, for a given level of employment growth, immigration increases labor supply and unemployment. Although there may some demand stimulus associated with greater immigration, it may be less than the associated increase in supply, producing a net effect of increasing unemployment.

To assess the effect of immigration, the third column reports the number of new foreign immigrants for 1995-1996 as a share of 1995 population for each state. For example, California's population increased 0.78 percent from 1995-1996 because of immigration. This exceeds that of the other states (and the national average of 0.33 percent), which is part of the reason for their higher unemployment rate. Illinois, New Jersey, and New York also had very high rates of immigration and relatively higher unemployment and net out-migration to Oklahoma. Of the top twelve contributors of net migrants to Oklahoma, nine had rates of immigration that exceeded Oklahoma's. Nevertheless, Florida and Texas had high rates of immigration and relatively higher unemployment, but experienced net in-migration from Oklahoma. The discrepancy appears related to differences in employment growth.

From the fourth column of Table 4, we see that nine of the twelve states that were the largest contributors of net migrants had lower employment growth in 1995 than Oklahoma's. Thus, differences in employment growth may be a slightly better indicator of the direction of net migration flows between states than unemployment rates. For example, even though Iowa and Kansas

had lower unemployment, they had lower employment growth. Again, this derives from Iowa and Kansas expected to have had even have lower unemployment rates than their actual rates in 1995 (Partridge and Rickman, 1997, p. 602). However, Colorado and Utah had both lower unemployment rates, which could not be explained away as being expected, and stronger employment, than Oklahoma; thus, they were anomalies to the expected direction of net migration flows.

What are the likely net migration flows between Oklahoma and these states in 1997 and beyond? To address this question we turn to the second and fifth columns of Table 4. These columns report the corresponding unemployment rates and employment growth rates for 1997 up through the third quarter.

Beginning with California, we see that although unemployment remains above that of Oklahoma, employment growth thus far in 1997 approximates that in Oklahoma. Moreover, the 1997 unemployment rate difference between California and Oklahoma is close to the expected difference given approximately equal employment growth (Partridge and Rickman, 1997, p. 602). Therefore, it is unlikely that Oklahoma will experience significant inflows of migrants from California in 1997 or beyond if current relative employment growth trends continue.

Nevertheless, among other states from which migration to Oklahoma occurred in 1995, employment growth remains relatively weak in Illinois, New Jersey and New York, with growth slowing in Illinois. Employment growth remains lower, and unemployment remains higher (and higher than what would be expected), in New

Mexico and Wyoming. These patterns suggest that out-migration should continue from these states.

Employment growth has slowed in Colorado and Iowa, but unemployment is close to what would be expected in the two states, suggesting little migration. Conditions in Arizona, Florida, and Utah have not changed appreciably. Employment growth is yet stronger in Kansas, but unemployment is still above what would be expected, suggesting possible out-migration. Missouri's employment growth remains lower, and unemployment remains higher, but since Oklahoma lost population to it in 1995, no population gains are expected from Missouri.

Employment growth remains strong in Texas, but its unemployment rate relative to that in Oklahoma is greater than expected. Employment growth slowed significantly and unemployment increased in Arkansas. Thus, although Oklahoma lost population to Arkansas and Texas in 1995, it may gain population in 1997 and beyond if current employment trends continue.

Taken together, the employment and unemployment trends in 1997 suggest future net in-migration into Oklahoma from many of the states examined. It is unlikely, however, that population gains will come from California. Yet, there are other states not examined here, from which there were negligible migration flows to Oklahoma in 1995, that may have had a change in their economic fortunes, producing additional net outflows to Oklahoma.

Quality of Life, Migration Flows, and Unemployment

As discussed earlier, migration flows also may be related to non-monetary quality-of-life factors in a state. Quality-of-life

factors may include those related to a favorable climate, location, environmental quality, and opportunities for recreation. All else equal, higher quality of life leads to greater net in-migration. However, given existing employment conditions, greater in-migration increases unemployment. Therefore, states with higher quality of life may experience both higher net migration inflows and higher unemployment. In addition, all else equal, greater in-migration reduces the wage rate and increases land and housing prices.

Therefore, studies attempting to measure regional quality-of-life differences have examined differences in wage rates, housing prices, migration flows, and unemployment. Blomquist, Berger, and Hoehn (1988) measured quality of life for metropolitan areas in 1980 based on differences in wage rates and housing prices. Greenwood, Hunt, Rickman and Treyz (1991) measured quality of life for states based on 1971-1988 migration flows, controlling for the influence of differences in economic conditions. Similarly, Partridge and Rickman (1997) found that over one-half of observed unemployment differences across states for 1972-1991, that were not related to employment growth differences, could be explained by quality-of-life factors.

Table 5 summarizes the findings of the three studies regarding the states examined above. All three studies suggest that Arkansas, Arizona, California, Colorado, and Florida have a higher than average quality of life. Contrarily, all three studies suggest that both New Jersey and New York have average or below quality of life. Iowa, New Mexico, and Utah have higher

quality of life, but lower unemployment. Contrarily, Illinois, Missouri, and Texas have lower quality of life but higher unemployment. Thus, there are unexplained unemployment differences in these states offsetting quality-of-life influences on unemployment. No consensus emerges for Kansas, Washington, and Wyoming.

The evidence for Oklahoma suggests that it possesses a slightly below average quality of life. That is, migration flows and unemployment were somewhat below what would have been expected given its economic conditions in the 1970s and 1980s. This suggests that in the absence of relatively strong employment growth and low unemployment, domestic in-migration will not occur. Nevertheless, quality of life can change over time. As other areas become more congested, or polluted, the relative attractiveness of the more remote areas of the country may increase.

Conclusion

Historically, changes in Oklahoma employment have been accompanied mostly by changes in labor force participation rates. In addition, though increases in the Oklahoma labor force through natural increases in population lag that of the nation, Oklahoma net migration appears responsive to changes in employment. However, unemployment rates have not always changed in a manner predictable by the changes in employment.

Given the current low rate of unemployment, continued employment growth will most likely have to rely on increased labor force participation rates and net in-migration. Oklahoma labor

force participation rates are below the national average, so they have room to move upwards. Finally, with less robust employment growth, and higher unemployment rates, migration from some other key states will likely continue. Nevertheless, the education and skills of those currently not in the labor force may have to be addressed to be able to bring them into the labor force. Correspondingly, if labor markets become tighter in all states in the nation, in-migration into Oklahoma will diminish.

References

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Table 1
Supply Sources of Oklahoma Employment Growth

Period	Employment (e)[a]	Population (p)[b]	Labor Force (lfpr)[a]	Unemployment (u)[c]
1971-1979[d]	2.60	1.63	0.87	-0.05
1980-1985[d]	2.35	1.64	1.35	0.62
1986-1989[d]	-0.25	-0.94	0.28	-0.39
1990	-0.76	-0.09	-0.70	-0.03
1991	-1.95	0.64	-1.37	1.16
1992	2.45	1.21	0.18	-0.97
1993	0.16	0.84	-0.27	0.38
1994	1.29	0.77	0.19	-0.30
1995	1.41	0.58	-0.37	-1.12
1996	2.56	0.72	1.15	-0.64

[a]Percent change from previous year; Oklahoma Employment Security Commission.
[b]Percent change from previous year; U.S. Bureau of the Census.
[c]Percentage point change from previous year; Oklahoma Employment Security Commission.
[d]Average year-to-year changes during the period.
NA denotes not applicable.

Table 2
Domestic Net Migration into Oklahoma[a]

Period	Net Migration
4/80-7/83[b]	59,586
7/83-4/90[b]	-40,796
4/90-7/91	-3,074
7/91-7/92	15,294
7/92-7/93	5,405
7/93-7/94	1,916
7/94-7/95	4,320
7/95-7/96	10,176

[a]For years 1980 to 1990, migration also includes international immigration and net movement of federal employees and their dependents into and out of the nation, for years after 1990, migration only includes domestic migration.
[b]Annual average during the period.
Source: United States Bureau of the Census.

Table 3
Oklahoma 1995-1996 State-to-State Migration Flows

State	In Migration[a]	Out Migration[b]	Net Migration[c]
Texas	0.220 (1)	0.258	(-0.42)
California	0.087 (2)	0.050	0.400 (1)
Kansas	0.068 (3)	0.060	0.121 (2)
Arkansas	0.066 (4)	0.074	(-0.051)
Missouri	0.046 (5)	0.056	(-0.15)
Colorado	0.035 (6)	0.031	0.062 (3)
Florida	0.031 (7)	0.034	(-0.02)
Arizona	0.024 (8)	0.023	0.023 (11)
Illinois	0.022 (9)	0.021	0.027 (7)
New Mexico	0.019 (10)	0.016	0.046 (5)
Washington	0.018 (15)	0.016	0.027 (7)
New York	0.015 (16)	0.010	0.052 (4)
Iowa	0.010 (24)	0.008	0.025 (10)
Utah	0.008 (31)	0.005	0.026 (9)
New Jersey	0.007 (33)	0.004	0.026 (6)
Wyoming	0.005 (37)	0.003	0.020 (12)

[a]Migration into Oklahoma as a share of total in-migration.
[b]Migration out of Oklahoma as a share of total out-migration.
[c]Positive values are net in-migration as shares of positive net inflows; Negative values are net out-migration as shares of net outflows.
Source: United States Internal Revenue Service, *Statistics of Income*.

Table 4
Comparison of State Economic Performance

State	Unemployment Rate 1995[a]	1997[b]	Immigration 1995-1996[c]	Employment Growth 1995[d]	1997[e]
Texas	6.0	5.5	0.45	2.9	2.9
California	7.8	6.4	0.78	2.3	2.9
Kansas	4.4	3.9	0.11	2.6	3.1
Arkansas	4.9	5.2	0.04	2.8	1.0
Missouri	4.8	4.1	0.08	1.4	2.1
Colorado	4.2	3.3	0.25	3.8	2.0
Florida	5.5	4.9	0.59	3.4	3.5
Arizona	5.1	4.6	0.31	5.5	3.6
Illinois	5.2	4.7	0.33	2.3	1.1
New Mexico	6.3	6.4	0.28	2.0	2.0
Washington	6.4	5.0	0.30	1.4	4.0
New York	6.3	6.3	0.65	0.3	1.3
Iowa	3.5	3.1	0.09	2.5	2.1
Utah	3.6	3.4	0.18	5.6	4.1
New Jersey	6.4	5.5	0.51	0.6	1.6
Wyoming	4.8	4.6	0.07	0.3	0.0
Oklahoma	4.7	3.7	0.11	2.8	3.0

[a]Yearly average unemployment rate.
[b]Yearly average unemployment rate through September 1997.
[c]Immigrants from 7/95-7/96 as a share of 7/95 population.
[d]December year-over-year percent change in nonfarm employment.
[e]September year-over-year percent change in nonfarm employment.
Sources: United States Bureaus of Labor Statistics and Census.

Table 5
Relative Quality of Life[a]

State	Blomquist et al.	Greenwood et al.	Partridge & Rickman
Texas	-	-	+
California	+	+	+
Kansas	+	-	-
Arkansas	+	+	+
Missouri	-	-	+
Colorado	+	+	+
Florida	+	+	+
Arizona	+	+	+
Illinois	-	-	-
New Mexico	+	+	-
Washington	-	+	+
New York	0	-	-
Iowa	+	+	-
Utah	+	+	-
New Jersey	0	-	-
Wyoming	NA	+	-
Oklahoma	0	-	-

[a]+ represents above average, - below average, 0 average, quality of life

NA denotes not available