ARE SMALL URBAN CENTERS MAGNETS FOR ECONOMIC GROWTH?

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Executive Summary

In a report prepared for Georgia Power, DRI/McGraw Hill stated that distance to Atlanta was an important factor in determining the growth rate of Georgia counties (Alexander, et al., 1993). The implication from that report is that the Atlanta region is a “magnet” for economic growth in the state. It is also possible that smaller “urban centers” play a similar role in the economic development of their regions, as DRI/McGraw Hill found for Atlanta, but on a smaller scale. This report addresses two questions regarding regional economic growth and small urban centers:

- To what extent do small urban centers impact job growth in their home counties?
- To what extent do small urban centers impact job growth in neighboring counties?

Specifically, we seek to answer the question of whether small Georgia cities, cities with 10,000 to 75,000 residents, have been magnets for economic growth in their regions.1 If small cities are job magnets, state and federal economic development policy should look to these small cities as potential engines of regional growth.

Our results indicate that the presence of small cities is associated with significant job growth in their home counties; however, the estimated benefits to contiguous counties are small in magnitude. On average, a county experienced an 18.2 percentage point greater total job growth over a decade for each small city located within its county limits. Given that average total job growth was 22.6 percent per decade, the impact of small cities on home county job growth is large indeed.

Our estimates suggest that neighboring counties benefit from the “magnetic attraction” of smaller cities as well. However, these benefits are modest in magnitude relative to the benefits to home counties. We estimate that each small city leads to a 3.2 percentage point increase in total county job growth in neighboring counties.

Considering only non-agricultural private sector job growth, our estimates suggest that a county experienced a 10.0 percentage point increase in private sector job growth over a decade for each small city located within the county limits. This estimate is much smaller than the effect of cities on total job growth in home counties.

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1 There are five cities in Georgia with populations that exceeded 75,000 in 1990: Albany, Atlanta, Columbus, Macon, and Savannah.
Are Small Urban Centers Magnets For Economic Growth?

counties. The effects of small cities on surrounding counties are somewhat larger for non-agricultural private sector job growth than those estimated for total job growth. We estimate that each small city leads to a 4.9 percentage point increase in county private sector job growth over a decade in a neighboring county.

For manufacturing job growth, our estimates suggests that a county experienced a 5.0 percentage point increase in manufacturing job growth over a decade for each city between 10,000 and 75,000 residents located within the county limits. This estimate is much smaller than the effects of cities on total and private sector job growth in home counties, and we do not have a high level of confidence that this result is statistically different from zero. We estimate that each small city leads to a 3.1 percentage point increase in county manufacturing job growth over a decade in a neighboring county. It appears that the type of manufacturing present in Georgia is not as likely as other private sector industries to locate in or near small cities.

The results in this study suggest small cities in Georgia have been magnets for total and private sector employment growth that accrues to home and neighboring counties. Although home counties experience large benefits from the presence of small cities, the benefits to surrounding counties are smaller. However, we cannot detect a large tendency for manufacturing jobs to locate in or near small cities. This may be due to these firms desiring to be in larger cities (near their markets) or rural areas (near natural resources or other inputs) in order to maximize profits.

Our evidence of the benefits of cities on their regional economies is indirect in nature. The models we estimate literally measure the fact that there has been an increasing agglomeration trend of non-manufacturing jobs, not just in metropolitan Atlanta, but in smaller Georgia cities as well. The fact that the presence of small cities in a county or nearby has an impact on county job growth does not directly imply that adding jobs to small Georgia cities will benefit their regional economies more than adding those same jobs to a large city or a rural area. Nevertheless, our evidence is consistent with the economic theory on the benefits of cities; for various reasons, cities provide fertile grounds for firms and jobs to incubate and expand. Our results suggest that the magnetic attraction of cities like Atlanta is present for these smaller cities—albeit on a smaller scale—as well. We believe that our results
provide indirect evidence that the presence of and proximity to small cities may cause more economic growth in home and neighboring counties relative to more rural areas. Moreover, our results suggest that these smaller cities in Georgia, not just metro Atlanta, may have been engines of job growth over the past few decades.

Given that this research provides only indirect evidence, it should not be the sole determinant of state economic development policy. However, given our indirect evidence is consistent with the economic theory of cities and suggests that this theory applies to even the small cities in the analysis, we are comfortable in recommending that state policymakers look to the smaller cities in Georgia as incubators for regional job growth. Metropolitan Atlanta has not been the only place in Georgia to experience large rates of job growth; Georgia counties containing smaller cities have grown as well.
I. Introduction

In a report prepared for Georgia Power, DRI/McGraw Hill stated that distance to Atlanta was an important factor in determining the growth rate of Georgia counties (Alexander, et al., 1993). The implication from this report is that the Atlanta region is a “magnet” for economic growth in the state. This result is consistent with the findings of Voith (1998). Using national data, Voith considers the impacts that large cities (over 100,000 residents) have on their suburban economies. Voith’s research finds that the economies of cities with over 500,000 residents have an impact on the economies of their suburbs, but he finds no impact of economies of cities between 100,000 and 500,000 residents on their surrounding suburbs (Voith ignores smaller cities in his analysis).1

Voith’s study used population and income growth as economic measures. It is possible that city job growth has an even more important impact on their regional economies than Voith’s economic measures. It is also possible that smaller “urban centers” play a role in the economic development of their regions, as DRI/McGraw Hill found for Atlanta, but on a smaller scale. We know of no study that addresses the role of small “urban centers” in the regional economic development process. We do not know whether economic growth of a small “urban center” affects economic growth in its surrounding region. This report addresses two questions regarding economic growth from small urban centers:

- To what extent do small urban centers impact job growth in their home counties?
- To what extent do small urban center impact job growth in neighboring counties?

Specifically, we seek to answer the question of whether small Georgia cities, that is, cities with 10,000 to 75,000 residents, have been magnets for economic growth.2 We exclude the 10-county metropolitan Atlanta region from the analysis,

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1 Voith (1998) considers the impact that city income and population growth have on the income, house values, and population growth of their suburbs.

2 The impact of Georgia cities over 75,000 residents, Albany, Atlanta, Columbus, Macon, and Savannah, are not considered in the analysis.
which frames the study as relevant for considering economic development policies outside metropolitan Atlanta.³

If small cities are job magnets, state and federal economic development policy should look to these small cities as potential engines of regional growth. Our results indicate that the presence of small cities is associated with significant job growth in their home counties; however, the estimated benefits to contiguous counties are small in magnitude. We note that our evidence should not be interpreted as direct evidence that the presence of small cities cause economic growth in their home and surrounding counties. Nevertheless, our results suggest that counties that contain small cities and, to a lesser extent, counties that are close to small cities experienced greater job growth, other things equal. Like Atlanta, these small cities have been magnets for economic growth, albeit to a smaller extent. This increase in the geographic concentration of jobs into Georgia’s small cities (10,000 to 75,000 residents) implies that economic development policies could look to these smaller cities to generate regional economic growth.⁴

Section II contains a discussion of the theory that underlies our empirical work and the empirical methodology. Sections III and IV describe the data and results. Policy implications are presented in Section V.

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³ Estimates from excluding only the 5-county region proved to be highly similar to the results presented in this report.
⁴ Evidence in support of this conclusion has also been found by Edmiston (2001), who examines the issue of small urban center job growth (via the location of a new large firm) on job growth in their home counties. His research finds that for every 10 jobs created from a large firm location in a county, there is 1 additional spillover job created in the county.

2
II. Theory and Methodology

Voith (1998) has shown that cities with over 250,000 residents have an important impact on their regional economies. Although he found no evidence that smaller cities (100,000 to 250,000 residents) have an impact on the incomes, population, and house values in their regional economies, it may be the case that cities of this size, and even smaller ones, do have an impact on job growth in their region. The theoretical basis for this possibility comes from the answers given to the question, why do cities exist? Urban economists have long agreed on the reasons why economic activity tends to cluster in and around cities. The following is a list of these reasons. This list is not meant to be exhaustive, but merely to demonstrate the potential benefits for business firms from clustering in—or close to—cities.5

1) *Economies of scale in input production.* Business firms take inputs and transform them into outputs for sale. If firms that produce some of these inputs experience lower costs per unit of production as their production scale increases, then firms who make and firms who use these inputs have an incentive to congregate together in a city. The economies of scale will allow the input producers to sell their inputs at a lower price and make higher profits—a winning situation for all parties.

2) *Lower transportation costs.* By locating in cities, business firms may experience lower transportation costs when receiving inputs and for transporting outputs to consumers, as there are more consumers in the city. A given city may house a central transportation node or be convenient to an important transportation artery.

3) *Labor pooling.* Firms who use the same skill type(s) of labor may benefit from having a pool of workers of the skill type(s) required living in or nearby the city. These labor pools make hiring less expensive. If business firms congregate together in cities, then workers who possess the skills that the firms need have the incentive to live in or near the city in order to secure employment, which creates the labor pool.

4) *Knowledge spillovers.* Firms in the same industry, especially different niches of the same industry, benefit by locating near one another, which facilitates the rapid exchange of information and diffusion of technical knowledge. Formal and informal exchanges of information can benefit all firms in the area, and these exchanges are more likely to occur when firms are located closer to one another—in cities.

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5 For a longer treatment of why cities exist, see chapter two of O’Sullivan (2000). This chapter also provides a long list of empirical studies that provide evidence in favor of the existence of each one of the following reasons why many business firms have an incentive to locate in or near cities.
Each of these four conditions suggest why business firms have an incentive to congregate together in cities—firms can earn higher profits, and thus can pay higher wages, in cities. Thus, an agglomeration of business firms in a city may act as if it were a magnet to attract other businesses to the city or nearby.

If conditions 1-4 are ever true, they are more likely to occur in large metropolitan areas like Atlanta. However, it is possible that if business firms have an incentive to locate in and around cities, then business firms would have a tendency to locate in or near smaller cities in Georgia, as well. This study examines the latter possibility.

Location choices for business firms will also depend on the particular characteristics of the industries in which they operate. The nature of some industries may mean that firms in these industries may earn greater profits by locating outside of small metropolitan areas. Firms in these industries may find it more profitable to:

- Locate near the natural resources, like timber, or other inputs that are more expensive to transport than the finished or intermediate goods they produce.
- Locate in rural areas where land and labor costs are lower.
- Locate in large metropolitan areas near the majority of their customers or specialized labor.

Therefore, firms in different industries may have different incentives regarding locations. For example, some firms may wish to be in or near large cities to benefit from a larger pool of educated workers, while other firms may prefer to locate in rural areas because of the more inexpensive land. Given these theoretical possibilities, our empirical work considers separately the impact of the presence and proximity of small cities on total job growth, private sector job growth, and manufacturing job growth.

We seek to estimate the effects of proximity to smaller urban centers on the economies of surrounding areas. To that end, we estimate a statistical model that seeks to explain county job growth. Specifically, we seek to explain the determinants of county job growth rates over a 10-year period in Georgia counties, where JOB_GROWTH(t) equals the percentage increase in the number of jobs located in the

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6 Glaeser and Mare’ (2001) document that workers earn higher wages in cities, all else equal.
4
county over a ten year period. We model the determinants of job growth rates in each county as follows:

\[(1) \text{JOB\_GROWTH}(t) = f[\text{POP}(t-10), \text{DEN}(t-10), 1990, \text{JOBS}(t-10), \text{DIST\_ATLANTA}, \text{CITY1075}, \text{BORDER1075}]\]

where

\(\text{POP}(t-10)\) is the county population 10 years previously; ("t" indexes annual time periods).

\(\text{DEN}(t-10)\) is the county population density 10 years previously.

1990 is a dummy variable that equals 1 if t is 1990 and zero otherwise.

\(\text{JOBS}(t-10)\) is the number of jobs in the county ten years previously. Economists suggest that economic activity in different regions should converge over time as business firms seek to move to areas with lower wages, which suggests that job growth rates will be higher in areas with fewer jobs at the start. Numerous empirical studies of growth rates across nations have verified this theory, as low-income nations have tended to grow at faster rates than wealthier nations. Thus, the impact of \(\text{JOBS}(t-10)\) on \(\text{JOB\_GROWTH}(t)\), all else equal, is expected to be negative.

\(\text{DIST\_ATLANTA}\), distance to Atlanta, has been shown in previous research to be an important predictor of economic growth in Georgia counties.

\(\text{CITY1075}\) is the number of cities between 10,000 and 75,000 residents located within the county.

\(\text{BORDER1075}\) is the number of cities between 10,000 and 75,000 residents located in bordering counties.

To explain how \(\text{CITY1075}\) and \(\text{BORDER1075}\) are constructed, consider the following examples: Appling County has no cities within its county limits that have between 10,000 and 75,000 residents. Therefore, \(\text{CITY1075}\) equals “0” for Appling County. However, Toombs County, which borders Appling County, has one city that contains between 10,000 and 75,000 residents, Vidalia. Therefore, \(\text{BORDER1075}\) equals “1” for Appling County. Columbia County, in another example, has two cities with between 10,000 and 75,000 residents—Evans and Martinez. Thus, \(\text{CITY1075}\) equals “2” for Columbia County. Since the counties that border Columbia contain three cities that have between 10,000 and 75,000 residents (Augusta, South Augusta, and West Augusta), \(\text{BORDER1075}\) equals “3” for Columbia County.
The purpose of our empirical work is to estimate the impact that CITY1075 and BORDER1075 have on county JOB_GROWTH, all else equal. The hypotheses to be tested are that having small cities within one’s county borders (CITY1075 > 0) leads to greater job growth in the home county and that having small cities in neighboring (border) counties (BORDER1075 > 0) leads to greater job growth as well.
III. Data

Using data from the U.S. Department of Commerce’s Bureau of Economic Analysis, we estimate the effect of proximity to small urban centers on home and surrounding (border) county job growth. These data come from the Regional Economic Information System, 1969-1997 CD-Rom (REIS). Information on the number of jobs in various industry classifications located in each Georgia county and Census data for 1970, 1980, and 1990 are included in the REIS data.

Table 1 lists the 61 Georgia cities that are used in the analysis. Using mapping software and Census geocoded information, we computed distance from each county to the city of Atlanta, geographic centroid to geographic centroid. This distance measure is used as determinant of county employment growth.

| TABLE 1. GEORGIA CITIES WITH 10,000 TO 75,000 RESIDENTS IN 1990 |
|-----------------------|------------------|-------------------|------------------|
| Alpharetta            | Douglas          | Lawrenceville     | Roswell          |
| Americus             | Douglasville     | Lithia Springs    | Sandy Springs    |
| Athens               | Druid Hills      | Mableton          | Smyrna           |
| Augusta              | Dublin           | Marietta          | Snellville       |
| Bainbridge           | Dunwoody         | Martinez          | South Augusta    |
| Belvedere Park       | East Point       | Milledgeville     | St. Simons       |
| Brunswick            | Evans            | Moultrie          | Statesboro       |
| Candler-McAfee       | Forest Park      | Mountain Park     | Thomasville      |
| Carrollton           | Fort Benning South| Newnan            | Tifton           |
| Cartersville         | Fort Stewart     | North Atlanta     | Tucker           |
| College Park         | Gaines School    | North Decatur     | Valdosta         |
| Cordele              | Gainesville      | North Druid Hills | Vidalia          |
| Covington            | Griffin          | Peachtree City    | Warner Robins    |
| Dalton               | Hinesville       | Redan             | Waycross         |
| Decatur              | La Grange        | Rome              | West Augusta     |
|                      |                  |                   | Wilmington Island|

Table 2 contains summary statistics for Georgia counties between 1970 and 1990 used to estimate the growth model described in Section II. As shown in Table 2, the counties under study average about 22,300 residents on average and 12,000 total jobs. Approximately 8,900 of these 12,000 jobs are in the non- agricultural

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7 City populations were calculated for the year 1990 in order to determine which cities were to be considered in the analysis.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Definition</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>JOBS (t-10)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Employment</td>
<td>Total county employment</td>
<td>11,948</td>
<td>18,724</td>
<td>311</td>
<td>129,285</td>
</tr>
<tr>
<td>Private Employment</td>
<td>Total county private employment</td>
<td>8,902</td>
<td>14,741</td>
<td>154</td>
<td>109,079</td>
</tr>
<tr>
<td>Manufacturing Emp.</td>
<td>Total county manufacturing employment</td>
<td>2,685</td>
<td>3,673</td>
<td>20</td>
<td>26,350</td>
</tr>
<tr>
<td>JOB_GROWTH_TOT</td>
<td>% change in total county employment (decade)</td>
<td>22.6%</td>
<td>28.1%</td>
<td>-36.0%</td>
<td>195.1%</td>
</tr>
<tr>
<td>JOB_GROWTH_PVT</td>
<td>% change in county private employment (decade)</td>
<td>28.1%</td>
<td>32.9%</td>
<td>-44.2%</td>
<td>175.4%</td>
</tr>
<tr>
<td>JOB_GROWTH_MAN</td>
<td>% change in county manuf. employment (decade)</td>
<td>16.4%</td>
<td>51.1%</td>
<td>-87.4%</td>
<td>323.4%</td>
</tr>
<tr>
<td>DIST_ATLANTA</td>
<td>Distance to city of Atlanta (miles)</td>
<td>130.01</td>
<td>62.14</td>
<td>32.57</td>
<td>271.74</td>
</tr>
<tr>
<td>CITY 1075</td>
<td>Number of cities of this size in county</td>
<td>0.24</td>
<td>0.53</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>BORDER 1075</td>
<td>Number of cities of this size in neighboring counties</td>
<td>1.47</td>
<td>1.53</td>
<td>0</td>
<td>9</td>
</tr>
<tr>
<td>POP (t-10)</td>
<td>Number of residents, 10 years previously</td>
<td>22,324</td>
<td>29,677</td>
<td>1,814</td>
<td>202,220</td>
</tr>
<tr>
<td>DEN (t-10)</td>
<td>Persons per square mile, 10 years previously</td>
<td>69</td>
<td>108</td>
<td>4</td>
<td>780</td>
</tr>
<tr>
<td>N</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>298</td>
</tr>
</tbody>
</table>


**Summary statistics for all 149 Georgia counties outside the 10-county Atlanta metropolitan area for the years 1980 and 1990. For county observations for 1980, lagged variables come from 1970.
private sector. Over this time period, these counties averaged almost 2,700 manufacturing jobs.

Job growth rates are computed for $t=1980$ and $1990$ in the following manner (we use $t=1980$ as an example):

$$\text{JOB\_GROWTH}(1980) = \frac{\# \text{Jobs in 1980} - \# \text{Jobs in 1970}}{\# \text{Jobs in 1970}}$$

Job growth rates in these counties has occurred more rapidly in the non-agricultural private sector—28.1 percent per decade in the non-agricultural private sector versus 22.6 percent per decade overall.

Two growth statistics in Table 2 are stark:

- Job growth rates vary dramatically across these counties and cities as evidenced by the large standard deviations, especially manufacturing job growth.
- Manufacturing job growth rates are, on average, low (16.4 percent job growth per decade) compared to the private sector overall.

Finally, population density is very low on average in these counties (69 persons per square mile).
IV. Results

To answer the policy questions regarding the impact of smaller Georgia cities on their regional economies, we estimated the following equation, which is consistent with the expression in (1):

\[ \text{JOB\_GROWTH} = \beta_0 + \beta_1 \text{JOBS (t-10)} + \beta_2 \text{1990} \]
\[ + \beta_3 \text{DIST\_ATLANTA} + \beta_4 \text{CITY1075} + \beta_5 \text{BORDER1075} \]
\[ + \beta_6 \text{POP (t-10)} + \beta_7 \text{DEN (t-10)} + \varepsilon, \]

where the \( \beta \)'s are coefficients to be estimated, \( \varepsilon \) is an error term that allows for unobserved factors to affect county employment growth, and all the variables are defined in Table 2. All variables on the right-hand-side of equation (2) are factors that influence county job growth rates. If small cities have a large economic impact on their home counties, then the estimate of \( \beta_4 \) will be positive and large. If small cities have an impact on the economies of neighboring counties, then the estimate of \( \beta_5 \) will be positive and large.

Population (POP(t-10)) and population density (DEN(t-10)) are included as county controls to see whether county growth rates vary by these factors. We have no a priori assumption about the effects of these variables on county job growth.

An estimate of \( \beta_1 < 0 \) would mean that counties that started out with a lower level of JOBS (t-10) would experience the highest rates of growth, where JOBS(t-10) for 1980, for example, equals the number of jobs present in the county in 1970. This negative coefficient estimate is a standard result in theoretical and empirical studies of economic growth. Barro and Sala-I-Martin (1999) present a good survey of the field.

A. Regression Results

Equation (2) is the model of policy interest. The dependent variable in equation (2) is county JOB\_GROWTH. We estimate three models consistent with equation (2) by ordinary least squares. The three regressions seek to explain, respectively, total employment growth, private sector employment growth, and manufacturing employment growth in counties. The results from these three regressions are reported in Tables 3, 4, and 5.
TABLE 3. TOTAL COUNTY JOB GROWTH REGRESSION

<table>
<thead>
<tr>
<th>Variable**</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>B₀</td>
<td>0.132</td>
<td>0.045</td>
</tr>
<tr>
<td>1990 Dummy Variable</td>
<td>B₁</td>
<td>-0.048</td>
<td>0.029</td>
</tr>
<tr>
<td>TOTAL_JOBS (t-10)</td>
<td>B₂</td>
<td>-0.00003</td>
<td>0.00001</td>
</tr>
<tr>
<td>DIST_ATLANTA</td>
<td>B₃</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>CITY 1075</td>
<td>B₄</td>
<td>0.182</td>
<td>0.035</td>
</tr>
<tr>
<td>BORDER 1075</td>
<td>B₅</td>
<td>0.032</td>
<td>0.010</td>
</tr>
<tr>
<td>POP (t-10)</td>
<td>B₆</td>
<td>0.00001</td>
<td>0.00000</td>
</tr>
<tr>
<td>DEN (t-10)</td>
<td>B₇</td>
<td>0.00057</td>
<td>0.00033</td>
</tr>
</tbody>
</table>

R² = 0.21
N=298

Dependent variable is County JOB_GROWTH_TOT.
*Indicates statistically significant at the 10 percent level.
**See Table 2 for variable definitions and summary statistics.

NOTE: The 1990 dummy variable equals “1” if the year is 1990 and “0” if the year is 1980.

In Table 3, we report results from an empirical model that explains the county total employment growth rate. Total employment includes all jobs located within the jurisdiction—private sector, public sector, and agricultural employment. We estimate a large, positive, and statistically significant coefficient on CITY 1075. This estimate suggests that a county experienced, on average, an 18.2 percentage point greater total job growth over a decade for each city between 10,000 and 75,000 residents located within its county limits. Given that average total job growth was 22.6 percent per decade, the impact of small cities on home county job growth is large indeed.

The positive estimate on BORDER1075 suggests that neighboring counties benefit from the magnetic attraction of smaller cities as well. However, these benefits are modest in magnitude, relative to the benefits to home counties. We estimate that each city located in a neighboring county leads to a 3.2 percentage point increase in county job growth over a decade for cities with 10,000 to 75,000 residents. This coefficient is statistically significant at conventional levels.

In Table 4, we report results from an empirical model that explains non-agricultural private sector employment growth. We estimate a large, positive, and statistically significant coefficient on CITY1075. The estimate suggests that a county experienced a 10.0 percentage point increase in private sector job growth over a
TABLE 4. COUNTY PRIVATE SECTOR JOB GROWTH REGRESSION

<table>
<thead>
<tr>
<th>Variable**</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>B_0</td>
<td>0.143</td>
<td>0.054</td>
</tr>
<tr>
<td>1990 Dummy Variable</td>
<td>B_1</td>
<td>0.032</td>
<td>0.036</td>
</tr>
<tr>
<td>TOTAL_JOBS(t-10)</td>
<td>B_2</td>
<td>-0.00003</td>
<td>0.00001</td>
</tr>
<tr>
<td>DIST_ATLANTA</td>
<td>B_3</td>
<td>-0.00012</td>
<td>0.00030</td>
</tr>
<tr>
<td>CITY1075</td>
<td>B_4</td>
<td>0.100</td>
<td>0.041</td>
</tr>
<tr>
<td>BORDER1075</td>
<td>B_5</td>
<td>0.049</td>
<td>0.012</td>
</tr>
<tr>
<td>POP(t-10)</td>
<td>B_6</td>
<td>0.00001</td>
<td>0.00000</td>
</tr>
<tr>
<td>DEN(t-10)</td>
<td>B_7</td>
<td>0.00051</td>
<td>0.00040</td>
</tr>
</tbody>
</table>

R^2 0.15
N=298

Dependent variable is County JOB_GROWTH_PVT.
*Indicates statistically significant at the 10 percent level.
**See Table 2 for variable definitions and summary statistics.

Note: The 1990 dummy variable equals “1” if the year is 1990 and “0” if the year is 1980.

decade for each city between 10,000 and 75,000 residents located within the county limits. This estimate is much smaller than the effect of cities on total job growth in home counties. The positive estimate on BORDER1075 suggests the presence of economic benefits to neighboring counties, and these benefits are somewhat larger than those estimated in the total job growth regression. We estimate that each city in a neighboring county leads to a 4.9 percentage point increase in county private sector job growth over a decade. These coefficients are statistically significant at conventional levels.

In Table 5, we report results from an empirical model that explains manufacturing employment growth. We estimate a small coefficient on CITY1075 that is not statistically significant. The estimate suggests that a county experienced a 5.0 percentage point increase in manufacturing job growth over a decade for each city between 10,000 and 75,000 residents located within the county limits. This estimate is much smaller than the effects of cities on total and private sector job growth in home counties. The positive estimate on BORDER1075 suggests the presence of economic benefits to neighboring counties, but these benefits are somewhat smaller than those estimated in the total and private sector job growth regression. We
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TABLE 5. COUNTY MANUFACTURING JOB GROWTH REGRESSION

<table>
<thead>
<tr>
<th>Variable**</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>B₀</td>
<td>0.164</td>
<td>0.089</td>
</tr>
<tr>
<td>1990 Dummy Variable</td>
<td>B₁</td>
<td>-0.168</td>
<td>0.058</td>
</tr>
<tr>
<td>TOTAL_JOBS(t-10)</td>
<td>B₂</td>
<td>-0.00004</td>
<td>0.00002</td>
</tr>
<tr>
<td>DIST_ATLANTA</td>
<td>B₃</td>
<td>0.00048</td>
<td>0.00051</td>
</tr>
<tr>
<td>CITY1075</td>
<td>B₄</td>
<td>0.050</td>
<td>0.066</td>
</tr>
<tr>
<td>BORDER1075</td>
<td>B₅</td>
<td>0.031</td>
<td>0.019</td>
</tr>
<tr>
<td>POP(t-10)</td>
<td>B₆</td>
<td>0.0000018</td>
<td>0.0000030</td>
</tr>
<tr>
<td>DEN(t-10)</td>
<td>B₇</td>
<td>0.00047</td>
<td>0.00064</td>
</tr>
</tbody>
</table>

R² 0.07
N=298

Dependent variable is County JOB_GROWTH_MAN.
*Indicates statistically significant at the 10 percent level.
**See Table 2 for variable definitions and summary statistics.
NOTE: The 1990 dummy variable equals “1” if the year is 1990 and “0” if the year is 1980.

estimate that each city located in a neighboring county leads to a 3.1 percentage point increase in county manufacturing job growth over a decade. It appears that the type of manufacturing present in Georgia is not as likely as other private sector industries to locate in or near small cities.

B. Discussion of Results

The results of this study suggest small cities in Georgia have been magnets for total and private sector employment growth that accrues to home and neighboring counties. Although home counties experience large benefits from the presence of small cities, the benefits to surrounding counties are smaller. However, we cannot detect a large tendency for manufacturing jobs to locate in or near small cities. This may be due to reasons stated previously—these firms may desire to be in larger cities (near their markets) or rural areas (near natural resources or other inputs).

Our evidence benefits of cities on their regional economies is indirect in nature. The models we estimate literally measure the fact that there has been an increasing agglomeration trend of non-manufacturing jobs, not just in metropolitan Atlanta, but in smaller Georgia cities as well. The fact that the presence of small cities in one’s county or nearby has an impact on county job growth does not directly imply that adding jobs to small Georgia cities will benefit their regional economies.
more than adding those same jobs to a large city or a rural area. Nevertheless, our evidence is consistent with the economic theory on the benefits of cities; for the reasons discussed in Section II, cities provide fertile grounds for firms and jobs to incubate and expand. Our results suggest that the “magnetic attraction” of cities like Atlanta is present for these smaller cities—albeit on a smaller scale—as well. We believe that our results provide indirect evidence that the presence of and proximity to small cities may cause more economic growth in home and neighboring counties relative to more rural areas. Moreover, our results suggest that these smaller cities in Georgia, not just metro Atlanta, may have been engines of job growth over the past few decades.
V. Policy Implications

If small urban centers are an important force in generating economic growth, then state policy regarding economic development needs to reflect that. The analysis in this paper detects an effect of small urban centers on their regional economies. Our results are in contrast with the one previous study on the subject, Voith (1998), which found that cities with over 500,000 residents had an impact on their suburbs, while cities that had between 100,000 and 500,000 residents did not. Perhaps the difference is due to the different measures of economic activity—job growth in this study versus income, population, and housing values in Voith’s research. It is likely that job creation provides a greater economic stimulus to a region than income, population, or house value growth.

Given that this research provides only indirect evidence, it should not be the sole determinant of state economic development policy. However, given our indirect evidence is consistent with the economic theory of cities and suggests that this theory applies to even the small cities in the analysis, we are comfortable in recommending that state policymakers look to the smaller cities in Georgia as incubators for regional job growth. Metropolitan Atlanta has not been the only place in Georgia to experience large rates of job growth; these smaller cities in Georgia have grown as well.
References


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