MID-CONTINENT
REGIONAL
SCIENCE
ASSOCIATION

2013 MCRSA Conference Proceedings

Industrial Composition, Local Fiscal Policy and Micropolitan Area Economic Growth

Bienvenido S. Cortes, Michael McKinnis and Michael Davidsson
Pittsburg State University

Abstract. Various studies have analyzed the impact of economic policy, especially fiscal policy, on the economic growth of regional and local area economies. A general finding is that industrial composition has been a consistently important determinant of local economic growth as well as of regional differences in the effects of economic policy (Moore and Walkes (2010), Gabe (2003)). The influence of fiscal policy variables has been ambiguous depending, for example, on the measure of economic growth used – employment, population, firm growth, etc. This current study adds to the literature by analyzing the U.S. micropolitan areas (with populations between 10,000 and 50,000) following Davidsson and Rickman (2011). It finds that local and state fiscal policies, industrial composition, distance, and human capital have significant impacts on personal income growth in micropolitan areas.

JEL category: R11 Regional economic activity

Introduction

The role and impact of macroeconomic policy, primarily fiscal and monetary, on economic growth especially as measured by job creation has been studied extensively. The findings are mixed and controversial depending on the level of aggregation (country, region, state, county, or city) under study, among other factors. There is also the continuing debate as to whether economic growth depends on government policy variables such as tax rates or whether emphasis should be placed more on strengthening the inherent growth environment such as the quality of labor and infrastructure as well as the strategic mix of industries.

Although there have been many studies at the country or macroeconomic level, the actual function and practice of economic development - attracting new firms, creating jobs, increasing the tax base - have long been conducted at the local level. According to Malizia and Feser (1999), theories explaining local economic development in the U.S. have evolved and changed over time as a result of reality checks. For example, in the 1960s, economists contended that the aggregation economies found in metropolitan areas would guarantee growth; later, however, census data showed that nonmetropolitan areas experienced a "rural renaissance" surpassing the growth of metropolitan areas. Moreover, national recessions in the 1980s adversely affected rural areas dependent on mining and manufacturing industries; likewise, there were state-level differences in the effects of national recessions. As Malizia and Feser point out: "Thus, as a general rule, it appears that simplified ideas and explanations of urban and regional development prove largely incorrect by the time they take hold in people's minds. The spatial mosaic of growth and decline will undoubtedly continue to defy conventional explanations" (1999, p. 7).

This study focuses on the disaggregated geographical unit called the micropolitan statistical area. This area was defined by the Office of Management and Budget in 2003 to refer to an urban area with a population of 10,000 to 49,999. It has been the subject of relatively few studies (see Davidsson and Rickman (2011) for a review).

The objectives of this study are twofold: (1) to analyze the growth of micropolitan areas in the U.S. as measured by the growth rate of real per capita income for the period 2000-2007; (2) to identify and measure the various determinants of income growth with special focus on industrial diversity and local economic policy variables. The current study reexamines Davidsson and Rickman's (2011; hereafter, D&R) study of micropolitan areas with some significant differences:

- We employ a different measure of local economic growth (real per capita income) as the dependent variable; fiscal policies have been shown to affect income more than employment or labor supply.

- We consider a different, longer, and more recent time horizon/period – 2000-2007.

- We use D&R's original data set of 511 micropolitan areas but remove four which have populations over 50,000 (Cape Girardeau, MO-IL; Manhattan, KS; Mankato-North-Mankato, MN; Palm Coast, FL).

- We use a more parsimonious model by reducing the number of explanatory variables (for example, we combined the separate industry employment shares into one industrial composition variable), by selecting a few important control variables, and then sequentially adding groups of local policy variables; D&R found that industrial composition is the most important determinant of growth.

- We compare the differential impacts of local fiscal (state vs. local/county) and monetary policy; D&R do not consider monetary or financial policy determinants of growth.

- We compare our findings with those of D&R especially relating to the results of their wage growth equation; D&R find no significant county and state fiscal policy variables, except for state spending on highways which is significant (at the 10 percent level) but has the wrong sign.

The general framework here is based on earlier economic growth models by Mofidi and Stone (1990), Abrams, Clarke, and Settle (1999), Connaughton and Madsen (2004), and Davidsson and Rickman (2011). The analysis employs a cross-sectional data set for 507 micropolitan statistical areas which was kindly provided by Davidsson and Rickman.

The remainder of the paper is organized as follows. The next section discusses the past literature, followed by the theoretical model listing the important determinants of income growth in micropolitan areas. Then the statistical procedure and empirical findings are presented. Finally, a summary and conclusions are discussed.

Theoretical and empirical background

As discussed, the body of research emphasizing the impact of fiscal and monetary policy decisions on the various levels of political subdivisions generally fails to arrive at a consensus as to its effectiveness. The conclusion of such research is heavily dependent on the measurement of growth that is used, as well as the level of data aggregation. Thus, any review of the pertinent literature is necessarily thematically diverse and often contradictory. This review of the literature is a sample of the divergent research that delves into the localized consequences of fiscal and monetary policy changes, and the resulting impact on growth as delineated by the author(s). A common undercurrent in a significant number of these studies is that the magnitude of industrial diversity in a region has a material impact on the effectiveness of policy decisions. While diversity is consistently acknowledged as a catalyst for economic growth, the interplay between successful policy implementation and the role of industrial diversity is subject to a wide variety of interpretations.

The conclusions of Izraeli and Murphy (2003) provide a good starting point for reviewing the body of literature that addresses industrial diversity and its effects. Their study, which evaluated the economic performance of seventeen states over a thirty-eight year period, found that states with a diverse industrial mix enjoy a certain degree of insulation from the damaging effects of a national recession. Their data indicates that diverse states are better protected against the cyclical unemployment resulting from recessions compared to states with a highly concentrated industrial base. States with little industrial diversification often suffer from double-digit rates of unemployment during recessionary periods. Izraeli and Murphy suggest that, while the unemployment rate in such states should not differ significantly from their diverse counterparts as the country approaches full employment, they believe that specialization should contribute to relatively higher incomes during an expansionary economic climate, thanks to the comparative advantage which results from

specialization. Their findings are: (1) industrial diversity mitigates the effects of cyclical unemployment, but this relationship is only apparent when state heterogeneity can be adequately controlled, and (2) the notion that industrial concentration results in increased per capita income during times of economic prosperity is difficult to ascertain. Smith and Gibson (1998) also find industrial diversification at the state level to be beneficial during a downturn. However, their conclusion is that the strength of unique regional economic advantages greatly complements diversification, and that diversification alone may not be an effective defense against a stagnant economic climate.

Tomljanovitch's (2004) exploration of the localized effects of fiscal policy decisions provides an effective example of how industrial diversity can act as a "wild card" in determining the success of such endeavors. Tomljanovitch points out that national policy changes in reaction to deteriorating economic conditions do not have a uniform result. Despite expansionary efforts originating at the federal level that may achieve some degree of national success, regional differences in economic prosperity tend to persist. His findings are that the composition of a region's industrial base (first conditions), along with tax rates that differ significantly by state, could act as impediments to the success of national fiscal policies. When the federal government or the states themselves attempt to address economic issues through fiscal policy, any benefits tend to be short-lived. Tomljanovitch's data shows that expansionary fiscal policy changes do not have a lasting impact on future growth patterns. The results indicate that long-term growth rates return to historical averages after five years, largely because of the structural challenges posed by first conditions that are not conducive to long-run economic prosperity. Even in the case of tax increases at the state level, which may result in detrimental short-term outcomes, long-run growth rates tend to return within a few years.

Deskins and Hill (2008) concurred with Tomljanovitch's assessment. They found that over the last two decades the negative effect of localized tax increases on long-term growth virtually disappeared. This was in spite of improvements in communications technology and transportation infrastructure which greatly lessen the barriers typically encountered by firms and individuals wishing to abandon jurisdictions that choose to raise taxes. In contrast to these studies, Alm and Rogers (2010) investigated these same themes over a longer time frame, and in the process illustrated the difficulties of establishing a sustained relationship between state-level economic performance and fiscal policy decisions. Their investigation, which spanned fifty years (1947-1997), looked at a large and assorted set of fiscal variables and their relationship to changes in taxes and spending. Alm and Rogers (2010) found a very clear yet unstable connection between changes in taxation and growth, but their results were highly dependent on the set of explanatory variables and the time period under consideration. The relationship between growth and expenditure changes on the other hand is much more certain and predictable. In their conclusion, Alm and Rogers (2010) briefly touched on the challenges of building models for predicting growth based on historical data that has not been adjusted for errors and other statistical problems. They used aggressive statistical techniques in order to remedy this problem in their data set but conceded that their conclusions merit further investigation due to these complications.

Investigations into the merits of industrial diversity at the local level encounter inherent difficulties, mostly attributable to the limitations of statistical techniques, but also to the very definition of diversity used within the study. Jackson (1984) provides a succinct yet comprehensive historical overview of this dichotomy, concluding that the diversity measures commonplace at the time of the article were not adequate for use in policy decisions. While many of the limitations cited by Jackson have been lessened by modern analytical tools, industrial diversity, despite its undeniable economic influence, continues to elude a definitive measurement. In his extensive and frequently cited investigation into the industrial diversity measurement problem, Wagner (2000) postulates that the limitations of all measurements of industrial diversity are so substantial that they should never be used as the primary justification for policy decisions which have diversity and enhanced employment stability as their ends. Regardless of the difficulties such as those cited by Jackson and Wagner, the strong relationship between diversity and growth that has been established by the extant literature undoubtedly merits continued development and refinement.

Model and estimation results

This study is concerned with the determinants of per capita income growth in micropolitan statistical areas. It extends the earlier study by Davidsson and Rickman (D&R; 2011) by: (1) using D&R's original dataset and revising and adding other variables; (2) examining a different measure of local economic growth in the form of real per capita income for a more recent period 2000-2007, and comparing our findings with those of D&R's wage growth equation; (3) employing a more parsimonious model of endogenous growth; and (4) examining the differential impacts of local economic policies: state vs. county taxes; state vs. county government spending; financial and monetary variables represented by per capita banking deposits, per capita bank offices, and a state-level branching restriction index.

Our method employs hierarchical regression on a cross-sectional data set comprised of 504 micropolitan areas. The base model in this study first examines the relationship between micropolitan per capita income growth and a number of control variables: industrial composition, initial per capita income, educational attainment, distance variables, and regional dummy variables to reflect regional fixed effects. In the second step, policy variables to reflect fiscal structures and monetary or financial development are included sequentially and finally together in a full model. Thus, the general specification is:

Micropolitan income growth = f(Initial income, Industrial composition, Education, Distance, Regional dummy variables, Fiscal policy variables, Monetary variables)

Davidsson and Rickman initially started with the original 554 micropolitan areas (as defined by the Office of Management and Budget), which cover 662 counties in the 48 continental states; however, after adjusting for outliers the final set included 511 micropolitan areas. After reexamining their data, we found that four have populations exceeding 50,000; thus, we include only 507 micropolitan areas in our analysis.

Unlike Davidsson and Rickman who use separate industry sector shares as independent variables, we combine the different industry shares into a composite index of industrial diversity. As Wagner (2000) points out, diversity is a static concept illustrating the mix of industries in an area at a specific point in time. However, Kuhlman, Decker, and Wohar (2008) find that a more important determinant of economic growth is not the area's initial level of industrial diversity but whether the level or degree of diversity is increasing (or decreasing) over the relevant long-run time period. As such, we employ a "sectoral composition variable" similar to that of Abrams, Clarke, and Settle (1999):

$$COMP_{it} = \Sigma^{10}_{j=1} w_{ijt} \log(emp_{j,t+T}/emp_{jt})$$

where wijt is the weight or share of sector *j* in a micropolitan area *i*'s employment at time *t*, and emp is the national average of micropolitan area employment that exists in sector *j* at time *t*. This composite variable not only reflects the industry employment shares within an area, but also shows the growth rate of employment in the area if each sector grew at the same national average rate for that corresponding sector between years *t* and *t+T* (Abrams *et al*., p. 371). COMP is thus a weighted average of "predicted" employment from ten SIC sectors for 1990-2000: farm; mining; construction; manufacturing; transportation; retail trade; wholesale trade; finance, insurance and real estate; services; and government. It is expected that as COMP increases, i.e., the micropolitan area economy becomes more diversified as the nation, the more the area's personal income grows. Initial per capita income for 2000 is included to check for conditional convergence of micropolitan area income growth rates and is expected to be negative following the literature.

The distance variable used here is the incremental distance to the nearest metropolitan area with a population of less than 250,000 following Partridge and Rickman (2008). There are two possible causal relationships between distance and income growth. One relationship may be negative, i.e., the greater the distance from a metro area, the slower the income growth ("tyranny of distance"). This indicates that there are benefits in terms of synergy and agglomeration economies resulting from proximity of a smaller local area to a larger urban area. The second possibility is that the closer a micro area is to a metro area, the more it will lose in terms of labor supply, retail sales, and spatial

competition because of the low cost of travel to the larger metro area, i.e., "tyranny of proximity" (see the New Economic Geography literature, e.g., by Fujita and Mori, 2005). The squared value of incremental distance is added to adjust for nonlinear relationships. D&R do not consider spatial correlation an issue as they "do not include metropolitan or rural counties in the sample to account for spatial spillovers because by definition metropolitan and rural areas are separate functional economic regions with likely differing growth dynamics from micropolitan areas (2011, p. 185, footnote)." Nonetheless, in this current study, we include the incremental distance variable, distance squared, and eight regional dummy variables to account for the importance of spatial proximity and regional fixed effects.

The last control variable, educational attainment or human capital, is represented by the percentage of the population in the micropolitan county area aged 25 and over who have a bachelor's degree or higher. Following past studies, it is expected that the quality of the labor resource has a positive impact on a local area's economic growth.

A major objective of the current study is to measure the differential impacts of economic policy variables. Local fiscal structures in terms of different taxes and government spending activities, both at the state and county levels, are identified and tested in the extended model. At the state-level, these variables are state per capita income tax revenues, state per capita corporate tax revenues, state per capita property tax revenues, state per capita sales tax revenues, state per capita spending on highway infrastructure, state per capita spending on hospital care, and state per capita spending on public safety, all in 1992 figures. The county-level fiscal variables include per capita county tax revenues from property and sales taxes, and per capita spending on education, highway, and public safety. For comparability and to adjust for size, these fiscal variables are divided by the respective county or state-level personal income (see Davidsson and Rickman, p. 184).

In terms of macroeconomic influences, monetary policy has been shown to affect the regional economy (Carlino et al., 2009, 2003; Owyang et al., 2008). Unlike Davidsson and Rickman, we include financial and monetary variables in the analysis. Following past studies, the variables - per capita bank deposits and per capita bank offices in the counties comprising the micropolitan area - are included to reflect the area's financial development or depth. The estimated coefficients for these banking variables are expected to be positive. Finally, we include a state-level branching restrictiveness index developed by Rice and Strahan (2010) which reflects how restrictive a particular state is to entry by out-of-state banks; a negative relationship between income growth and branching restrictions is hypothesized.

Four alternative models are estimated using cross-sectional data for 507 micropolitan areas. The dependent variable, real per capita income growth, is the average annual growth rate of micropolitan area income for 2000-2007, while all the explanatory variables are initial values for the period to account for any potential endogeneity bias. Only the initial income, per capita deposits, and per capita bank offices are converted to logarithmic form. All the policy variables are expressed as percentage shares of income, while the industrial composition variable, distance, branching index, and regional dummy variables are kept as is. We also adjust for heteroscedasticity by applying White's correction on the estimated model. As mentioned earlier, the main data set was provided by Davidsson and Rickman; other additional data are gathered from the Bureau of Economic Analysis and the U.S. Census Bureau.

Descriptive statistics of the variables are presented in Table 1. The empirical estimates of the alternative models are shown in Table 2. The base model, Model 1, regresses per capita income growth on the control variables, initial income, sector composition, education, incremental distance to nearest metro area (with 250,000 population), distance squared, and regional dummy variables. The next three models sequentially add subsets of policy variables. Model 2 adds county-level fiscal tax and spending variables to Model 1. Model 3 includes state-level fiscal variables to Model 2. Finally, Model 4 adds the monetary and financial development variables to Model 3 for the full regression. To test for relative significance or redundancy of different policy variable groups, F tests were conducted. Finally, to address any concerns regarding multicollinearity, variance inflation factors (VIF) were calculated to measure the degree of collinearity between independent variables in the model. None of the VIF scores exceeded

the threshold value of 10 at which multicollinearity becomes an issue.

Table 1. Descriptive Statistics

Variable	Mean	Maximum	Minimum	Std. Dev.
Income growth rate	0.011516	0.073741	-0.01991	0.012946
Initial income	29852.39	69674.3	18061.2	4491.897
Industrial composition	-0.00494	0.053179	-0.04373	0.016807
Human capital	13.21026	36.3	5.5	4.454972
Incremental distance	47.3425	601.043	0	80.07363
County sales tax	0.003892	0.023533	0	0.004381
County property tax	0.027337	0.09937	0.00371	0.013568
County highway spending	0.007092	0.024515	0.000622	0.00394
County education spending	0.054019	0.13888	0.02926	0.013256
County safety spending	0.006324	0.021972	0.000804	0.002459
State income tax	0.020076	0.039943	0	0.010728
State corporate tax	0.003733	0.009788	0	0.002145
State property tax	0.030059	0.060725	0.010091	0.010221
State sales tax	0.02497	0.051105	0	0.008179
State highway spending	0.014228	0.039311	0.007904	0.004919
State hospital spending	0.008383	0.015885	0.00435	0.002342
State safety spending	0.01366	0.021361	0.007207	0.002824
Per capita deposits	8559.42	23331.73	3134.421	2738.353
Per capita bank offices	0.000352	0.000878	9.93E-05	0.000124
Branching index	2.534517	4	0	1.545199

Table 2. Alternative Models of Micropolitan Area Income Growth, 2000-07

Variable	Model 1	Model 2	Model 3	Model 4
Constant	0.11 (1.63)	0.04 (0.47)	0.07 (1.05)	0.11 (1.60)
Initial income	-0.01 (-1.52)	-0.004 (-0.53)	-0.007 (-1.07)	-0.006 (-0.94)
Industry composition	0.18 (5.87)***	0.17 (5.41)***	0.14 (4.94)***	0.14 (4.99)***
Education	0.02 (1.90)**	0.03 (2.11)**	0.02 (2.05)**	0.02 (1.90)**
Incremental distance	-0.00002 (-1.18)	-0.00002 (-1.36)	-0.00003 (-2.25)**	-0.00003 (2.23)**
Incremental distance squared	0.0000001 (3.52)***	0.0000001 (4.17)***	0.0000001 (3.67)***	0.0000001 (3.54)***
Region 1	-0.002 (-0.78)	0.001 (0.39)	-0.003 (-0.84)	-0.003 (-0.90)
Region 2	-0.002 (-1.56)	0.001 (0.31)	0.004 (1.47)	0.004 (1.48)
Region 3	-0.005 (-4.28)***	-0.003 (-1.82)*	-0.003 (-1.42)	-0.003 (-1.45)
Region 4	-0.003 (2.31)**	0.006 (3.21)***	-0.002 (-0.63)	-0.002 (-0.78)
Region 5	-0.002 (-1.40)	0.0001 (0.05)	-0.001 (-0.50)	-0.001 (-0.52)
Region 6	0.001 (0.53)	0.004 (1.91)**	-0.005 (-1.87)*	-0.005 (-1.79)*
Region 7	0.011 (5.35)***	0.01 (5.70)***	0.007 (2.33)**	0.007 (2.23)**
Region 8	0.014 (4.46)***	0.013 (4.61)***	0.003 (0.85)	0.003 (1.12)
County sales tax		0.08 (0.60)	0.04 (0.29)	0.03 (0.19)
County property		-0.06 (-1.33)	0.03 (0.47)	0.03 (0.44)
County education		0.11 (2.37)**	0.105 (2.36)**	0.10 (2.27)**
County highway		0.05 (0.29)	0.21 (1.05)	0.17 (0.80)
County safety		0.73 (2.87)***	0.50 (2.10)**	0.52 (2.20)**
State income tax			-0.32 (-4.46)***	-0.32 (-4.28)***
State corporate			0.13 (0.49)	0.07 (0.25)

Table 2. Alternative Models of Micropolitan Area Income Growth, 2000-07 continued				
State sales			-0.31 (-3.53)***	-0.30 (-3.41)***
State property			-0.35 (-3.17)***	-0.33 (-2.74)***
State highway			1.10 (6.68)***	1.06 (6.55)***
State hospital			0.40 (1.20)	0.46 (1.27)
State safety			0.23 (0.59)	0.19 (0.47)
Bank deposit				-0.002 (-1.12)
Bank offices				0.003 (1.61)
Branching index				0.0002 (0.35)
Adj R-squared	0.40	0.43	0.51	0.51
F-statistic	27.32 (p<0.0001)	21.81 (p<0.0001)	22.24 (p<0.0001)	20.01 (p<0.0001)
No. of observations	507	507	507	507

Note: T-statistics are in parentheses. *, **, and *** denote significance at the 0.10, 0.05, and 0.01 level, respectively.

The results of applying ordinary least squares regression with White's heteroscedasticity correction on the cross-section of 507 micropolitan areas show that the industrial composition variable has a consistently positive and statistically significant (at the 1% level) influence on area income growth. Thus, a more diverse local industrial structure (similar to the national structure) is more conducive to personal income growth in the micropolitan area. Similarly, the area's human capital or educational attainment, as measured by the percentage of the population with a bachelor's degree or higher, positively contributes to income growth and is consistent with past studies. Consistent with Partridge and Rickman's (2008) finding, the incremental distance variable has a negative and significant coefficient in Models 3 and 4, supporting the contention that remoteness is detrimental to income growth; there are also nonlinear effects as shown by the significant squared distance variable. On the other hand, the initial level of per capita income is not significant in all models, suggesting no conditional convergence of micropolitan area income growth rates during the period 2000-07 under study. Moreover, there are significant regional fixed effects especially for regions 7 (West South Central) and 8 (Rocky Mountain) which show higher income growth rates over the period relative to the base region 9 (Pacific), while region 3 (East North Central) has comparatively lower growth. Our results for the control variables are generally consistent with those of Davidsson and Rickman (2011).

In Model 2, county fiscal tax and expenditure variables are added to the control variables. The estimated results indicate that micropolitan area income growth is positively and significantly related to local county government spending on education and public safety. The estimated coefficient of county property tax has the expected negative sign but is not statistically different from zero. Our results are contrary to those of Davidsson and Rickman who find no effects of both

county tax and spending activities on wage growth. Although the general absence of tax effects is consistent with Denaux (2007), our findings of significant spending effects suggest that, contrary to Denaux and Davidsson and Rickman, counties are not "too small to have power over their own growth rate (2007, p. 134)." The control variables of industrial composition, human capital, and distance continue to be important determinants.

In Model 3, the state-level fiscal variables were added with the control variables and local fiscal variables. The coefficients for the state taxes on income, sales, and property all have the hypothesized negative sign and are highly significant; corporate tax share is insignificant and has the unexpected positive sign. In terms of state government expenditures, only highway spending has a positive and significant impact on metropolitan area income growth; moreover, its estimated coefficient has the largest absolute value among all the explanatory variables, indicating that for every one percent increase in highway spending, income grows more than proportionately by 1.10 percent. This is contrary to Davidsson and Rickman who find no state-level fiscal impact except for a negative (and significant at the 10 percent level) effect of state highway expenditures on wage growth. Moreover, consistent with the Model 2 results, county spending on education and safety are significant as well as the control variables of diversity, education, and distance. Combining local and state-level fiscal variables (tax and spending) in Model 3 shows that effective fiscal policy both at the county and state-wide levels are important for economic growth; this is contrary to Denaux who finds that only state fiscal policy variables have an impact.

In the full regression Model 4, financial and monetary variables are included to compare and contrast the relative effectiveness of fiscal versus monetary policy. The per capita bank deposit variable is insignificant and has the unexpected negative sign. The bank office variable has the expected positive sign but is insignificant. Similarly, the estimated coefficient of the branching index, an indicator of the entry barriers to interstate bank branching, is not statistically different from zero. This result confirms Rice and Strahan's (2010) finding that, although the liberalization of bank expansion across states led to more banking competition and growth of credit supply, this had no impact on the demand for credit especially by small firms. Thus, constraints on the ability of businesses to access capital continue to have a depressing effect on local economic growth. Finally, the relevant fiscal variables in Model 3 are also significant in Model 4, thus confirming the relative contributions of various fiscal policies on personal income growth in the micropolitan areas. Backward stepwise regression of Model 4 and the resultant F tests show that, as a group, fiscal variables (state or county) have a significant impact on local economic growth as compared to financial or monetary factors.

Conclusions and Summary

This paper reexamines and extends Davidsson and Rickman's (2011) study of U.S. micropolitan areas (central areas with populations of 10,000 to less than 50,000 people). Using Davidsson and Rickman's original data set, we compared our empirical findings especially regarding fiscal policy effectiveness relative to per capita income growth. Although the dependent variables and time frame are different, the general model specification is the same, with some changes in the explanatory variables used. After combining Davidsson and Rickman's various industry employment shares into an industrial composition variable which reflects not only various sector weights but also change of industry mix over time (1990-2000) similar to Abrams et al. (1999), we find that the more diverse the micropolitan area's industrial structure, the more the micropolitan area income grows, consistent with past studies of industrial diversification. Our results indicate that the relative distance of a micropolitan area to a metro area with a population of less than 250,000 incurs a significant cost (in terms of diffused scale economies and synergies) to local area growth; the relationship between distance and income growth is also nonlinear.

Human capital and regional fixed effects are also consistent determinants. Finally, income growth of micropolitan areas is influenced more by fiscal policies both at state and county levels than by financial factors. This study has several implications: (1) investments in strengthening an area's competitive advantages, primarily in terms of an educated labor force and efficient highway infrastructure, are vital to local economic growth; (2) local governmental units have an important role in promoting the basic services of education and public safety; (3) state governments can effectively and judiciously use tax policy to stimulate income growth in micropolitan areas; (4) just like their metropolitan area and rural area counterparts, the inherent industrial structure of individual micropolitan areas may vary widely, horizontally, and over time; thus, focusing on economic size may not be as essential as focusing on the comparative strengths and strategic industry mix of an area (Gill and Goh, 2010). Finally, given this study's limitation of using cross-sectional analysis, an interesting extension would be to apply the methodology to pooled cross-sectional and time-series data and to analyze long-run effects.

References

Abrams, Burton A., Margaret Z. Clarke, and Russell F. Settle, "The Impact of Banking and Fiscal Policies on State-level Economic Growth," *Southern Economic Journal*, 66(2), 1999, 367-378.

Alm, James and Janet Rogers paper, "Do state fiscal policies affect state economic growth?" *Public Finance Review*, 39(4), 2011, pp. 483-526.

Carlino, Gerald, Robert DeFina, and Keith Sill, 2009, The Long and Large Decline in State Employment Growth Volatility, Federal Reserve Bank of Philadelphia Working Paper No. 09-9.

_____, 2003, Postwar Period Changes in Employment Volatility: New Evidence from State/Industry Panel Data, Federal Reserve Bank of Philadelphia Working Paper No. 03-18.

Connaughton, John E. and Ronald A. Madsen, "Explaining Per Capita Personal Income Differences between States," *The Review of Regional Studies*, 34(2), 2004, 206-220.

Davidsson, Michael and Dan S. Rickman, "U.S. Micropolitan Area Growth: A Spatial Equilibrium Growth Analysis," *The Review of Regional Studies*, 41, 2011, 179-203.

Denaux, Zulal S., "Endogenous Growth, Taxes and Government Spending: Theory and Evidence," *Review of Development Economics*, 11(1), 2007, 124-138.

Deskins, John, and Brian Hill, "State Taxes and Economic Growth Revisited: Have Distortions Changed?" *The Annals of Regional Science*, 44, 313-348.

Fujita, Masahisa and Tomoya Mori, "Frontiers of the New Economic Geography," *Papers in Regional Science*, 84(3), 2005.

Gabe, Todd M., "Local Fiscal Policy and Establishment Growth," *The Journal of Regional Analysis and Policy*, 33(1), 2003, 57-82.

Gill, Indermit S. and Chor-Ching Goh, "Scale Economies and Cities," *The World Bank Research Observer*, 25(2), 2010, 235-262.

Jackson, Randall W., "An Evaluation of Alternative Measures of Regional Industrial Diversification," *Regional Studies*, 18(2), 1984, 103-112.

Izraeli, Oded, and Kevin J. Murphy, "The Effect of Industrial Diversity on State Unemployment Rate and Per Capita Income," *The Annals of Regional Science*, 37, 2003, 1-14.

Kuhlmann, Angela, Christopher S. Decker, and Mark E. Wohar, "The Composition of Industry and the Duration of State Recessions," *The Journal of Regional Analysis & Policy*, 38(3), 2008, 206-221.

Malizia, Emil E. and Edward J. Feser, *Understanding Local Economic Development*, Center for Urban Policy Research: New Jersey, 1999.

Mofidi, Alaeddin and Joe A. Stone, "Do State and Local Taxes Affect Economic Growth?" *Review of Economics and Statistics*, 72, 1990, 686-691.

Moore, Winston and Carlon Walkes, "Does Industrial Concentration Impact on the Relationship Between Policies and Volatility?" *International Review of Applied Economics*, 24(2), March 2010, 179-202.

Owyang, Michael, Jeremy Piger, and Howard Wall, 2008, A State-level Analysis of the Great Moderation, *Regional Science and Urban Economics*, 38, 578-589.

Partridge, Mark D. and Dan S. Rickman, "Distance from Urban Agglomeration Economies and Rural Poverty," *Journal of Regional Science*, 48(2), 2008, 285-310.

Rice, Tara and Philip E. Strahan, "Does Credit competition Affect Small Firm Finance?" *The Journal of Finance*, 65(3), June 2010, 861-889.

Smith, Stephen M., and Cosette M. Gibson, "Industrial Diversification in Nonmetropolitan Counties and Its Effect on Economic Stability," *Western Journal of Agriculture Economics*, 13(2), 1988, 193-201.

Tomljanovich, Marc, "The Role of State Fiscal Policy in State Economic Growth," *Contemporary Economic Policy*, 22(3) July 2004, 318-330.

Wagner, John E., "Regional Economic Diversity: Action, Concept, or State of Confusion," *The Journal of Regional Analysis & Policy*, 30(2), 2000, 1-22.