

**IS NEW YORK CITY STILL PROPELLING GROWTH
IN ITS SUBURBS?: A STUDY OF ECONOMIC SPILLOVER EFFECTS
THROUGH SPATIAL CONTIGUITY***

Michael L. Lahr
Center for Urban Policy Research
Rutgers, The State University of New Jersey
33 Livingston Avenue, Suite 400
New Brunswick, NJ 08901-1982

E-mail: lahr@rci.rutgers.edu
Phone: (732)932-3133 x546
Fax: (732) 932-2363

February 4, 2004

ABSTRACT. *In this paper I investigate from a strict efficiency perspective whether or not New York City's suburbs should be helping the city in its economic development efforts. By analyzing metropolitan New York City, I am able to take advantage of the area's spatial size and the ready availability of a pool of economic data below the metropolitan level (counties). In particular I disaggregate New York City's economy into three sectors and the suburban geography into three rings and four radial subregions. In the case of the employment equation, national city-based industry variables tended to have expected effects on suburban economic growth when they were significant at all. Greater articulation of the geography of analysis through the inclusion of fixed effects does change the nature of these findings slightly, however. More surprising was a swing in the direction of the influence on suburban economic growth of the City's nonfinancial nonmanufacturing sector when the analysis was performed using earnings data. This differential effect is rationalized by the City's ability to retain high-wage service workers who reside in the suburbs.*

* I thank Rodrigo Duran, Ruchika Sah, and May Ng for research assistance. I also thank Richard Voith and Andrew Haughwout for crucial comments and encouragement on prior drafts. Most of all, I thank Robert Yaro and Chris Jones of the Regional Plan Association for partial funding of this study.

INTRODUCTION

Since 1969, the employment growth rates for the nation and New York City typically have bound those for its greater metropolitan area (see Table 1).¹ That they persistently do so begs the question of whether economic growth in the area's suburban counties depends upon forces emanating from the city, or whether forces affecting the national economy have become more crucial to the economic well being of New York City's suburbs.

Due to an apparent increase in the gap between the incomes of U.S. cities compared to their suburbs, research on whether central cities still affect the growth has been building during the past decade. Interestingly, little work has focused upon New York City, in particular, which seems to be leading the nation in its economic trends and is indisputably a national economic powerhouse.

During the last three decades population and employment have been growing steadily in suburban areas while many central cities have been declining or, at best, growing slowly. Indeed, by 1980 the population of suburbs surpassed those of the central cities of US metropolitan areas. This trend has been accompanied by an ever-increasing divergence between the incomes of cities and their suburbs, partly through the conservative majority political power-base that the suburbs have gained in most states. This change in the economic and demographic climate within metropolitan areas has led to inquiry into whether suburbs and cities continue to be economically interdependent.

From the perspective of economic growth, economic interdependence can cut two ways. When cities and suburbs are complements, the decline of cities should eventually lead to a decline of the suburbs. Thus, policies developed at an area hierarchically superior to the metropolitan area would be needed to arrest such urban decline. If, however, cities and suburbs are substitutes, then metropolitan economic growth may not be much affected, since city decline is offset by an increase in the growth rate in the suburbs. Alternatively, suburbs

¹ Except for the 1980-1982 period, which covered two recessions, and the 1969-1973 period, which is left truncated, each period used in Table 1 is a national recovery period following a recession.

and not cities may be the drivers of metropolitan growth. In these latter two cases, the city only, not the metropolitan area, is at the mercy of the success of the suburbs. Hence, there would be a strong argument that it would be incumbent only upon central cities to enact policies to curb their decline. Indeed, most suburban politicians seem to adhere to this latter argument.

This paper, which reports such an investigation, is organized as follows. First, a brief review of the literature and of recent economic trends in New York City's metropolitan area develops into a set of study hypotheses. This is followed by a discussion of the study method and approach. Next, I report the findings of the investigation. I conclude the report with a brief summary of the findings and some suggestions for further investigation.

DEVELOPMENT OF HYPOTHESES

Starting as early as Alonso (1964), economic theorists have maintained that wages and rents adjust so that (in equilibrium) people and firms are indifferent to location. That is, declines in population and employment in less attractive areas are offset by increases in population and employment in desirable areas. Economic theory also tells us, however, that the process of out-migration in response to the inherent attractiveness of the suburbs can affect the declining central city's ability to provide basic public services (Haughwout and Inman, 2002). In some cases, this can cause a downward-spiraling disequilibrium in which falling land prices in the central city cut further into the city's tax base, inducing more decline in public services. Also, such decline can have metropolitan spillover effects that change the general attractiveness of the entire region to residents and potential migrants (Pauly, 1973).

The short- and long-run consequences of these spillover effects are likely to be different. Initially, city decline might lead to a growth in suburban regions through a substitution effect whereby city residents and firms move to the suburbs to take advantage of

the greater availability of amenities and public services there. This suburban flight induces an income divergence between cities and their suburbs. Hence, as long as city hardship conditions are fairly low, the metropolitan area should continue to grow, with the suburbs rising at the expense of the central city (Voith, 1992). Eventually this increasing income divergence can induce negative spillover effects (like increasing suburban crime rates) — problems that originate in the city and that adversely affect the entire region. In this case, the consequences are complementary between cities and suburbs as people move to even more desirable areas outside of the metropolitan area (Lederbur and Barnes, 1991). In this way, a new equilibrium that yields fewer people in the metropolitan region is eventually attained.

An economic force that has been inducing such decline in many metropolitan areas in the name of enhanced economic efficiency has been the national trend of deindustrialization, a phenomenon often termed Baumol's disease (Baumol, 1967). Indeed, in the decades preceding 1970, cities had long maintained a larger share of the manufacturing employment than did rural areas. Manufacturers decreased their share of total national employment from 22.6% to 11.4% between 1969 and 2000 through productivity gains, outsourcing of some previously internal functions, and relocating to developing nations. The trend of decline was less marked in rural areas of the nation, so that the rural share of employment in manufacturing actually surpassed the metropolitan share in about 1976. Employment by national firms seeking lower-cost labor for their mass production operations made up most of the rural gains. Indeed, as one of the highest-cost labor markets in the nation, manufacturing employment in the New York City metropolitan area slipped from a near-national share (22.9%) in 1969 to about half of the national share (6.0 %) by 2000.

A strong set of economic forces in New York City should serve to counteract the general national trend of urban economic decline—the City's agglomerations of idea-intensive industries whose production processes require face-to-face contact. Glaeser and Kahn (2001) count among them the creative arts, certain finance and business services, basic science and technology development, health care, and government. Indeed, Sassen (2000)

gives particular emphasis to the financial sector in this regard. The city's international reputation in a few of these economic sectors should provide some impetus for the continued growth of related industries. Schwartz (1992, 1993) suggests that suburban proximity may be sufficient for many such industries that rely on these idea-intensive industries:² He found spillovers of the agglomeration economies at least from the central-city finance and professional service industries to suburbs.³ Indeed, during the past decade the New Jersey suburbs were net receivers of back office jobs from Wall Street firms, even prior to the 9/11 tragedy. In addition a number of publications have shown that higher aggregate employment densities lead to growing employment levels (e.g., Glaeser et al., 1992; Henderson, Kuncoro, and Turner, 1995), supported by the detailed work of Rauch (1993), who found knowledge spillovers as a source of area gains productivity and growth. This would lead us to expect that inner suburbs, in particular, would benefit from proximity to the City's idea-intensive industries.

Nonetheless, ever-greater proportions of employees of central-city firms are finding suburban living desirable. So that the incomes of jobs in central cities are suburbanizing, which leads to growth in suburban trade and personal service jobs. Indeed, analyzing four East Coast US cities, Chang and Coulson (2001) find that when the central cities grew, their associated suburbs grew (complementary). But the central cities also grew because the suburbs were growing (complementary) and, in some cases, specific suburbs were growing at the expense of the central cities (substitutive). As a result, growth in the suburban private sector is retaining existing resident metropolitan workers even if in net it is not luring a quality labor force from other parts of the nation or from abroad. As long as the positive agglomerative forces inherent in this industry are maintained, a growth pole of sorts (for more, see Parr, 1999) should continue to exist in New York City.

² Indeed, interviews conducted by the author with representatives of major pharmaceutical manufacturers in New Jersey during the mid-1990s bear this out as well.

³ This goes against the findings of Rosenthal and Strange (2002) who found that location advantages from agglomeration economies fully dissipate after five miles from the agglomerative core.

In conclusion, most studies agree with the suburban dependence hypothesis, i.e., that cities complement them. Moreover, the effect of cities on suburbs is larger for cities with larger suburbs. Only Orefield (1997) has explicitly suggested any sort of relationship between distance and central-city spillover effects on suburbs. But his discussions center on the impacts of central-city decay not economic growth. Of course some of the aforementioned work that finds a positive correlation between economic growth and employment density may also imply a relationship with proximity to the metropolitan core.

Past research has shown that Baumol's disease has infected both regional wages and employment in many areas that were heavily vested in manufacturing. Indeed, a large body of evidence has amassed showing that production-line manufacturing establishments continue to seek low-wage labor markets. As one of the highest-cost labor markets in the nation, the New York City metropolitan area has been particularly susceptible to deindustrialization. Thus, we should expect that employment in area manufacturing industries (City and suburb alike) should decline more rapidly than national rates. Hence, national manufacturing should substitute for suburban New York City manufacturing. Within the region we might expect some city-suburb substitution effects in manufacturing activity: That is, some New York City manufacturers are likely escape the city's high land prices and taxes but maintain spatial proximity to their regional market or supplier linkages (Voith, 1999).

Matters are less clear when it comes to nonmanufacturing industries. According to Chang and Coulson (2001), we should expect suburban economic growth to complement both city growth and national growth in this industry. Schwartz's (1992, 1993) contention that suburban growth depends in part on professional service jobs in the City supports this notion. On the other hand, New York City's suburbs remain one of the most expensive places in the US in which to live (ACCRA, 2003) and do business (Voicu and Lahr, 1998). Within the metropolitan area, these cost differentials also exist, at least between New York City and its outer suburbs. This lends some basis for a hypothesis of the substitution of suburban

nonmanufacturing employment for its city counterpart as well as for the nation's ability to serve as a substitute for the metropolitan area for this sector. In any case, since service industries largely serve the local area and also comprise most of the measurable changes in economic activity in U.S. regional economies, we expect local city-suburban complementary effects to overwhelm any possible city-suburban substitution effects.

Strongest among the service industries are those that maintain some agglomerative force. In the case of New York City, as noted earlier, these industries are the finance and arts industries. In the current paper, I focus strictly upon the agglomerative effects of the finance industry (actually the finance, insurance, and real estate industry) because of the ready availability of data for this industry. In the case of New York City's finance sector, agglomeration occurs largely because of the need to communicate in a face-to-face manner—a function of the large sums of capital transacted. Agglomerative forces should enhance growth of most of the City's industries since many rely on the presence of the finance industries for their survival. Nonetheless, it may be sufficient for some organization that need occasional face-to-face contact to opt for locations in suburbs of the City's to take advantage of the perceived higher quality of life there (Herzog and Schlottmann, 1986).

In summary, we hypothesize that nonmanufacturing sectors (national plus City-based financial and nonfinancial nonmanufacturing sectors) will display complementary effects (their coefficients will have positive signs and are statistically significant) as will the City's manufacturing sector. We also hypothesize that national manufacturing will display substitutive effects (have negative signs and be statistically significant). We leave room, however, for possible substitutive effects emanating from the City's manufacturing and nonfinancial nonmanufacturing sectors, but expect that decline in the metropolitan area to be sufficiently mature to substantially discount those possibilities.

RESEARCH APPROACH

As was discussed in the preceding section, investigations into the economic relationships between cities and their suburbs remain rudimentary. Further, prior studies' scopes considered several metropolitan areas nationwide. The focus of our investigation is a single metropolitan area, the metropolitan area, including New York City, as defined by Regional Plan Association (RPA). This special focus provides opportunities for innovation.

Employing data from the Regional Economic Information System (REIS) published by the Bureau of Economic Analysis of the U.S. Department of Commerce, which has annual county-level employment and earnings by place of work data from 1969 to 2000, I was able to expand both the number of subareas and years covered. The county-level data enabled the use of five subregions: New York City (i.e., Bronx, Kings, New York, Queens, and Richmond); Connecticut (Fairfield, Litchfield, and New Haven counties); Mid-Hudson (Dutchess, Orange, Putnam, Rockland, Sullivan, Ulster, and Westchester counties); Long Island (Nassau and Suffolk counties); and New Jersey (Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren counties). These regions are used by the Regional Plan Association, an organization that advocates for more unified governance of the greater New York City Region. This organization of the data also facilitated the use of each county as an observation.

Because of its great breadth in both time and space in coverage, the REIS data set permits the use sophisticated approaches to analyze the nature of the relationships between New York City and its suburbs—i.e., complementary or substitutive. As a result, I opted for a panel data approach, i.e., cross-sectional data for all of suburban regions over time.

We tested the effect of industries in New York City on suburban employment.⁴ In the first set of panel data tests, we used RPA subregions as observations. In the second set, the

⁴ We used Stata's feasible generalized least squares program with a log-log functional form, heteroskedastic panels and one-year panel-specific autoregressive correction.

counties were treated separately. We conducted each set of tests using both employment and earnings by place of work. The basic model that was estimated was

$$\frac{E_t^r}{E_{t-1}^r} = c \cdot \frac{NM_{t-1}^{US}}{NM_{t-2}^{US}} \cdot \frac{M_{t-2}^{US}}{M_{t-3}^{US}} \cdot \frac{NM_{t-2}^{NYC}}{NM_{t-3}^{NYC}} \cdot \frac{M_{t-2}^{NYC}}{M_{t-3}^{NYC}} \cdot \frac{F_{t-1}^{NYC}}{F_{t-2}^{NYC}} \cdot \varepsilon$$

where E_t^r = employment for region r in year t .

NM_{t-1}^{US} = employment in the nation's nonmanufacturing industries in year $t-1$;

M_{t-2}^{US} = employment in the nation's manufacturing industries in year $t-1$;

NM_{t-2}^{NYC} = employment in New York City's nonfinancial nonmanufacturing industries in year $t-2$;

M_{t-2}^{NYC} = employment in New York City's manufacturing industries in year $t-2$;

F_{t-2}^{NYC} = employment in New York City's financial sector⁵ in year $t-2$;

c = the constant term; and

ε = an error term.

We set the Mid-Hudson region to be the default region throughout the analysis. Note that all variables in the above equation are lagged. This was done with the hope of obtaining a more robust indication the direction of causality. Had I applied independent variables for the same period as the dependent, it certainly would not have been clear whether the dependents were affecting the independent variables or vice versa. While causation is by no means assured, a two-year lag does make causation in the direction opposite of that specified a bit more difficult. I wound up resorting to one-year lags for both national nonmanufacturing and the City's finance industry since they both assured substantially better equations fits than did a two-year lag.

In the second set of panel regressions, each suburban county was a separate observation. Hence, rather than four observations (New York City was a regressor and could

⁵ The finance sector was defined as finance, insurance, and real estate sectors due to limitations in the employment data.

not be used as a subregion observation) over the 30-year period of 1969 to 2000, I used 26 (31 counties less 5 for New York City). The equation estimated was that specified above with the addition of a set of annual fixed effects. I also included three spatial contiguity dummy variables, using a commuter's perception of travel time to Manhattan to devise the regions (see Figure 1). This allowed me to test for varying levels of spatial influence levied by New York City across its 26 suburban counties. I also anticipated that any ambiguities in sign and significance might be cleared up with the enhanced spatial articulation.

RESULTS

Subregion Analysis

Table 2 contains the results for the panel approach for the metro-area subregions using employment and earnings data, respectively. In general it is gratifying that most of the variables are significant in both equations. Indeed, interestingly and most importantly, the finance industry reveals the hypothesized complementary influence upon suburban growth, which is especially strong in the case of employment change. The nation's nonmanufacturing sector's influence is similarly complementary but much stronger with regard to earnings change, which may reflect the effects of inflation as much as anything else. But other results are somewhat unexpected. In fact, the results for earnings sometimes appear to conflict with those for employment. This also could in part be because the underlying data are in nominal dollars.

First, it is clear that manufacturing had little effect upon aggregate earnings by RPA subregion. That is, while manufacturing's change in both the City and the rest of the nation had significant effects on suburban *employment* growth (the nation's a substitutive effect and the City's a complementary effect), it had no significant effect on suburban *earnings* growth.

The two regressions differ in the direction of significant influence of New York City's nonfinancial nonmanufacturing sector on subsequent suburban growth (a substitutive effect on *employment* and a complementary one with regard to *earnings*). This may well

imply that the suburbs gained some jobs at the expense of this City sector but that the suburban earnings grew with the tremendous earnings growth, due to the City's ability to retain its concentration of high-paying jobs in the sector, due to the rapid suburbanization of retail and personal service jobs induced by the spending of workers incomes near their suburban homes.

In summary, while the feature hypothesis of this paper on the importance of specialized financial services in New York City to suburban growth appears to be vindicated, not all of the results were unambiguous. In particular, the difference in the findings between the earnings and employment equations did not lend themselves to a decision regarding whether the City's nonfinancial nonmanufacturing sector has a complementary or substitutive effect on suburban economic growth. I therefore hoped that the analysis by county would express the results more clearly.

County-level Analysis

In a second set of regressions, I employed panel data by county. The use of counties allowed a more detailed analysis. In particular, as I mentioned earlier, the use of counties allowed me to measure the effect of spatial proximity to New York City on suburban economic growth. To enable such an analysis I divided the suburban counties into three concentric spatial rings around New York City. This time, I enhanced the basic set of variables (national economy effects, New York City economy effects, subregion fixed effects, and spatial contiguity fixed effects) with variables that represented interactions among them. In particular, I added a set of variables interacting the spatial rings with the RPA subregions, and another interacting the spatial rings with the economic change in both national and New York City industries. The counties included in each suburban spatial region are (see Figure 1):

Spatial ring 1: Bergen, Essex, Hudson, Passaic, and Union (NJ); Nassau, Rockland, Westchester (NY).

Spatial ring 2: Middlesex, Monmouth, Morris, Somerset (NJ); Orange, Putnam, Fairfield (CT); Suffolk (NY)

Spatial ring 3: Litchfield, New Haven (CT); Dutchess, Sullivan, Ulster (NY); Hunterdon, Mercer, Ocean, Warren, and Sussex (NJ).

The results for the pair of regressions on change in employment and aggregate earnings are quite similar (see Table 3). I controlled for growth by ring and by subregion, including some interaction between the two. (An analysis by ring of counties reveals that employment was growing fastest in the second ring. And, among the states, New Jersey was the clear job winner during the study period.)

In general, the results from this test were quite similar to those from the panel analysis of the RPA subregions. The main difference among the industry specifications was that national manufacturing became significant at the .10 level (assuming a two-tailed t test) in the expected direction (substitutive) in the earnings equation. Hence, the enhanced spatial articulation did not help to clear up matters on the difference in signs across the two formulations for the elasticity of the growth of the City's nonfinancial nonmanufacturing sector.

Controlling for spatial fixed effects moderated the elasticities in the employment-based equation but induced mixed changes in the magnitude of elasticities within the earnings equation, where the greater spatial specificity imparted influence upon suburban economic growth to the city-based nonfinancial nonmanufacturing sector at the expense of national nonmanufacturing. Interestingly, a different spatial dimension turned out to be significant in each of the two equations. Employment in counties of the outermost spatial rings apparently had a tendency to grow significantly faster than counties in the innermost suburban ring, with counties in second ring having a somewhat higher growth than those in the third. In the case of earnings, growth in counties outside of the State of New York was comparatively slower after controlling for growth by general sector.

A parallel analysis articulating interactions of the spatial variables with New York City industry variables (see Table 4) and of variables in the two spatial dimensions reveals few key differences from those elucidated above for Tables 2 and 3. The most important

difference is that in the employment equation, where the City's nonfinancial nonmanufacturing sector wields no significant influence on suburban growth. That is, the substitutive relationship apparent in Tables 2 and 3 evidently was the result of a strong relationship strictly between this sector and the City's Connecticut suburbs. The clear complementary relationship between suburban employment change and past change in employment by the City's financial services sector is substantially weaker as well. Comparing the results in Table 4 to those shown in Table 3, it is apparent that the employment growth elasticities for national industry change were enhanced by the greater articulation of space and its interactions. This was generally also true for the case of the earnings growth elasticities, although the elasticity for the City's nonfinance nonmanufacturing sector was substantially lower with the fuller specification.

A review of the interaction variables shows that suburban New York counties had similar growth influences regardless of whether they were in the Mid-Hudson region or on Long Island. Suburban New York counties in the second spatial ring, however, grew slightly faster than those in the first or third ring in both the employment and earnings equations. After controlling for industry-induced changes, New Jersey counties generally faced slower employment growth rates, although that state's third-ring counties experienced employment growth as strong as that in second-ring suburban counties in New York. Employment growth in suburban Connecticut was fairly uniform across its three counties.

The influence of New York City's was fairly uniform across the suburban counties, although a few differences did crop up. These few only showed up in the employment-based equation, and none were revealed themselves through the ring dimension of New York City's suburban space. The elasticity for City manufacturing employment growth was dampened by about a third in the case of New Jersey counties. This may well reflect this state's tendency to be the main substitute location for City manufacturing firms among the suburban possibilities. As was alluded to earlier, the substitutive relationship between the City's nonfinancial nonmanufacturing sector and job growth in the Connecticut counties was quite

strong, showing up strictly in that interaction term. On the other hand, these same counties tended to benefit more in terms of jobs (a complementary effect) than did other suburban counties in the New York metropolitan area from additional employment in the City's financial sector, although this elasticity was only a third of that of Connecticut's interaction with the City's nonfinancial nonmanufacturing sector (and of opposite direction).

In the case of a couple of counties, we found that adding fixed effects improved the fits but did not much affect the elasticities of other variable in the equations. The two counties were Somerset and Morris Counties in New Jersey. During the 31-year study period, these two were among the fastest-growing counties in the metropolitan area in terms of both employment (3.6 and 3.1 percent annually) and earnings (10.6 and 10.1 percent annually) and by far were the fastest-growing second-ring counties. Thus the positive sign obtained for the fixed effect of Somerset County was clearly expected in the case of employment change. The growth-dampening negative coefficient for both counties in the earnings equation was not expected, however. In this regard the only connection between these two counties that could be inferred was that, during the study period, growth in both of these counties had been dominated by the successes of two industries—pharmaceuticals production and communications services.

CONCLUSIONS

The economies of New York City's suburbs rely on the well-being of the City's economy. Since its manufacturing industry is on the decline, the City appears to wield disproportionate portion of its economic might upon the suburbs through its finance industry, especially in Connecticut's suburbs. The suburban effect of the City's nonfinancial nonmanufacturing industries is somewhat less clear, given the conflicting results that were obtained between the employment- and earnings-based formulations. The fullest specification of the model reveals only complementary effects for it, but they were with respect to earnings only.

The four suburban subregions (Long Island, Mid-Hudson, New Jersey, or Connecticut) appear to have obtained few special impacts from changes in City's employment base. Not only did Connecticut receive extra benefits from the growth of the City's financial sector but it also had strong substitutive spillovers from the City's nonfinancial, nonmanufacturing sector. In addition, New Jersey had some substitutive benefits from the City's declining manufacturing base.

Surprisingly, fewer effects were evident across the spatial rings. During the study period, growth was slowest among New Jersey's first-ring counties and fastest in its third-ring counties. This comports well with Voith's story about the attraction of lower property values, especially since by far the greatest preponderance of large, old cities in the metropolitan area but outside the boundaries of New York City is in the inner suburban ring of New Jersey counties.

Additional study should be devoted to sharpen some of the results. Explicitly accounting for commuting time or distance directly rather than mere contiguity could help in this regard. Although employment is a politically expedient measure, aggregate earnings are probably more desirable from a purely economic point of view since theory informs us that they should account for productivity changes/differentials. There were some differences in the results when the annual proportional change in these two measures was used as dependent variable. In particular, we obtained opposite signs for the elasticities for the lag in the City's nonfinancial nonmanufacturing sector in the suburban employment and earnings growth equations (negative for employment and positive for earnings). Although it would seem that national and city trends in earnings should account for inflation, perhaps performing the earnings-based analysis in terms of real dollars would help explain this "switch." On the other hand, it simply may be the case that this set of results is due to the relocation to the suburbs of some of the City's lower-paying (retail and personnel service) jobs within this set of sectors. New York City's ability to retain the higher-paying workers who spend their earnings in their suburban homes for such services could explain this

potentially confusing outcome. Hence, further investigation of this matter could prove useful to understanding city-suburb dynamics.

Finally, in this paper I examined only the effect of New York City on its suburbs. Its suburbs are themselves a major economic force, sufficiently large to affect economic outcomes in the City. Hence, a next natural step would be to undertake an analysis similar to the one undertaken here but simultaneously solving for spillover and feedback effects from the suburbs to the city.

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TABLE 1: Employment Growth Rates for the Nation and Tri-State Region, 1969-2000

(Percent)

<i>Year</i>	<i>US</i>	<i>NYC</i>	<i>NYC</i>	<i>NY</i>
		<i>Nonfinance</i>	<i>Finance</i>	<i>Metro Area</i>
1969-1973	1.97	0.43	-1.95	1.82
1974-1979	2.50	0.21	0.41	1.75
1980-1982	0.14	2.58	1.99	0.95
1983-1989	3.06	2.56	2.54	2.35
1990-1991	-0.55	-3.03	-3.79	-3.13
1992-2000	2.33	2.27	1.10	1.52

TABLE 2: Factors Affecting Subregions of the New York City Metropolitan Area, Annual Employment and Earnings Change 1969-2000

[FGLS, log-log functional form, heteroskedastic panels, panel-specific AR(1)]

Variable	Employment Change		Aggregate Earnings Change	
	Coefficient	Std. Error	Coefficient	Std. Error
Intercept	0.017976*	0.006109	0.000302	0.008887
Change in U.S. manufacturing (t-2)	-0.351172*	0.069730	-0.051596	0.073535
Change in U.S. nonmanufacturing (t-1)	0.376337*	0.152299	0.534220*	0.101164
Change in NYC financial services (t-1)	0.172484*	0.064041	0.101896*	0.035292
Change in NYC manufacturing (t-2)	0.323986*	0.088554	-0.016500	0.094832
Change in NYC nonfin. services (t-2)	-0.261765*	0.101630	0.366306*	0.089027
<i>N</i>		116		116
Log likelihood		330.2		279.8
Wald Chi²		58.5		67.8

Note: * and + next to a coefficient indicates significance at the .05 and .10 based on a two-tailed test, respectively.

**TABLE 3: Factors Affecting Annual Economic Growth
in New York City's Suburban Counties, 1969-2000**
[FGLS, log-log functional form, heteroskedastic panels, panel-specific AR(1)]

Variable	Employment Change		Aggregate Earnings Change	
	Coefficient	Std. Error	Coefficient	Std. Error
Intercept	0.009517*	0.003748	0.140045*	0.005952
Change in U.S. manufacturing (t-2)	-0.291141*	0.037311	-0.069266+	0.038545
Change in U.S. nonmanufacturing (t-1)	0.256610*	0.080766	0.467216*	0.052576
Change in NYC financial services (t-1)	0.155751*	0.034335	0.087444*	0.018252
Change in NYC manufacturing (t-2)	0.240916*	0.047211	-0.043524	0.050339
Change in NYC nonfin. services (t-2)	-0.242521*	0.054386	0.420800*	0.048291
Second-ring county	0.017950*	0.002096	-0.000566	0.003260
Third-ring county	0.011884*	0.002202	-0.000438	0.003215
New Jersey county	0.001267	0.002011	-0.010483*	0.002889
Connecticut county	-0.003854	0.003246	-0.010224*	0.004586
Long Island County	0.003885	0.003748	0.002317	0.005952
<i>N</i>	754		754	
Log likelihood	1927.1		1597.6	
Wald Chi²	225.6		209.3	

Note: * and + next to a coefficient indicates significance at the .05 and .10 based on a two-tailed test, respectively.

**TABLE 4: Factors Affecting Annual Economic Growth
in New York City's Suburban Counties (with Additional Fixed Effects), 1969-2000**
[FGLS, log-log functional form, heteroskedastic panels, panel-specific AR(1)]

Variable	Employment Change		Aggregate Earnings Change	
	Coefficient	Std. Error	Coefficient	Std. Error
Intercept	0.019224*	0.004188	0.003768	0.010567
Change in U.S. manufacturing (t-2)	-0.310850*	0.035073	-0.074644*	0.036585
Change in U.S. nonmanufacturing (t-1)	0.301731*	0.076529	0.486250*	0.050233
Change in NYC manufacturing (t-2)	0.370199*	0.067459	-0.090105	0.103900
Change in NYC financial services (t-1)	0.132588+	0.068094	0.093240*	0.045834
Change in NYC nonfinancial services (t-2)	-0.146590	0.109778	0.352547*	0.122493
Second-ring county	0.009713*	0.004180	0.024999*	0.010094
Third-ring county	-0.005457	0.004033	0.002158	0.010516
New Jersey county	-0.014629*	0.003546	0.004367	0.009793
Second-ring New Jersey county	0.008593*	0.004251	-0.028594*	0.006826
Third-ring New Jersey county	0.024407*	0.004019	-0.016423*	0.006541
Long Island county	-0.000522	0.004980	0.029742+	0.016683
Connecticut county	0.005189	0.005064	-0.022349	0.015155
Second-ring Connecticut county	-0.014491*	0.005585	-0.019913*	0.009127
NYC mfg* Ring 2	-0.082177	0.060920	0.083234	0.094774
NYC mfg* Ring 3	-0.097389	0.065513	0.050159	0.098058
NYC finance* Ring 2	0.020610	0.073459	-0.026963	0.043936
NYC finance* Ring 3	-0.060052	0.078221	0.001378	0.045283
NYC nonfinancial services* Ring 2	-0.092131	0.118653	0.005178	0.114471
NYC nonfinancial services * Ring 3	0.091086	0.126495	0.115685	0.119498
NYC manufacturing* New Jersey	-0.117580*	0.058801	-0.006421	0.092192

NYC manufacturing* Connecticut	-0.052320	0.088926	0.010604	0.150409
NYC manufacturing* Long Island	-0.021379	0.085208	0.146140	0.171003
NYC finance* New Jersey	0.088277	0.070334	0.025522	0.042574
NYC finance* Connecticut	0.176031+	0.105078	0.066139	0.069909
NYC finance* Long Island	-0.125211	0.108243	-0.116962	0.078950
NYC nonfinancial services * New Jersey	-0.075817	0.113698	0.046482	0.112685
NYC nonfinancial services * Connecticut	-0.443739*	0.170129	0.202583	0.179918
NYC nonfinancial services * Long Island	-0.018793	0.172907	-0.326617	0.209799
Somerset County, NJ (second ring)	0.012773*	0.004367	-0.017380*	0.005678
Morris County, NJ (second ring)	0.007419	0.004188	-0.016741*	0.004334
<i>n</i>		754		754
Log likelihood		1951.4		1620.3
Wald Chi²		376.2		344.4

Note: * and + next to a coefficient indicates significance at the .05 and .10 based on a two-tailed test, respectively.

Figure 1: Map of the Spatial Rings of Counties around New York City (in black)

