# A Further Note on Determinants of Geographic Living-Cost Differentials

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# NOTE

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The impact of geographic living-cost differentials on resource distribution has been well documented (see, for example, Gary Fournier, David Rasmussen, and William Serow [4]; Gary Fournier and David Rasmussen [3]; Richard Cebula [2]; Stephen Renas [8]; and Stephen Renas and Rishi Kumar [9, 10]). As a result of this type of impact, a number of recent studies have examined the determinants of geographic living-cost differentials (see, for example, Richard Cebula [1]; Timothy Hogan [5]; Daniel Langston, David Rasmussen, and John Simmons [6]; and Anthony Ostrosky [7]). This note seeks to add to the latter literature by investigating the determinants of living-cost differentials among the 67 counties in the state of Florida for the year 1988. In addition to certain variables suggested in the existing literature, the investigation includes a number of previously neglected variables that influence living-cost differentials.

### THE ANALYSIS

We undertake this study by investigating the determinants of living-cost differentials among the 67 counties in the state of Florida in 1988. We use this data rather than the metropolitan area data used in most other related studies for a number of reasons. To begin with, the living-cost data available for metropolitan areas have not been updated since 1981. In addition, since 1979, the metropolitan area data have been generated for only 24 areas. Thus, such metropolitan area data provide only out-of-date living-cost information for a limited number of observations. By contrast, we focus on the 67 counties in the state of Florida because of superior data availability: the state of Florida provides a source of plentiful, current, and comparable living-cost data, as well as a rich variety of other dependable data. Moreover, in focusing on one state (Florida), we deal with a more nearly homogeneous environment than would be the case with a national study. For instance, the 67 counties of Florida surely have a more nearly homogeneous climate and labor market than do the Bureau of Labor Statistics 24 metropolitan areas from across the nation or the 48 contiguous states as a group.

Based to some limited degree on the analyses in [1, 5, 6, and 7], the following reduced-form equation is to be estimated:

$$Ci = a + bTi + cRi + dAi + eHi + fSi + gUi + u, \quad (1)$$

where $Ci$ = the average cost of living in county $i$ in 1988, expressed as an index (100.0 = average); $a$ = constant term; $Ti$ = per capita local taxes paid in county $i$, 1986; $Ri$ = percentage of households in county $i$ with an annual income in excess of $75,000, 1988; $Ai$ = percentage of county $i$'s geographic area that was involved in nonagricultural activity, 1986; $Hi$ = the number of households that were living in county $i$ in the year 1988; $Si$ = a dummy variable indicating whether county $i$ is located on a coast (the Atlantic Ocean or the Gulf of Mexico), with $Si = 1$ if county $i$ is located on a coast and $Si = 0$ otherwise; $Ui$ = the average unemployment rate in county $i$, 1982; and $u$ = stochastic error term. The data sources were the City and County Data Book, 1987, Table B; US Department of Commerce, Bureau of the Census, County Business Patterns, 1986; the Florida Statistical Abstract, 1989; and the 1989 National Decision Systems Source Data.

Based on [1, 6, and 7], it is expected that coefficient $b > 0$. This expectation is based essentially on the simple fact that the higher the level of local taxation in an area, the higher the overall consumer outlays associated with residing in that area. Next, according to [1] and [5], geographic area should exercise a negative impact on the cost of livng, so that we expect $d < 0$. The reasoning offered is that the larger the geographic area, the lower the population density, and with lower population density there is less congestion. In turn, less congestion implies fewer transfer/transit diseconomies and, hence, lower costs and commodity prices. Next, we expect that coefficient $e > 0$. This expectation is based on the argument that "The number of housing units . . . is . . . directly linked to the demand for land. A rising number of housing units raises land rents and housing costs by increasing the demand for land" [6, p. 316].

In addition, it is argued that $c > 0$. This is because the greater the proportion of county $i$'s households that has an annual income in excess of $75,000, the higher the demand for commodities (such as high-priced housing) in county $i$. We adopt variable $Ri$ rather than per capita income in order to avoid the multicollinearity problems associated with per capita income (see [1]). Next, our dummy variable $Si$ captures the impact of the coastal barrier (the Atlantic Ocean or the Gulf of Mexico) on the expansion of urbanized areas in Florida. In addition, given the general desirability of residing in and visiting (as in the case of tourists) coastal areas in Florida, the variable $Si$ is included to control for the stronger (higher) demand for land and housing in coastal areas in the state of Florida. Finally, it is argued here that the higher the unemployment rate in an area, the weaker the demand for goods and services in the area. And, with a weaker demand, the overall level of living-costs (commodity prices) should be lower. Hence, we expect that $g < 0$.

Estimating Equation (1) by OLS yields:

$$(2) \quad Ci = \underset{}{93.46} + \underset{(+4.01)}{0.009\,Ti} + \underset{(+6.56)}{0.84\,Ri} - \underset{(-4.43)}{0.086\,Ai} + \underset{(+6.97)}{0.00001\,Hi} + \underset{(+2.55)}{1.86\,Si} - \underset{(-2.20)}{0.24\,Ui},$$

$$DF = 60, \; RSQ = 0.81, \; F = 42.65$$

where terms in parentheses are t-values and where the standard errors (and hence t-values) have been corrected for heteroscedasticity using the procedure of Halbert White [11].

In Equation (2), all six of the estimated coefficients exhibit the expected signs, with five being statistically significant at the 1 percent level and one being significant at the 3 percent level. The coefficient of determination is 0.81, so that the model explains more than four-fifths of the variation in the dependent variable. In addition, the F-ratio is significant at far beyond the 1 percent level.

Among other things, the results in Equation (2) imply that the cost of living in Florida counties is an increasing function of both local tax levels and the number of housing units and a decreasing function of geographic area. These results are consistent with earlier studies such as [1, 5, 6, and 7]. In addition, the cost of living in Florida counties is shown to be an increasing function of both coastal proximity and the proportion of households with an annual income in excess of $75,000 and a decreasing function of the unemployment rate; the latter three effects are not generally addressed (found) in the literature.

## CONCLUDING REMARKS

Geographic living-cost differentials have been shown by previous research (see, for example, [2, 3, 4, 8, 9, and 10]) to influence geographic mobility and regional economic growth significantly. Using 1988 data for the 67 counties in the state of Florida, this note has empirically investigated the determinants of living-cost differentials. In addition to certain variables already examined in the exiting literature, three new variables have been investigated here: $Ri$, $Si$, and $Ui$. Among the findings in this note, it is revealed that local tax levels exercise a very significant impact on living-costs. It also is shown that unemployment significantly affects living costs. Furthermore, living costs are also significantly influenced by income distribution.

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