# The Effect of Local Economic Development Policy on Employment Growth in Rural Counties in the Mid-Atlantic Region

**Sara-Beth James**

**Thomas W. Ilvento**

**Steven E. Hastings**

University of Delaware

**FOOD
& RESOURCE
ECONOMICS**

# The Effect of Local Economic Development Policy on Employment Growth in Rural Counties in the Mid-Atlantic Region

By

Sara-Beth James
Graduate Research Assistant
sbjames@udel.edu


Dr. Thomas W. Ilvento
Professor
ilvento@udel.edu

Dr. Steven E. Hastings
Professor
hastings@udel.edu


Department of Food and Resource Economics
University of Delaware
213 Townsend Hall
Newark, DE 19716
Voice: 302-831-6773          Fax: 302-831-6243

May 2002

## <u>ABSTRACT</u>

**The Effect of Local Economic Development Policy on Employment Growth in Rural Counties in the Mid-Atlantic Region**

**Sara-Beth James**
**Thomas W. Ilvento**
**Steven E. Hastings**
University of Delaware

This paper analyzes the role of local economic development strategies on employment. Data were collected on employment changes in 146 nonmetro counties along with a survey of economic development offices (99 surveys, 67.8%). Using OLS, results show that counties that increased economic development emphasis had higher employment growth.

# INTRODUCTION

Local economic development professionals are searching for the correct recipe of strategies to induce the greatest employment gain. Traditional policy strategies used by local governments are tax benefits, low interest loans, labor force training programs, and other strategies used to promote economic growth. One measure of their success is defined as an increase or decrease in total employment relative to the county. From the perspective of the economic development official, the community should optimize the combination of development strategies into a package that will be beneficial to businesses, without imposing too high cost on the community (Blair, 1995). In other words, the goal of community economic development is to diversify the local economy by engaging in development programs that result in employment opportunities for the existing labor force (Blakeley, 1994).

Although nonmetro areas have enjoyed the economic prosperity of the 1990s, not all nonmetro areas have shared equally in the economic boom (Gibbs, 2001). Specifically, the most remote nonmetro areas have not achieved the same magnitude of economic prosperity as those closer to metro areas (Gibbs, 2001). Also, a divergence still remains between metro and nonmetro areas with respect to growth, because rural areas are at a disadvantage by design caused by differences in population density and economic base (Gibbs, 2001).

The research objective of this paper is to examine the effect of the local economic development activities of nonmetro counties in Delaware, Maryland, Pennsylvania, Virginia and West Virginia on local employment growth. This relationship will be evaluated by first comparing the mix of development tools used in the study counties. Second, the effect of local economic activities on employment will be determined using OLS regression analysis, while controlling for classic location factors, which conceptualize firm location and growth.

The focus of this paper examines the local government economic development strategies on employment growth. Past research has found inconclusive results when looking at the relationship between economic growth and local policies devoted to economic development (Walzer & Gruidl, 1991). Some studies have found a positive relationship while others show little or no relationship. This research seeks to add to the literature by analyzing the role of local economic development on employment growth. Specifically, this research studies the different

programs established for the purpose of job creation and business recruitment and expansion, and their success in generating employment growth, while controlling for alternative explanations.

## <u>LITERATURE REVEIW</u>

Traditional location theory forms the economic model used to predict industry location decisions by identifying location factors.  This theory suggests that firms tend to locate in areas that are in proximity to markets, formally known as agglomeration.  Agglomeration means that a firm's production costs are lowered due to the presence of other industries.  Also another theory, the product-life cycle theory conceptualizes industry location based on the product or production process growth stage.  Basically, this theory predicts that rural areas will benefit from products that are in the final stage of growth due to cheaper labor, which is common to nonmetro areas.

There are a wide variety of tools and strategies designed to promote economic growth available to local economic development officials.  This section will discuss some common economic development strategies used by local governments that were identified by *The County Government Survey: Changes and Challenges in the New Millennium* (2001).  Business retention and expansion, business attraction, and small business development programs were recognized as major strategies used by local governments; however, this list of strategies is by no means exhaustive.  Business retention and expansion programs emphasize working with existing businesses to improve their efficiency.  Business attraction programs focus on the recruitment of new firms by offering incentives to reduce business costs.  Small business development programs seek to assist and promote local business formation and efficiency.   While these programs collectively overlap in the some of the services provided, it is important to recognize the goals of each program individually.

Location theory provides the conceptual framework for the factors that influence economic growth.  The motivational assumption of this theory is that firms seek to maximize profit when selecting a site location (Blair, 1995).  Although location theory assumes profit maximization, the underlying objective of this model is employment maximization through characteristics associated with location theory.   Therefore, the theory assumes that location is selected based on both production costs at alternative locations and the existing market

conditions.  As would be expected, each location has a different set of unique cost and market characteristics.

Location theory assumes that location factors are categorized into primary and secondary factors.   Primary factors involved in the decision-making process include transportation costs, the relative market, labor supply, personal management objectives, and the accessibility of raw materials (Blair. 1995).   The primary factors involve costs associated with production, raw material supply, and other cost factors.  The primary location factors, also known as classic location factors have historically explained industry location decisions based on basic cost factors (Blair & Primus, 1993).

Secondary factors associated with firm location decisions include government incentives, taxes, education and the quality of life (Blair & Primus, 1993).  Note that incentives and taxes are included in this category and reflect the use of local development initiatives.  These factors form the basis of this research, while controlling for the primary factors in an econometric model.

The role of secondary factors in theory has expanded with the declining importance of the classic location factors.  Specifically, research conducted by Gruidl and Walzer (1992) addressed how traditional economic development policies affect employment growth in Illinois communities using a classic location model.   The results of the study indicate that that indirect policy, measured as per capita property tax and municipal spending, were statistically significant in explaining employment growth, and the direct policy measures were not (Gruidl & Walzer, 1992).  Direct policy measures were incentives offered by the government, such as industrial revenue bonds and labor force training programs, were not statistically significant  (Gruidl & Walzer, 1992).  This implies that public services were more important to employment growth than specific policy targeted at business attraction or expansion (Gruidl & Walzer, 1992).

Location theory, agglomeration effects, and the product-life cycle collectively give insight into economic growth and incorporate the role of local economic development policy into the analysis.  Location theory provides insights into factors that determine where economic growth occurs, and how these factors influence cost factors.  The economic model for this paper will be established based on the location factors established in this theory.   Agglomeration effects further describe the characteristics of the local economy that result in economic growth.  A diversified economy benefits firms by minimizing costs due to the presence of other services.

Finally, the product life cycle associates the stages of the production process and how it attributes to nonmetro growth. The theories collectively give insight into the factors that determine the location of a firm in nonmetro areas and the effect of economic development strategies on economic growth. However, these theories do not prescribe the cause of industry location decisions. They merely hypothesize important factors associated with nonmetro employment growth.

In conclusion, business retention and expansion, business recruitment and attraction, and small business development programs are some of the common strategies used by communities to stimulate economic growth. It is expected that communities that actively engage in these strategies will result in increased employment. Moreover, business costs will be reduced by these incentives leading to an increase in profits.

## DATA AND METHODS

The study area consisted of non-metropolitan counties in Delaware, Maryland, Pennsylvania, Virginia, and West Virginia. The county entity was selected as the unit of analysis because it is the most reasonable entity to measure local based economic development activity. The county entity is sufficient in size to identify local economic activity, the county government is often responsible for planning and economic development activity, and data are available. Previous research used the county as the unit of analysis (Aldrich & Kusmin, 1997; Lewis & Smith, 1997).

Non-metropolitan counties were selected because they often engage in similar, local economic development strategies. Metro and urban areas were excluded from this study in order to limit the range of diversity. Nonmetro counties face similar challenges in creating effective economic development strategies. The study area was selected according to 1993 Rural-Urban Continuum as designated by the Beale codes. Beale codes characterize counties into metropolitan and nonmetropolitan designations, and further refine county types by their urban population and proximity to metropolitan areas (Butler & Beale, 1993).

There are 146 nonmetropolitan counties in the study area that met the criteria of nonmetropolitan. Those counties assigned an even numbered code are adjacent to metro areas and odd numbered codes are not adjacent. Adjacency will be an independent variable in the

model.  It is expected that counties that are adjacent to metro areas will be positively related to employment growth.

A survey was conducted to obtain measures for the level and strength of local economic development activities in the study region.  The goal of the survey was to contact a local county official to gain insight into current economic development programs at the county-level.  Economic development contact information for each county was obtained through web sources and phone calls.   When contact information could not be obtained or the county did not have an economic development official, the survey was sent to a local government official.

The survey instructions allowed the respondent to forward the survey to a more appropriate individual in the event they felt they were not the ideal contact.  Respondents were asked to identify their occupation and indicate if their county had an economic development official on staff.  Also, respondents were given the option to leave any question blank if they were uncertain or uncomfortable with the content.

Survey questions pertained to activities that the county participated in the past decade and current trends.   This was necessary in order to capture the effect of past activity on current employment patterns.  Respondents were asked to indicate the activity level of organizations or groups within the county.  Specifically, this question was asked because many counties have several cities and towns with separate economic development organizations.  Additional survey questions pertained to: the economic development tools or incentives used to attract or expand new and existing firms, the importance level of several community development activities and goals, and if their county had an official website.

The survey, entitled "Strategies For Economic Growth" was designed based on the Tailored Design Approach, crafted by Dillman (2000).  This approach consisted of three major contacts.  The first contact was a mailing consisting of a cover letter, survey, and a postage-paid envelope.  It was mailed to the county economic development contact on January 11, 2002.  To encourage response, a postcard reminder, was mailed to the county informant on January 25, 2002.  The second contact was mailed on January 29th; non-respondents were mailed the same components as the first mailing.  Finally, a final contact was made by phone to the county office to encourage response either by phone or fax beginning February 25th and concluded on March 15th.

The validly of a survey depends on a high response rate. Overall, there were 146 surveys mailed in the initial mailing. There were four returned as undeliverable. The undeliverable surveys were remailed after further investigation produced valid address information. The second mailing consisted of 114 counties. The total response rate, as a result of the mailings was 47.2 percent (69 responses). Beginning February 25th, non-respondents were contacted via the phone as a follow-up reminder and were given the option to complete the survey over the phone or receive an additional copy of the survey by fax or mail. Three officials answered the survey questions by phone, and 27 respondents faxed the completed survey. The final response rate, as a result of the mailings and phone contact, was 67.8 percent (99 responses).

Secondary data were obtained from the Census Bureau, the Bureau of Labor and Statistics (BLS), and the Regional Economic Information System (REIS), produced by the Bureau of Economic Analysis (BEA). This data was used to create several county-level variables used in this research. Employment and manufacturing income data was obtained from the REIS and was measured based on place of work. The percent of the population with a bachelor's degree was obtained from the *1990 Census of Population and Housing*, collected by the Census Bureau. The unemployment rate was acquired from the BLS.

Additional county-level data was found through Internet investigation. First, the presence of a community college or university was obtained from Universities.com (www.universities.com). Universities.com has information on over 7,500 domestic colleges and universities. Second, interstate highway information was obtained from both Mapquest.com and the TIGER mapping engine provided by the Census Bureau (www.mapquest.com, www.tiger.census.gov). It was necessary to map the study region in order to obtain county-level interstate highway data. Finally, airport data and information was obtained from the Federal Aviation Administration (www.faa.gov).

## ANALYSIS

Of the respondents, 34.3 percent (34 respondents) were identified as a county economic development professional. Respondents were asked to indicate the activity-level (from not active to active) of organizations or groups that participated in economic development activities during the time period of 1990 to 2000. Eighty percent of the respondents indicated that their county government was very active (45 percent) or active (35 percent). Also, 68 percent of the

respondents reported the state government as very active (23 percent) or active (47 percent) in economic development activities. In comparison, only 41 percent indicated that the federal government was very active (4 percent) or active (37 percent).

Respondents were asked to indicate the importance of several economic development activities during the 1990s and currently. The activities were existing business retention and expansion, recruiting new firms, local small business development, helping new business starts, tourism development, and labor force training programs. Over time, the importance level in percentage terms increased for every category. Specifically, 51 percent specified existing business and retention activities as very important from 1990 to 1999, and eighty-three percent indicated that the current level of importance devoted to this activity as very important. Especially significant is the magnitude of the change in importance of labor force training programs. In the previous decade, 22 percent indicated that labor force training programs were very important, and currently 53 percent specified these programs as very important.

Respondents were asked to specify the use of several development incentives as tools to attract or expand new and or exiting firms. This question also reflected both past and current use and included the use of tax benefits, land, infrastructure assistance, labor force training programs, and low interest loans. Overtime, the number of counties offering incentives to both new and existing firms has increased. Most significant, the use of labor force training programs as a development tool increased over the time period, from 48 percent to 66 percent.

The major thesis of this paper will be analyzed using OLS regression analysis. The following economic model is used to evaluate the relationship between employment growth and a set of independent variables.

Y= $f$ (Local Economic Development Activity; Labor Quality; Labor Cost; Labor Supply; Agglomeration Economies; Adjacency; Highway; Airport) + $\mathbb{C}$

The dependent variable used in this economic model will be local employment growth, which is measured as the absolute change in total employment (1990-1999). Employment data was obtained from the Bureau of Economic Analysis. The total employment gain will used as a proxy for economic growth. Based on the Gain Model, it is necessary to include the employment in the base year as a statistical control (Kessler & Greenberg, 1981).

The independent variables are included in the model to explain the variation in local employment growth. The independent variables are described in two categories: (1) the classic location factors and (2) the variables created from the survey used to capture the effect of local economic development activitiess.

**Classic Location Factors.** The primary and secondary factors of location theory form the conceptual basis for this research. The classic location factors, which include both primary and secondary factors, reflect the effect of the labor quality, labor cost, labor supply, agglomeration economies, adjacency to metro areas, highway access, and distance to a large hub airport.

- **Labor Quality:** The quality of labor is expected to positively affect employment growth because theory predicts a skilled labor force benefits firms (Blair, 1995). This concept will be measured using two variables. First, a dummy indicating the presence of a community college or university (COLL) within the county and the percent of the population 25 years old and over with a bachelor's degree or higher (COLDEG) will be included in the model to control for the effect of the labor force quality. Gruidl and Walzer (1992) found a positive relationship between the percentage of the population with a high school diploma and employment growth. Also, results from the *1996 Rural Manufacturing Survey* report that the lack of skilled labor quality and quantity are the most important factor associated with nonmetro business locations (Gale et al., 1999). As a result, it is expected that an area with skilled labor will positively influence business location decisions and employment for that area.

- **Labor Cost:** Labor cost will be measured as the average income per manufacturing employed (MANINC). This is used as a proxy for a wage. It is expected to have a negative effect on employment growth because higher wages are predicted to deter business development (Aldrich & Kusmin, 1997).

- **Labor Supply**: Labor supply is included in the model to address the issue of labor availability. It is hypothesized that areas with significant amounts of available labor will benefit new businesses. This factor is important because labor cost is a large proportion of production costs (Blair & Premus, 1993). The effect of the labor supply will be measured by the unemployment rate (UNEMP). The unemployment rate may be measuring something about the county that indicates the workforce may not be employable or a negative characteristic of the county, which deters business location. Therefore, it is hypothesized

that the relationship between the unemployment rate and employment growth is different from zero.

- **Agglomeration Economies:** Agglomeration economies exist when a variety of industries are concentrated in a geographic area, causing a reduction of business costs (Blair, 1995). It is expected that a county with a diverse industrial base will be less volatile in the event the primary industry shuts down or downsizes.

       Agglomeration effects will be measured using the coefficient of specialization (COS), which uses employment data that was obtained from the Bureau of Economic Analysis (BEA). The COS measures how the local distribution of employment deviates from the distribution of employment of a base region (Isard, 1960). The COS is calculated for each county using the sum of the positive or negative differences between the local region (each study county) and the base region. The COS equation is notated by the following:

$$COS = \frac{1}{2} \sum_{i=1}^{k} |C_i\text{-}R_i|$$

This equation is similar to the Index of Dissimilarity (Coulter, 1989), where k is the number of industry sectors, $C_i$ is the proportion of employment in sector *i* for the county, and $R_i$ is the proportion of employment in sector *i* for the base region. The base region is all counties, both nonmetro and metro, in the study region (Delaware, Maryland, Pennsylvania, Virginia, and West Virginia). The proportion of employment was calculated for nine industry sectors. The industry sectors were: (1) extractive (farm, agricultural services, and mining), (2) construction, (3) manufacturing, (4) transportation and public utilities, (5) wholesale trade, (6) finance, insurance, and real estate, (7) retail trade, (8) services, and (9) government.

      It is assumed that the distribution of employment in the base region ($R_i$) is perfectly diversified (Isard, 1960). The COS value is bounded between zero and one. In other words, a COS equal to zero indicates the local region's employment was distributed proportionately in the exact same way as the region; thus, it would be considered perfectly diversified. The maximum COS is approximately one and would indicate that the local region is perfectly specialized. Therefore, based on theory the COS is expected to have an inverse relationship with employment growth.

- **Adjacency:** Rural-urban continuum codes are used to determine if the county is adjacent to metro areas (Cook & Mizer, 1993). A dummy variable was established to account for the effect of the county's location relative to metro counties (ADJ). Counties with a code of four, six, or eight are nonmetro adjacent counties and are assigned a one. Nonadjacent counties coded five, seven, or nine, are assigned a zero. This variable is expected to positively affect employment growth, i.e. counties that are adjacent to metro areas should be positively related to employment growth.

- **Highway**: The proximity and access of interstate highways is included in the model, because businesses are expected to locate in areas with better access to markets (Aldrich & Kusmin, 1997). This variable (HWY) will be measured as a dummy variable indicating if an interstate highway intersects the county. However, this intersection does not indicate that there is direct access or an exit in the county.

- **Airport:** Many rural communities feel that poor airport accessibility negatively affects their ability to attract new firms to their county (Gale & Brown, 2000). The *1996 Rural Manufacturing Survey* reported access to airports was most likely cited as a concern by manufacturers located in the most rural areas (Gale et al., 1999).

    Airport access (AIRPORT) will be measured by the number of miles to the nearest large or medium hub air facility. This information was obtained from the Federal Aviation Administration. The FAA defines hub based on the volume of traffic. A large hub is defined as a hub with at least one percent of U.S. emplanements (Gale & Brown, 2000). An emplanement is a single occurrence of boarding an airplane (Gale & Brown, 2000). A medium hub accounts for 0.25-0.99 percent of U.S. emplanements (Gale & Brown, 2000). Airport accessibility is expected to positively influenced business location and employment. However, based on this measure, the distance to a large or medium hub is expected to be inversely related to employment growth.

**Measures of Local Economic Activity.** Local economic development is the primary focus of this thesis. The survey data will provide several variables to account for the effect of local economic development on employment growth. It is expected that local economic development activities will have a positive effect on employment growth. However, past research has found inconclusive evidence with regard to this relationship (Lewis & Smith et al., 1997).

Local economic development activities are expected to have a positive effect on employment growth. The following variables are included in the model from the survey to measure the effect of local economic development.

- **Economic Development Importance:** EDIMPORT is a variable based on a scale that indicates the importance of development strategies within the county. This data was obtained from Question 8 of the survey. These strategies include: a marketing strategy to promote county, the improvement of public education, a formal job training program, the improvement or construction of a local airport, the redevelopment or beautification of the downtown, the improvement or expansion of highways, and others. Respondents were asked to rate the strategies by the following criteria: (1) not important, (2) somewhat important, (3) important, or (4) very important. A scale was created to measure the total level of importance for economic development activities (EDIMPORT).

- **Incentives**: Two dummy variables were created to measure the use of tax incentives (TAX) and labor force-training programs (TRAIN) as development tools to attract and expand both new and existing firms. The TAX and TRAIN variables will be measured by a dichotomous or binary variable for each activity based on the response for the pervious decade (1990-2000). It is expected that counties that offered tax incentives and labor force training programs experienced higher employment growth.

- **Local Economic Development Structure:** Two dichotomous or binary variables, were created that indicate whether or not the county had an economic development professional on staff during the 1990s (DEVPRO), and whether or not the county had an official website (WEBSITE).

- **Gain in Economic Development Importance:** The final variable from the survey will be the change in the total importance of a set of economic development activities (PROGAIN). These programs are labor force training, existing business retention and expansion, local small business development, new business starts and tourism development programs. Respondents were asked to rate the importance of labor force training programs by the following criteria: (1) not important, (2) somewhat important, (3) important, or (4) very important. This question was asked for two time periods: the previous decade and the current time period (2001). The measure was calculated by subtracting the value of the past activity from the current activity value. Therefore, a zero indicates that the activity did not increase

in importance.  A positive value indicates that the level of importance increased and a negative value would indicate that the level of importance decreased.  Then the numerical values for each category were added together to form a scale.

The  following table summarizes the variable measures used in this research and their hypothesized relationship to employment growth.

**Summary of Independent Variables**

| Variable | Description | Hypothesized Relationship |
| --- | --- | --- |
| EMP90 | Employment in base year (1990) | Positive |
| EDIMPORT TAX TRAIN DEVPRO WEBSITE PROGAIN | Local Economic Development Activities | Positive |
| COLL | Community College or University Presence | Positive |
| COLDEG | Percent of Population with Bachelor's degree | Positive |
| MANINC | Average Manufacturing Income | Negative |
| UNEMP | Unemployment Rate | Different from zero |
| COS | Coefficient of Specialization | Negative |
| ADJ | Adjacency to Metro Areas | Positive |
| HWY | Interstate Highway Access | Positive |
| AIRPORT | Distance to Large or Medium Airport Hub | Negative |

## ANALYSIS AND RESULTS

The number of observations in the analysis ranged from 146 (the number of counties in the study area to 99 (the number of responses of the survey) and to 94 (due to missing values).

For example, the coefficient of specialization (COS) was calculated from employment data that was obtained from the Bureau of Economic Analysis (BEA). There were several employment sectors with missing or undisclosed data for some counties, which reduced the number of observations to 131.

Overall, there was considerable change in total employment (dependent variable) over the time period. The average gain was 1,768 jobs with a standard deviation of 2,773. The minimum was 4,887 jobs lost, and the maximum was 14,926 jobs gained. The $Q^2$ is a measure of change that characterizes how the counties employment changed (Kessler & Greenberg, 1981). The $Q^2$ is based on the average squared gain over time. It can be mathematically broken down into a component that measures relative or individual change (counties shifting position over time) and change due to everyone gaining (a constant change that effects all counties equally). For this variable, 29 percent of the change over time was due to the counties gaining employment equally, while 71 percent reflected relative shifts among the counties. This measure shows that most of the change reflected shifts among counties, i.e., some counties had higher gains than others.

The average coefficient of specialization (COS) was 0.26 and ranged from 0.07 to 0.52. The value of 0.26 means that the average county's distribution of employment is 26 percent more specialized then the distribution of employment in the entire region (Delaware, Maryland, Pennsylvania, Virginia, and West Virginia).

Another important statistic is the average gain in total importance of economic development activities (PROGAIN). The average PROGAIN was 4.11 and ranged from –5.0 to 14.0. While the average is positive and indicates that most counties increased the overall importance of economic development activities from the previous decade, the total importance in some counties declined.

**Variable Description and Descriptive Statistics**

| Name | Description | N | Mean | Std. Dev. | Min | Max |
|------|-------------|---|------|-----------|-----|-----|
| GAIN | Employment Gain (1990 to 1999) | 146 | 1768 | 2773 | -4887 | 14926 |
| EMP90 | Total employment in 1990 | 146 | 14908 | 14578 | 1064 | 65948 |
| COLL | College presence | 146 | 0.45 | 0.50 | 0.00 | 1.00 |
| COLDEG | Proportion with college degree | 146 | 10.48 | 4.09 | 4.20 | 31.60 |
| ADJ | Adjacency to metro county | 146 | 0.56 | 0.50 | 0.00 | 1.00 |
| HWY | Interstate highway intersection | 146 | 0.35 | 0.48 | 0.00 | 1.00 |
| AIRPORT | Miles to large hub airport | 146 | 105.03 | 43.57 | 28.43 | 228.51 |
| COS | Industry concentration index | 131 | 0.26 | 0.09 | 0.07 | 0.52 |
| MANINC | Average manufacturing income | 146 | 22180 | 6150 | 8849 | 44327 |
| UNEMP | Unemployment rate | 146 | 7.92 | 4.00 | 2.40 | 22.00 |
| EDIMPORT | Scale of local economic development importance | 94 | 19.64 | 4.34 | 7.00 | 28.00 |
| TAX | Use of tax incentive as development tool | 99 | 0.61 | 0.49 | 0.00 | 1.00 |
| TRAIN | Use of labor training incentive as development tool | 99 | 0.68 | 0.47 | 0.00 | 1.00 |
| DEVPRO | Presence of economic development professional | 99 | 0.65 | 0.48 | 0.00 | 1.00 |
| WEBSITE | Official county website | 99 | 0.75 | 0.44 | 0.00 | 1.00 |
| PROGAIN | Scale of gain in total importance of economic development activities | 95 | 3.22 | 4.11 | -5.00 | 14.00 |

**Location Factor Models**

OLS regression analysis was used to test the significance of the traditional location factors and local economic development factors on employment growth. The dependent variable in all of the models is the employment gain (1990-1999). The location factor models are presented in the following table.

The bivariate relationship between the gain in total employment (1990-1999) and the total employment (EMP90) in the base year (1990) is positive and presented Model 1. This model shows that on average, the counties gained employment over the time period and counties with larger employment bases tended to have larger employment gains. The base value is an important control for any gain model and must be included in the analysis (Kessler & Greenberg, 1981). As expected, EMP90 is statistically significant at the 99 percent level.

Model 2 provides additional control for the states in which the counties are located - PA, WV, and VA. The state dummy variables will be included in all of the models to statistically control for policy and tax differences between states. There is only one Delaware county in the study, and this county was included in Maryland, which was the reference category. The state variables were statistically significant and negatively associated to employment growth. This means that average employment growth for the county is lower in Pennsylvania (PA), Virginia (VA), and West Virginia (WV) compared to MD/DE. The coefficient of determination or R-Square for Model 2 is 0.48. The adjusted R-Squared imposes a penalty for additional independent variables by using a degrees of freedom adjustment for estimating the error variance (Wooldridge, 2000). The adjusted R-Square for Model 2 is 0.46.

Locational factors are incorporated into Model 3 and 4. Model 3 includes all of the location factors that were obtained from secondary data sources. The proportion of population with a college degree (COLDEG), the coefficient of specialization (COS), and the highway access (HWY) variables were statistically significant in explaining the employment gain and exhibited the expected relationship with the gain. All other variables were not statistically significant. The adjusted R-square for Model 3 is 0.51.

**Regression Models**

| Variables | Model 1 | Model 2 | Model 3 | Model 4 | Model 5 | Model 6 |
|---|---|---|---|---|---|---|
| Intercept | [a]-150.81 | 1603.37 | 1908.67 | 1841.85 | 317.82 | 907.51 |
|  | [b](280.15) | *(755.51) | (1642.77) | (1250.86) | (2317.81) | (1690.98) |
| EMP90 | 0.13 | 0.13 | 0.09 | 0.10 | 0.10 | 0.10 |
|  | **(0.01) | **(0.01) | **(0.02) | **(0.01) | **(0.02) | **(0.02) |
| PA |  | -2309.67 | -2092.62 | -2282.28 | -2471.79 | -2474.59 |
|  |  | **(762.36) | **(784.49) | **(750.34) | **(996.97) | **(914.80) |
| WV |  | -1733.58 | -1231.71 | -1522.06 | -1600.53 | -1638.62 |
|  |  | *(784.59) | (907.95) | *(785.79) | *(1092.66) | *(1007.18) |
| VA |  | -1728.52 | -1430.83 | -1514.26 | -1663.71 | -1753.18 |
|  |  | *(752.62) | *(754.55) | *(740.69) | *(993.77) | *(930.40) |
| COLL |  |  | 302.38 |  |  |  |
|  |  |  | (425.96) |  |  |  |
| COLDEG |  |  | 100.68 | 102.08 | 171.65 | 172.19 |
|  |  |  | *(55.50) | *(51.33) | *(74.91) | **(70.19) |
| ADJ |  |  | -98.40 |  |  |  |
|  |  |  | (392.54) |  |  |  |
| HWY |  |  | 787.40 | 682.29 | 914.19 | 870.75 |
|  |  |  | *(419.52) | *(406.65) | (548.27) | *(519.00) |
| AIRPORT |  |  | 5.44 |  |  |  |
|  |  |  | (5.64) |  |  |  |
| COS |  |  | -4915.26 | -4994.43 | -5778.65 | -5446.94 |
|  |  |  | *(2463.00) | *(2418.58) | (3609.07) | *(3203.61) |
| MANINC |  |  | -0.01 |  |  |  |
|  |  |  | (0.03) |  |  |  |
| UNEMP |  |  | -82.25 |  |  |  |
|  |  |  | (73.16) |  |  |  |
| PROGAIN |  |  |  |  | 140.30 | 122.41 |
|  |  |  |  |  | *(71.01) | *(61.65) |
| EDIMPORT |  |  |  |  | 26.30 |  |
|  |  |  |  |  | (70.44) |  |
| DEVPRO |  |  |  |  | -46.59 |  |
|  |  |  |  |  | (548.89) |  |
| WEBSITE |  |  |  |  | 36.53 |  |
|  |  |  |  |  | (564.70) |  |
| TAX |  |  |  |  | -50.85 |  |
|  |  |  |  |  | (570.83) |  |
| TRAIN |  |  |  |  | 268.09 |  |
|  |  |  |  |  | (613.49) |  |
| $R^2$ | 0.44 | 0.48 | 0.56 | 0.55 | 0.58 | 0.57 |
| Adjusted $R^2$ | 0.43 | 0.46 | 0.51 | 0.52 | 0.50 | 0.53 |
| Number of Observations | 131 | 131 | 131 | 131 | 88 | 88 |

Significance Level *=$\leq$.05  **=$\leq$.01
[a]=Parameter Estimate
[b]=Standard Error

Due to many insignificant variables and the lack of statistical evidence, a reduced model was tested using COLDEG, HWY, and COS.  These location factors will be included in the

models that incorporate the local economic development measures. These location factor variables were selected because of the statistical significance in previous models, and these variables had the expected sign that was consistent with the initial hypotheses. By omitting the insignificant variables the analysis is further refined. This analysis is presented in Model 4. COLDEG, COS, and HWY remained statistically significant and consistent with the expected relationship to the gain. The adjusted R-square was 0.52 for this model.

## Local Economic Development Models

Model 5 incorporates the local economic development variables while controlling for the significant location factors (COLDEG, COS, and HWY), the base employment (EMP90) and the state control variables. Of the economic development variables, only PROGAIN was statistically significant. The adjusted R-square for Model 5 was 0.50.

Model 6 is a reduced analysis that includes the location factors established in Model 4 and the PROGAIN variable. PROGAIN was the significant local economic development variable. Results indicate that all of the variables were statistically significant in explaining the employment gain. A significant finding in Model 6 is the effect of the PROGAIN variable. Specifically, the effect of PROGAIN confirmed the central hypothesis of this study. Counties that increased the importance of local economic development activities, from 1990 to 2001, had a statistically positive impact on the employment gain. The parameter estimate for PROGAIN was 122.41 which implies that a one-unit increase in the PROGAIN would lead to the expectation of a gain in 122 jobs.

## CONCLUSIONS

The primary objective of this paper was to examine the effect of local economic development strategies on employment growth while controlling for the classic location factors. The classic factors that were significantly associated with employment growth were the coefficient of specialization (COS), highway access (HWY), and the proportion of the population with a bachelor's degree (COLDEG). The coefficient of specialization (COS) was included in the model to control for the effect of industry diversification and the local market. Results from the OLS regression analysis indicated that this is a significant variable in explaining employment growth and had the expected inverse relationship. The highway access variable (HWY) was

included in the model to control for the effect of transportation costs and was found to be statistically significant. The proportion of the population with a college degree (COLDEG) was included in the model to control for the effect of the quality of labor, and was also found to be statistically significant.

The survey results provide insight into the various economic development activities, strategies, and tools used at the county-level. Results indicate that forty-five percent of the respondents believed their county government was very active. Overall, the importance of several economic development activities increased overtime. Especially significant, is that for the previous decade twenty-two percent of respondents felt that labor force training programs were very important and currently fifty-three percent indicated that this program was very important.

Several independent variables were created from the survey to control for the effect of economic development on employment growth. The PROGAIN variable was the only variable with explanatory power and was positively associated with the employment gain. However, these results do not indicate that other local economic development activities do not generate positive economic development outcomes. The data simply indicates that evidence does not support the hypothesis that these factors are positively associated with employment growth.

Local economic developers should carefully evaluate the effect of incentives and tools used to promote growth. Based on the regression results, many of the variables created to measure local economic development were not statistically significant in explaining employment growth. However, results from the survey indicate that the importance and use of development tools and strategies has increased since the previous decade.

Also, economic development professionals must identify the tools and strategies that influenced businesses to locate in their county. After these factors have been identified, developers must market these tools and strategies to new and existing firms. The business visitation program may also give insight into the factors and incentives that are most attractive to existing and new businesses for the specific location.

Future research should encompass both metro and nonmetro counties, while controlling for this difference, to examine the effect of local economic development. Also, survey responses should be obtained from more than one respondent per county. This may better account for the economic development activities for the entire county.

Also, better insight into the use and level of state and federal funding offered may account for the differences in the activity-level of the county economic development programs. Economic development professionals must identify the tools and strategies that influenced businesses to locate in their county.  After these factors have been identified, developers must market these tools and strategies to other firms.

# BIBLIOGRAPHY

Aldrich, L. and Kusmin, K.  (1997, September) [economic research service report]. <u>Rural Economic Development: What Makes Rural Communities Grow?</u> Washington, DC: United States Department of Agriculture.

Bartik, T. (1991). Who Benefits From State and Local Economic Development Policies? Kalimazoo: Upjohn Institute.

Blair, J.P. (1995). <u>Local Economic Development: Analysis and Practice</u>.  Thousand Oaks: Sage.

Blair, J.P. & Premus, R. (1993). Location Theory. In R.D. Bingham & R. Mier (Eds). <u>Theories of local economic development: perspectives from across the disciplines</u>. (pp. 3-26) Newberry: Sage.

Blakely, E.J. (1994) <u>Planning Local Economic Development: Theory and Practice</u>.  Thousand Oaks: Sage.

Bonnen, J.T. (1975). Improving Information on Agriculture and Rural Life. <u>American Journal of Agricultural Economics, 57</u>. 753-763.

Butler, M.A. & Beale, C.L. (1994). Rural-Urban Continuum Codes for Metro and Nonmetro Counties (AGES 9425). Washington, DC: U.S. Department of Agriculture.

Cook, P.J. and Mizer K.L. (1994). <u>The Revised ERS County Typology</u> (Rural Development Research Report Number 89). Washington, DC: U.S. Department of Agriculture.

Coulter, P.B. (1989). <u>Measuring Inequality</u>. Boulder: Westview Press.

Dillman, D.A. (2000). <u>Mail and Internet Surveys: The Tailored Design Method</u>. New York: John Wiley & Sons, Inc.

Gale, F. & Brown, G. (2000). How Important is Airport Access for Rural Businesses? <u>Rural America, 15</u>(3) 16-24.

Gale, H.F., McGranahan, D. A., Teixeira, R., and Greenberg, E. (1999). <u>Rural Competitiveness: Results of The 1996 Rural Manufacturing Survey</u> (Agricultural Economic Report Number 776). Washington, DC: United States Department of Agriculture.

Gibbs, R. (2001). Nonmetro Labor Markets in the Era of Welfare Reform. <u>Rural America, 16</u>(3) 11-21.

Kessler, R.C. & Greenburg, D.F. (1981). <u>Linear Panel Analysis: Models of Quantitative Change</u>. New York: Academic Press.

Kraybill, D. & Labao, L. (2001, July). <u>County Government Survey: Changes and Challenges in the New Millennium</u> (Rural County Governance Center Research Report No. 1). Ohio: The Ohio State University.

Lewis, W. & Smith, S.M. (1997, April). <u>Community Economic Activeness and Manufacturing Employment Change</u> (Staff Paper No. 311) University Park, PA: Pennsylvania State University.

Rathge, R. W., Goreham, G. A. & Nundahl, D. (1992). The Role of Rural Community Development Corporations in Economic Development. <u>Journal of the Coummunity Development Society, 23</u> (2), 39-52.

Walzer, N. and Guidl, J.S. (1991). Local Economic Development: Perceptions and Actions of Small City Officials in Illinois.  In N. Walser (Ed)., <u>Rural community economic development</u>. New York: Praeger Publishers.

Walzer, N. and Gruidl, J.S.  Does Local Economic Development Policy Affect Community Employment Growth?  <u>Journal of Community Development Society, 23</u> (2), 53-65.

# The Department of Food and Resource Economics
## College of Agriculture and Natural Resources
## University of Delaware

The Department of Food and Resource Economics carries on an extensive and coordinated program of teaching, organized research, and public service in a wide variety of the following professional subject matter areas:

### Subject Matter Areas

Agricultural Finance

Agricultural Policy and Public Programs

Environmental and Resource Economics

Food and Agribusiness Management

Food and Fiber Marketing

International Agricultural Trade

Natural Resource Management

Operations Research and Decision Analysis

Price and Demand Analysis

Rural and Community Development

Statistical Analysis and Research Methods

The department's research in these areas is part of the organized research program of the Delaware Agricultural Experiment Station, College of Agriculture and Natural Resources. Much of the research is in cooperation with industry partners, other state research stations, the USDA, and other State and Federal agencies. The combination of teaching, research, and service provides an efficient, effective, and productive use of resources invested in higher education and service to the public. Emphasis in research is on solving practical problems important to various segments of the economy.

The department's coordinated teaching, research, and service program provides professional training careers in a wide variety of occupations in the food and agribusiness industry, financial institutions, and government service. Departmental course work is supplemented by courses in other disciplines, particularly in the College of Agriculture and Natural Resources and the College of Business and Economics. Academic programs lead to degrees at two levels: Bachelor of Science and Masters of Science. Course work in all curricula provides knowledge of tools and techniques useful for decision making. Emphasis in the undergraduate program centers on developing the student's managerial ability through three different areas, Food and Agricultural Business Management, Natural Resource Management, and Agricultural Economics. The graduate program builds on the undergraduate background, strengthening basic knowledge and adding more sophisticated analytical skills and business capabilities. The department also cooperates in the offering of an MS and Ph.D. degrees in the inter disciplinary Operations Research Program. In addition, a Ph.D. degree is offered in cooperation with the Department of Economics.

For further information write to:     Dr. Thomas W. Ilvento,  Chair
                                      Department of Food and Resource Economics
                                      University of Delaware
                                      Newark, DE 19717-1303

UNIVERSITY OF DELAWARE.