Econometric Method for Estimating the Impact of Tourism Spending on County Employment in South Carolina

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ABSTRACT

Tourism can promote job growth and income growth in regional economies. Policymakers in the regional government promote tourism to bring outside money into the local economy. Using accommodation tax revenue data published by the South Carolina Department of Revenue, this paper estimates the employment impact of tourism spending in South Carolina counties. The OLS regression results show that increased tourism spending, as measured by the accommodation tax, leads to increased total county employment, increased county employment in the accommodation sector (NAICS 721), increased county employment in full-service restaurant sector (NAICS 7221) and increased county employment in arts, entertainment, and recreation sector (NAICS 71).

KEYWORDS: Tourism Spending, Economic Development, Economic Impact

Introduction

Tourism generates multiple economic benefits in the local economy. Tourists spend money on accommodation, food service, and amusement and recreational activities to name a few. According to Trinajstic, Baresa, and Bogdan (2018), "Tourism is currently one of the largest and most dynamically developing sectors of the world. Tourism expansion is considered to be a potential mode for achieving growth and development." Tourism has the potential to generate job growth and increase the incomes of workers in the local economy (Cunha & Cunha, 2005).

Tourism spending has both direct and indirect effects leading to higher employment and wages in the local economy. Understanding the relationship between tourism and economic development is an important tool for business owners and policymakers. No precise economic measure of tourism exists. The NAISC code does not list "tourism" among the long list of industries classified in the system. Researchers and policymakers are left to construct reasonable measures of tourism. A tourist

Materials and Methods

Data

Tourism cannot be directly measured using employment and income data. No single NAICS code encompasses tourism-related employment and/or tourism-related income. Smith (1995) classifies tourism-related industries into two tiers: Tier 1 and Tier 2. Tier 1 industries receive close to 100% of their revenue from tourists while Tier

an be a person traveling for leisure and recreation, traveling to visit friends or relatives, traveling for business, or professional reason, to name a few. For this research, tourism, or tourist, refers to anyone from outside the area of interest, or county. This research attempts to measure the employment impact of tourism in local economies, counties, in South Carolina.

Using input-output analysis for the Romanian tourism sector, Surugiu (2009) finds for every 1,000 RON, employment increased by 0.023 in hotels and restaurants. Based on the 2009 exchange rate between the US Dollar and the Romanian RON, each additional $1 million increased hotel and restaurant employment by about 69 jobs. Horvath and Frechtling (1999) calculate the employment multiplier for hotels and lodging to be 7.54 jobs for every $1,000,000 in the Washington, DC area. Their employment data also included amusement and recreation services. Thompson (2007) measured the employment multiplier in Nebraska counties to be 370 additional jobs for an additional $1,000,000 spending in tourism lodging sales.

2 industries receive anywhere between 10% to 90% of their revenue from tourists (Smith, 1995). Hotels fall into Smith's Tier 1 group. This research uses NAICS code 721 for Accommodation. The NAICS code for accommodation includes hotels, motels, and bed and breakfast establishments as well as recreational accommodations. Tier 2 industries include full-service restaurant sector (NAICS 7221), drinking places (NAICS 7224) and arts, entertainment and recreation sector (NAICS 71) All county and state-level employment data were

obtained from the US Census Bureau's County Business Patterns dataset. US Census Bureau's estimates of county population and state population were also used. Other data include county-level data on employment and unemployment. These data were obtained from the US Bureau of Labor Statistics.

The primary measure of tourism spending is based on the South Carolina Department of Revenue's annual reports from 2004 through 2017. Each annual report includes county-level data on the amount of accommodations tax revenue collected by the Department of Revenue. The accommodations tax in South Carolina is a 2% tax on top of the 6% sales tax. Total accommodations spending is calculated by dividing the accommodation tax revenue for a county by 2%. All tax revenue data are in 2010 dollars. Summary statistics for all data are presented in Table 1.

Table 1
Summary Statistics of Variables

	Obs.	Mean	Std. Dev.	Min	Max
Accommodation Spending	611	53,500,000	146,000,000	12,382	903,000,000
County Population	644	100,754	108,524	9,001	506,552
Total County Employment	644	34,269	49,419	880	237,218
Total State Employment	644	1,617,319	90,538	1,502,853	1,866,451
County Population	644	100,754	108,524	9,001	506,552
County Employment (NAISC 721)	508	750	1,621	3	9,245
State Employment (NAISC 721)	633	27,357	2,176	23,596	31,822
County Employment (NAISC 7221)	320	1,827	2,449	8	11,747
State Employment (NAISC 7221)	364	73,431	3,091	68,926	79,465
County Employment (NAISC 7224)	223	195	257	2	1,315
State Employment (NAISC 7224)	464	3,338	570	2,648	4,630
County Employment (NAISC 71)	458	752	1,081	2	5,258
State Employment (NAISC 71)	636	24,990	1,752	22,078	28,105
State Population	644	4,634,696	242,159	4,210,921	5,021,219
County Labor Force	644	47,275	54,095	2,666	248,650
Hwy	644	.57	.50	0	1

Data issues arise in smaller counties with only a few establishments. To maintain confidentiality, the County Business Pattern data include a range of values rather than an actual numerical value. These data were treated as missing data in the analysis. Similar issues exist with the South Carolina Department of Revenue's reporting of accommodation tax revenue.

Empirical Strategy

The empirical strategy closely followed by Thompson (2007). The first step was to estimate county-level employment as a function of accommodation spending and other independent variables. Equation (1) shows the OLS model used.

$$\Delta Employment_{it} = b_0 + b_1 \Delta Pop_{it} + b_2 \Delta AccSpending_{it} +$$

$$b_3 \Delta StateEmployment_{it} + b_4 \Delta LaborForce_{it} + b_5 Hwy + b_6 Beach \ (1)$$

The dependent variable *(Employment)* is total employment in county *i* in year *t*. Independent variables include the change in estimated county population (*Pop*) for county *i* in year *t*, the change in accommodation tax revenue (*Acc Spending*) for county *i* in year *t*, the change in state employment (*State Employment*), change in the labor force (Labor Force) for county *i* in year *t*. A dummy variable for a county that borders the Atlantic Ocean, *(Beach)*. Five counties have borders with the Atlantic Ocean: Beaufort, Charleston, Colleton, Georgetown, Horry, and Jasper. The variable (*Hwy)*, is a dummy variable for whether an interstate highway runs through the county. For the purpose of this research, the interstate highways include I-95, I-85, I-26, I-77, and I-20. Also included in the regression, but not in Equation (1), are year dummy variables and county dummy variables.

The second step was to estimate the relationship similar to Equation (1) but only using county and state employment for NAICS 721, NAICS 7221, NAICS 7224, NAICS 71. All other variables remain the same.

$$\Delta Employment_{it} = b_0 + b_1\Delta Pop_{it} + b_2\Delta AccSpending_{it} +$$

$$b_3\Delta StateEmployment_{it} + b_4\Delta LaborForce_{it} + b_5 Hwy + b_6 Beach \quad (2)$$

Results and Discussion

Table 2 reports the preliminary results from regression Equation (1). The estimated coefficient for change in the county labor force is positive and statistically significant ($t = 2.29, p = 0.022$). The coefficient for the highway dummy variable was not statistically significant. Based on this sample, county employment is not related to highway access through the county. The coefficient for the beach dummy variable was also not statistically significant. This leaves us with the main purpose of the research which is to investigate the relationship between accommodation spending and county employment.

The estimated coefficient for the change in accommodation spending is 0.000041 and is statistically significant ($t = 2.78, p = 0.006$). For every $1 million in accommodation spending, county employment increases by 41 jobs. It is likely that new jobs are created in tourism-related industries like retail, restaurants and bars, and transportation. Additional research is needed to determine the nature of these new jobs.

Table 2
Regression Results for Total County Employment

Variable	
Change Accommodation Spending	.000041 (.00002)
Change in Total State Employment	.0015 (.003)
Change in County Population	.244 (.188)
Change State Population	.079 (.051)
Change in County Labor Force	.529 (.231)
Hwy	-1193 (1221)
Beach	1396 (1082)
Intercept	-4635 (3194)
R-squared	.421
N	550

Table 3 reports the regression results for Equation (2), which looks at the relationship between employment in the accommodation section, NAICS 721, and accommodation spending. Several smaller counties have missing data due to the confidentiality requirements of the County Business Patterns data. Of the included independent variables, the coefficient for the change in accommodation spending is the only estimated coefficient that is statistically significant. The coefficient, 0.000005, means every additional $1 million in accommodation spending creates 5 additional jobs in the accommodations sector. Although these results fall short of Thompson (2007), the 5 additional jobs created in the accommodations sector is comparable to the results of Horvath and Frechtling (1999).

Table 3
Regression Results for Employment in Accommodation

Variable	
Change Accommodation Spending	.000005 (.00002)
Change in State Employment	-.035 (.108)
Change in County Population	.008 (.018)
Change State Population	.0004 (.005)
Change in County Labor Force	.015 (.012)
Hwy	-84 (118.8)
Beach	92.5 (108.9)
Intercept	31.06 (280.4)
R-squared	.233
N	428

Additional regressions were performed to investigate job gains in Tier 2 sectors full-service restaurants (NAICS 7221), drinking places (NAICS 7224), and arts, entertainment, and recreation (NAICS 71). Full regression results are left out for brevity. Our primary interest remains the relationship between the change in accommodation spending and the change in county employment in the above three industries. The results of the regression for full-service restaurants provide an estimated coefficient for the change in accommodation spending is 0.00000612 and is statistically insignificant ($t = 2.13$, $p = 0.035$). For every \$1 million in accommodation spending, county employment in full-service restaurants increases by 6 jobs. When looking at the relationship between accommodation spending and employment in drinking places, the estimated coefficient for the change in accommodation spending is 0.000000453 and is statistically insignificant ($t = 1.07$, $p = 0.286$). Lastly, for the arts, entertainment, and recreation sector, the estimated coefficient for the change in accommodation spending is 0.0000021 and is statistically insignificant ($t = 2.38$, $p = 0.018$). For every \$1 million in accommodation spending, county employment in Full-Service Restaurants increases by 2 jobs

Conclusion

This paper provides an empirical measure of the economic impact of tourism spending on county-level employment and county-level employment in the accommodations (NAICS 721), full-service restaurants (NAICS 7221), drinking places (NAICS 7224), and arts, entertainment and recreation (NAICS 71) sectors in South Carolina. These results help to underscore the importance of tourism in regional economic development and employment growth. Using an OLS regression, it is estimated that for each additional \$1 million in accommodation spending, 41 new jobs are created within a county. For each additional \$1 million in accommodation spending, county employment in the accommodations sector increased by 5 additional jobs. Additional job creation occurs in full-service restaurants, 6 jobs, and arts, entertainment and recreation, 2 jobs. Additional research should look at the employment growth in tourism-related industries as identified in Smith (1995).

Declarations of Interest

None.

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