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The Geography of Entrepreneurship in the New York Metropolitan Area

1. Introduction

New York will be a great place when they finish it.
- Popular saying

New York City is often used as a paradigm for all that is urban. For instance, the analysis of New York in Jacobs (1969) is explicitly presented as bearing on fundamental aspects of urbanization in general, not just on New York. This approach is easy to understand. Cities are defined by their scale and density, and among the cities in the United States, New York has the most: the most employment, the most population, the most density. Almost any urban phenomenon that one might want to study is present in New York, and New York's size means that the phenomenon in question is magnified and thus easier to understand. This magnification makes the study of New York an essential part of the study of cities in general, and it is why the particular discussions of New York in Hoover and Vernon (1959), Vernon (1960), and Chinitz (1961) have had such long-lasting general impact on urban economics.

This paper also looks at New York as an urban paradigm. Our focus is on New York's constant change, as captured in the famous unattributed quote above. The central aspect of New York's dynamism that we consider is entrepreneurship. Specifically, we focus on the geography of entrepreneurship, examining how the levels and character of nearby economic activity influence the births of new establishments and the scale at which they operate.

This paper builds primarily on research on agglomeration economies. Much of the empirical work on agglomeration has sought to estimate the effect on productivity of an establishment's local environment. The estimation has sometimes involved direct estimates of productivity (Henderson 2003) and has sometimes involved estimating correlates of productivity, including wages (Glaeser and Mare 2001) and growth (Henderson, Kuncoro, and Turner 1995).[1] Our paper is concerned with two productivity correlates: establishment births and new-establishment employment. Prior work on agglomeration and births has established the importance of the metropolitan environment (Carlton 1983). Rosenthal and Strange (2003) show that agglomeration effects attenuate geographically for six standard industrial classification (SIC) industries—software (SIC 7371-73, 75), food products (SIC 20), apparel (SIC 23), printing and publishing (SIC 27), fabricated metal (SIC 34), and machinery (SIC 35)—that serve national and international markets. For these industries, it appears that an establishment's local environment matters most.[2]

This paper employs geographically refined data from Dun & Bradstreet together with geographic information systems (GIS) software to study the spatial pattern of entrepreneurship in New York City for a broad set of industry groups. The key aspects of our analysis involve regressions of the number of

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births and the amount of new-establishment employment in a census tract on variables that describe the tract's local environment. Two sets of such variables are constructed. The first characterizes the total employment across all industries within one mile, between one and five miles, and between five and ten miles of the tract. These measure the degree of urbanization of the tract, which Jacobs (1969) and others argue is associated with productivity. The second set of variables characterizes the employment in individual two-digit SIC industries. These allow the identification of localization effects, where the proximity to own-industry activity adds to productivity (Marshall 1920).

We take a within-city approach to agglomeration, with the identification of the determinants of the spatial pattern of births and new-establishment employment coming from variation in the data within the New York consolidated metropolitan statistical area (CMSA). Although such an approach is rare in the literature—Anderson, Quigley, and Wilhelmson (2004) and Arzaghi and Henderson (2005) are exceptions—theoretical work on agglomeration argues forcefully that the effect should be modeled as decaying with distance rather than being bounded by political borders.[3]

In addition to being closer to theories of agglomeration, our within-city geographic approach has an important econometric advantage: any effects that are fixed at the city level are captured by the constant term. One such effect is regional natural advantage. Recognition of the importance of this effect goes back to Marshall (1920) at least. More recently, Glaeser, Kolko, and Saiz (2001) show climate to be a strong predictor of urban growth. To the extent that this sort of natural advantage influences entrepreneurship at the regional level, we control for it, and also for any other regionwide natural advantage that might exist. Although we cannot fully rule out the possibility that within-city variation in natural advantages drives some of our results, we believe that most natural advantages are regional. If so, then spatial variation in activity within the New York CMSA will be driven primarily by agglomeration economies and the spatial differences in productivity they create. This seems to be especially likely when analyzing the location of information-oriented industries that are less sensitive to shipping costs.

Separate regressions are carried out for four one-digit industry groups: manufacturing (SIC 21-39), wholesale trade (SIC 50-51), services (SIC 70-89), and finance, insurance, and real estate (FIRE, SIC 60-67). We also estimate models with employment from all industries in the economy aggregated together (eighty-two two-digit industries in all). In all of these models, we include two-digit SIC-fixed effects to control for characteristics common to enterprises throughout a given two-digit category. We also estimate one additional model for just business services (SIC 73). This industry is considered separately because of its importance in the local economy. In all the models, we consider whether urbanization and localization economies are present. More important, our geographically refined data also allow us to consider whether these effects attenuate geographically.

Our results are as follows. First, we document the extensive variation within the New York CMSA in the types of business activity that take place, including entrepreneurship. Second, in our analysis of the sources of entrepreneurship, the density of local employment (urbanization) and the amount of local employment in an entrepreneur's own industry (localization) are both shown to affect entrepreneurship. The influence of localization is always positive, while the effect of urbanization is much smaller in magnitude at the margin. For some industries, it is negative. Third, all of these agglomeration economies are shown to attenuate with distance. Typically, the effects of the environment beyond one mile are an order of magnitude smaller than the effects of the more immediate environment.

In the next section, we present evidence on the location of economic activity within New York. Section 3 offers a simple model of new-establishment formation and discusses the agglomeration variables used in our estimation. The estimation results are presented in Section 4.

2. Metropolis 2001: Location Patterns in the New York Region

2.1 Overview

Nearly fifty years ago, the Graduate School of Public Administration at Harvard University was asked to carry out a comprehensive study of the New York region. This mammoth effort resulted in nine monographs and a summary volume (Vernon 1960). The New York Metropolitan Region Project covered nearly every aspect of New York's economy, including its labor markets, housing markets, and industrial organization. Geography was central to all of this analysis. What goods and services were produced in New York and not in other places because of New York's preeminent and peculiar place in the system of cities? Within New York, where were different goods produced? Although the study of agglomeration economies was far from mature during the project, the idea of external increasing returns played a central role in the answers offered to these questions.

Our goals in this paper are obviously much more modest, but they are related. We are interested in characterizing where various activities take place within New York and how agglomeration economies impact New York's perpetual reinvention of itself. This section concerns the first of these goals. As will become apparent, our analysis departs from the New York Metropolitan Region Project in at least one important way: we analyze at a much more refined level of geography.

2.2 Data

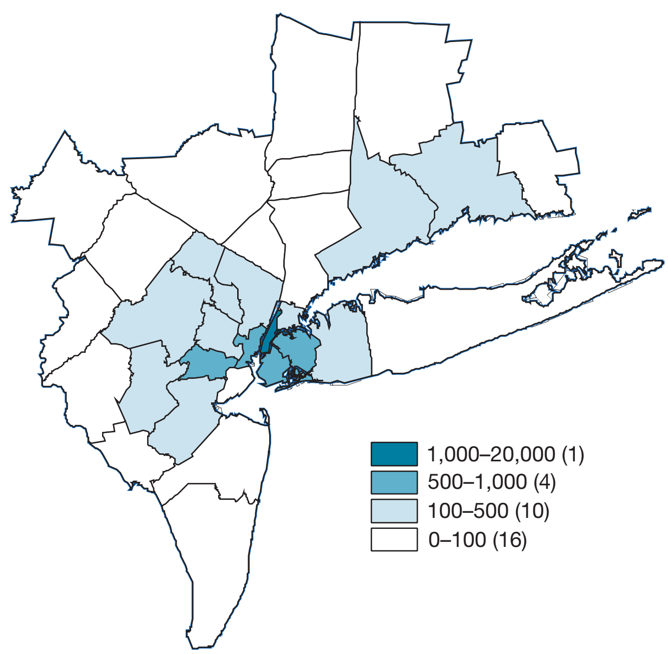
We are able to conduct our analysis at a more refined level of geography by employing data from Dun & Bradstreet Marketplace. This database provides a wealth of information on establishments throughout the New York CMSA. We employ data from 2001:2 to describe New York's economic environment. The data characterize an establishment's activity (using the primary standard industrial classification), its employment, and its U.S. postal ZIP code location. We then match ZIP codes to the census ZIP code tabulation area (ZCTA) geography, as well as to the year 2000 census-tract geography. This procedure enables us to convert all of the employment data to census-tract geography, which we use as our standard geographic unit of analysis.[4] In future work, the procedure will facilitate analysis of the relationship between local employment and residential patterns. However, as noted earlier, our focus in this paper is on employment and entrepreneurial activity in manufacturing, wholesale trade, FIRE, and services. We will address how the data are employed in our estimation later in the discussion.

2.3 County-Level Patterns

Before turning to our more geographically refined characterization of economic activity in New York, we will begin by painting a larger but somewhat less detailed picture at the county level. The New York CMSA is made up of thirty-one counties. They differ substantially. New York County, which is essentially equivalent to Manhattan, is extremely dense, with 66,940 people per square mile (<http://www.factfinder.census.gov>). Dutchess County is sixty-four miles from the center of Manhattan, and is considerably less dense, with 350 people per square mile. Across the rest of the New York CMSA, population density varies between these two extremes. This intracity variation is one of the main reasons why our study looks at agglomeration and entrepreneurship using within-city variation.

The maps in Charts 1-4 depict employment densities (employment per square mile) at the county level across the metropolitan area. Right away, it is clear that with regard to employment as well, Manhattan is different. Despite the well-known problems of central cities in general and of New York in particular, and despite the tendencies of industries and households to decentralize, the high density of activity in Manhattan remains unique in the New York metropolitan area. This pattern holds for manufacturing (SIC 20-39, Chart 1), wholesale trade (SIC 50-51, Chart 2), services (SIC 70-89, Chart 3), and FIRE (SIC 60-67, Chart 4). This result is somewhat surprising. Much popular urbanism (such as Garreau [1991]) argues that the really important parts of America's cities are their peripheries. It is certainly true that the changes taking place at the urban fringe are significant. However, it is also true that their

Chart 1
Manufacturing Employment Density (Workers per Square Mile)
County Level, 2001:2

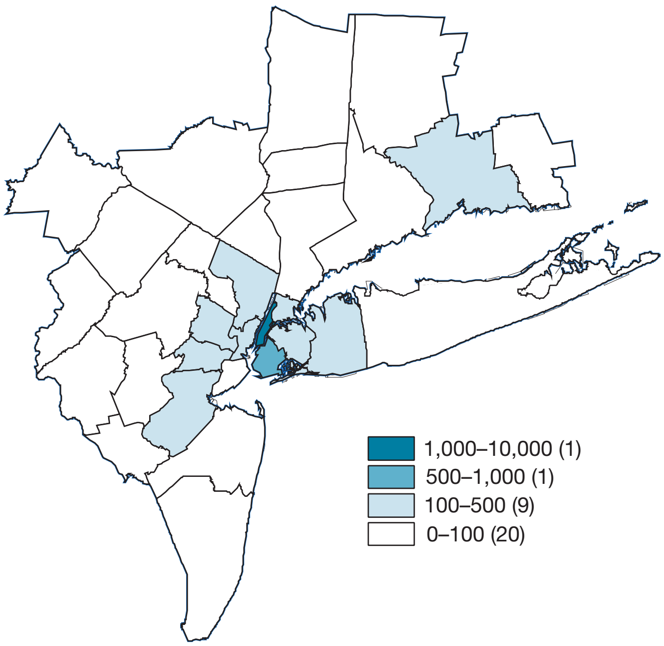


Source: Dun & Bradstreet, Inc., Second Quarter 2001 MarketPlace files.
Note: Figures in parentheses are the number of counties in each category.

Chart 2

Wholesale Trade Employment Density (Workers per Square Mile)

County Level, 2001:2



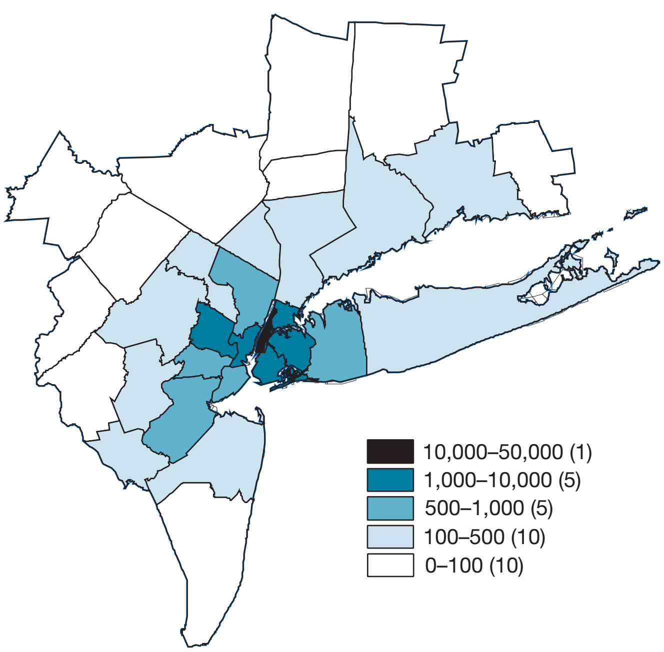
Source: Dun & Bradstreet, Inc., Second Quarter 2001 MarketPlace files.

Note: Figures in parentheses are the number of counties in each category.

Chart 3

Services Employment Density (Workers per Square Mile)

County Level, 2001:2



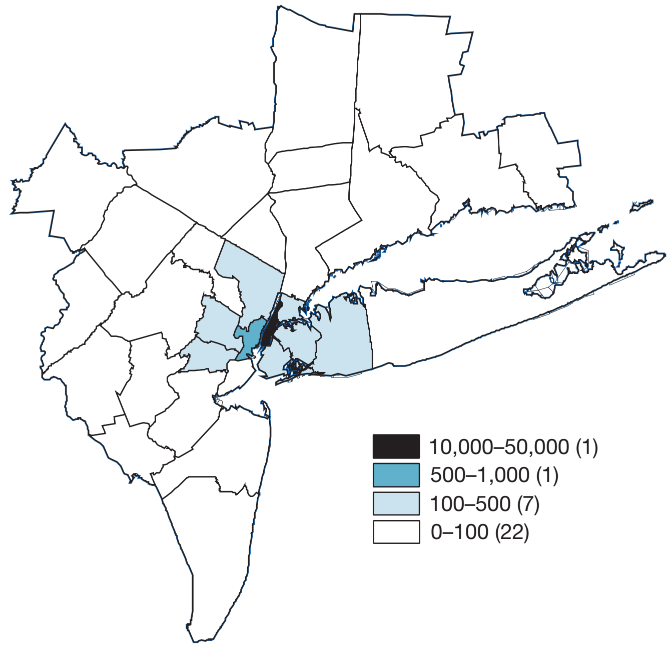
Source: Dun & Bradstreet, Inc., Second Quarter 2001 MarketPlace files.

Note: Figures in parentheses are the number of counties in each category.

Chart 4

FIRE Employment Density (Workers per Square Mile)

County Level, 2001:2



Source: Dun & Bradstreet, Inc., Second Quarter 2001 MarketPlace files.

Notes: Figures in parentheses are the number of counties in each category. FIRE is finance, insurance, and real estate.

status as a fringe implies the existence of a center, and the center still matters, at least for some cities. Of course, as we observed, New York is unusually dense. Thus, the picture from this analysis of New York may not apply to more sparsely developed cities like Houston.

Not surprisingly, the industries differ in their patterns of centralization. Comparing Charts 1 and 2 shows that manufacturing and wholesale trade follow roughly similar patterns, with the latter being more centralized. Given the importance of services to all twenty-first-century cities, it is not surprising that Chart 3 shows service sector employment exceeding 100 workers per mile in more than half of New York City's counties. It is also not surprising that employment in the FIRE industries is highly concentrated in and near Manhattan. These are known to be highly agglomerated industries.

2.4 Tract-Level Patterns

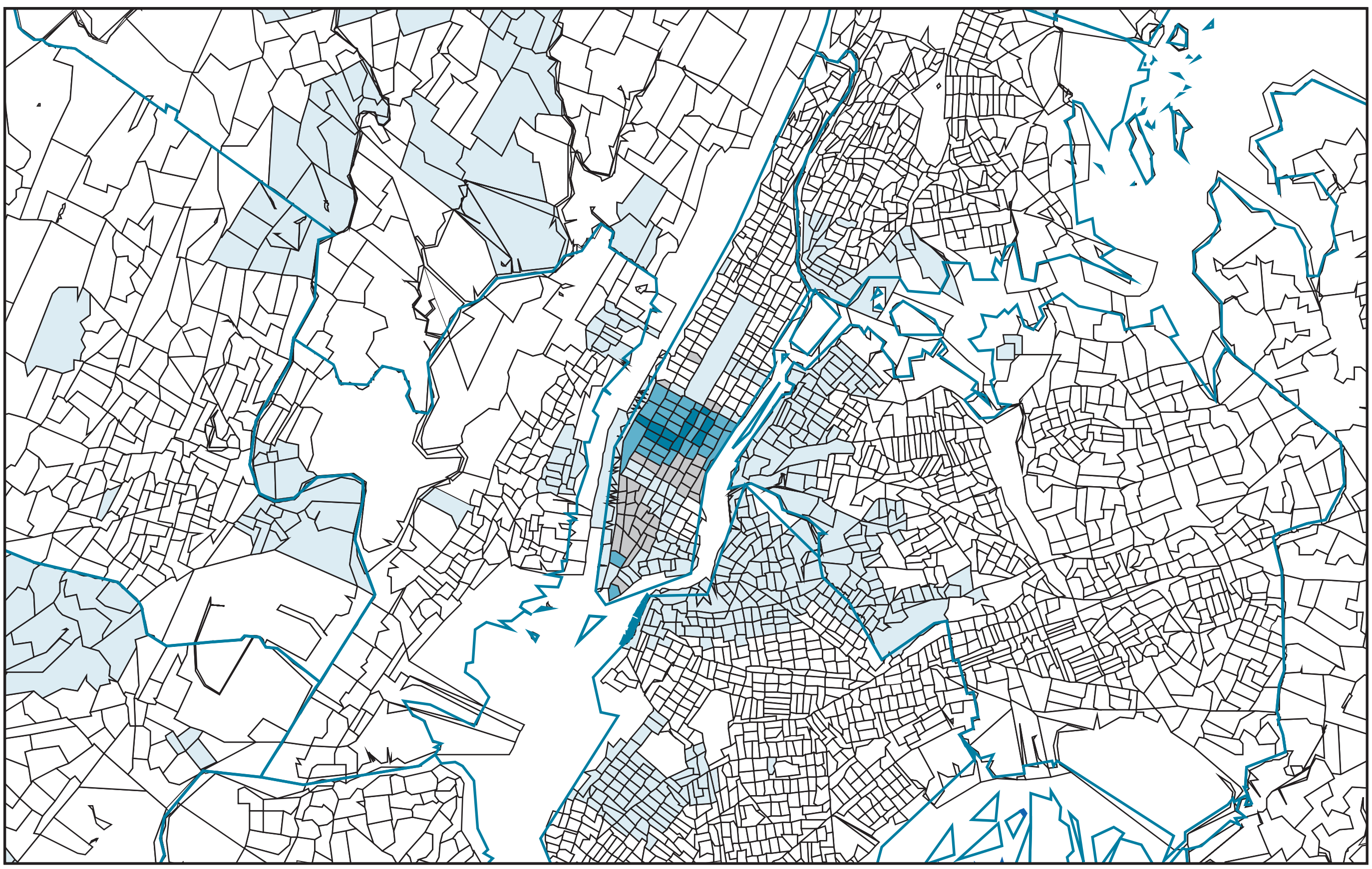
One might believe that the centralization of the New York CMSA is adequately depicted in the county maps (Charts 1-4). However, the maps in Charts 5-8 reveal that this is not true. They present employment densities at the census-tract level. Charts 5-8 show, as the county-level maps do, that Manhattan is overwhelmingly the center of the city's employment. In fact, for each of the four industry groups, the center of employment is not just Manhattan, but Lower Manhattan, defined as beginning at the southern end of Central Park. Even within Lower Manhattan, there are places with greater and smaller densities for each of the four industry groups. Thus, taken as a whole, the charts clearly establish that there is micro-level geographic concentration within the New York metropolitan area.

We begin with Chart 5, which indicates that manufacturing is concentrated in Midtown, specifically in the Fashion District (formerly the more modestly named Garment District). There exist smaller concentrations in the closest areas of Brooklyn, Queens, the Bronx, and in New Jersey. Despite the de-urbanization of manufacturing activity that took place in the last half of the twentieth century, the manufacturing sector remains important for New York City. In light of our earlier claim that New York has been treated as an urban paradigm, it is important to note that the persistence of manufacturing activity is probably greater in New York than in other cities. Chart 6 depicts wholesale trade employment density. As the earlier county-level map revealed, the pattern for wholesale

Chart 5

Manufacturing Employment Density (Workers per Square Mile)

Census-Tract Level, 2001:2



50,000–500,000 (11) 25,000–50,000 (30) 10,000–25,000 (39) 1,000–10,000 (517) 0–1,000 (4,497)

Source: Dun & Bradstreet, Inc., Second Quarter 2001 MarketPlace files.

Note: Figures in parentheses are the number of tracts in each category for the entire New York consolidated metropolitan statistical area.

trade is very similar to the pattern for manufacturing. Both industry groups reach their highest employment densities in Midtown.

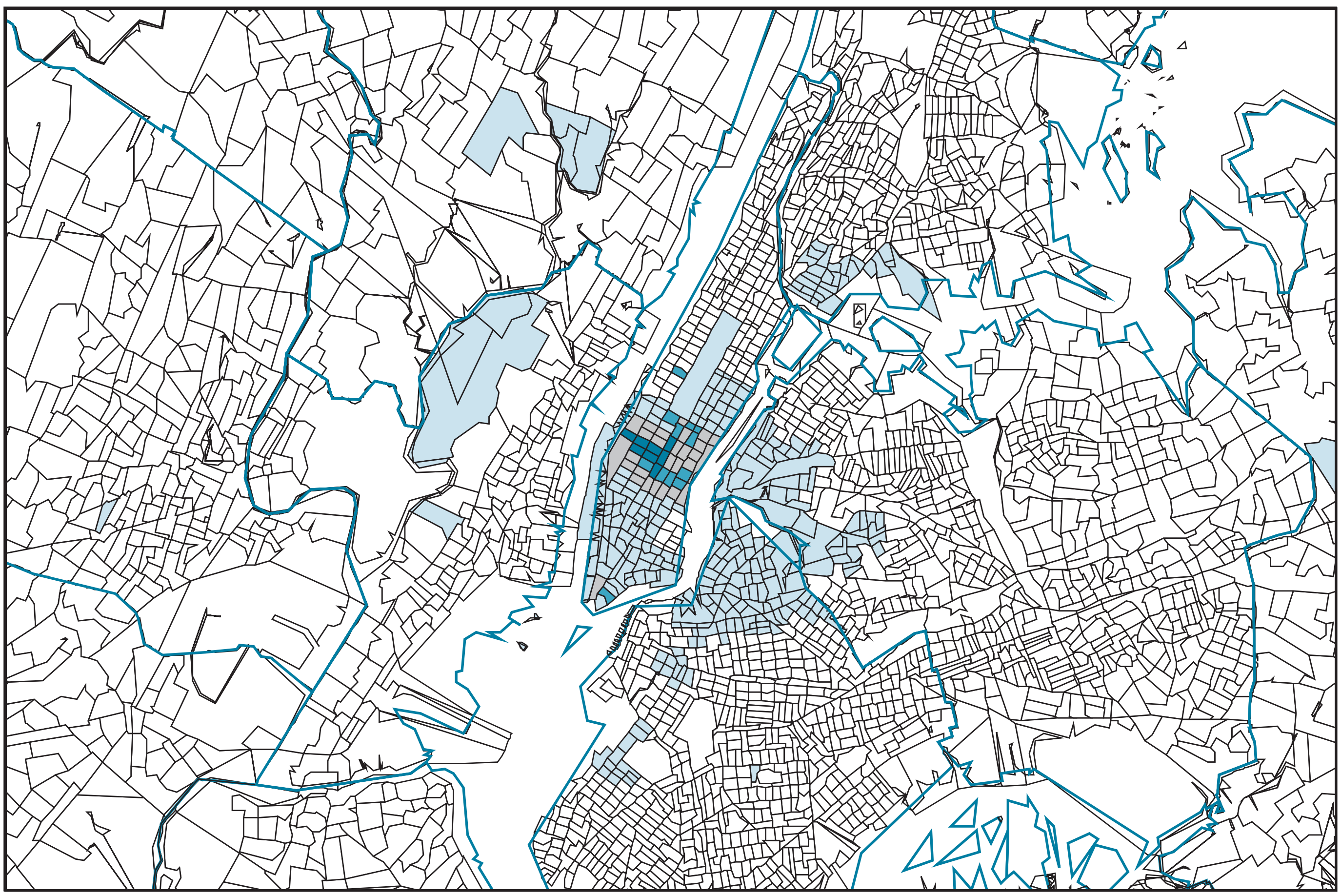
Chart 7 shows starkly just how much New York has become a "service city." For manufacturing, there are only eleven tracts where employment density is greater than 50,000 workers per square mile. For services, there are ninety-four tracts that reach an employment density of at least 50,000. There are smaller concentrations of manufacturing in the outer boroughs. The parallel for services is that most of Brooklyn, Queens, and the Bronx reach at least moderately concentrated levels of service employment density. It is worth reiterating that although service sector employment is present everywhere, it is especially present in Lower Manhattan.

Chart 8 illustrates employment density for the FIRE industry group. The chart reveals a somewhat different pattern. Employment continues to reach its greatest densities in Lower Manhattan, as with the other industries. Unlike the other

Chart 6

Wholesale Trade Employment Density (Workers per Square Mile)

Census-Tract Level, 2001:2



50,000–500,000 (8) | 25,000–50,000 (12) | 10,000–25,000 (28) | 1,000–10,000 (285) | 0–1,000 (4,761)

Source: Dun & Bradstreet, Inc., Second Quarter 2001 MarketPlace files.

Note: Figures in parentheses are the number of tracts in each category for the entire New York consolidated metropolitan statistical area.

industries, though, for FIRE there are two centers. They are located Downtown (at the lower tip of Manhattan) and in Midtown. Also, relative to the other industry groups, there is really very little high-density employment in FIRE outside (both upper and lower) Manhattan.

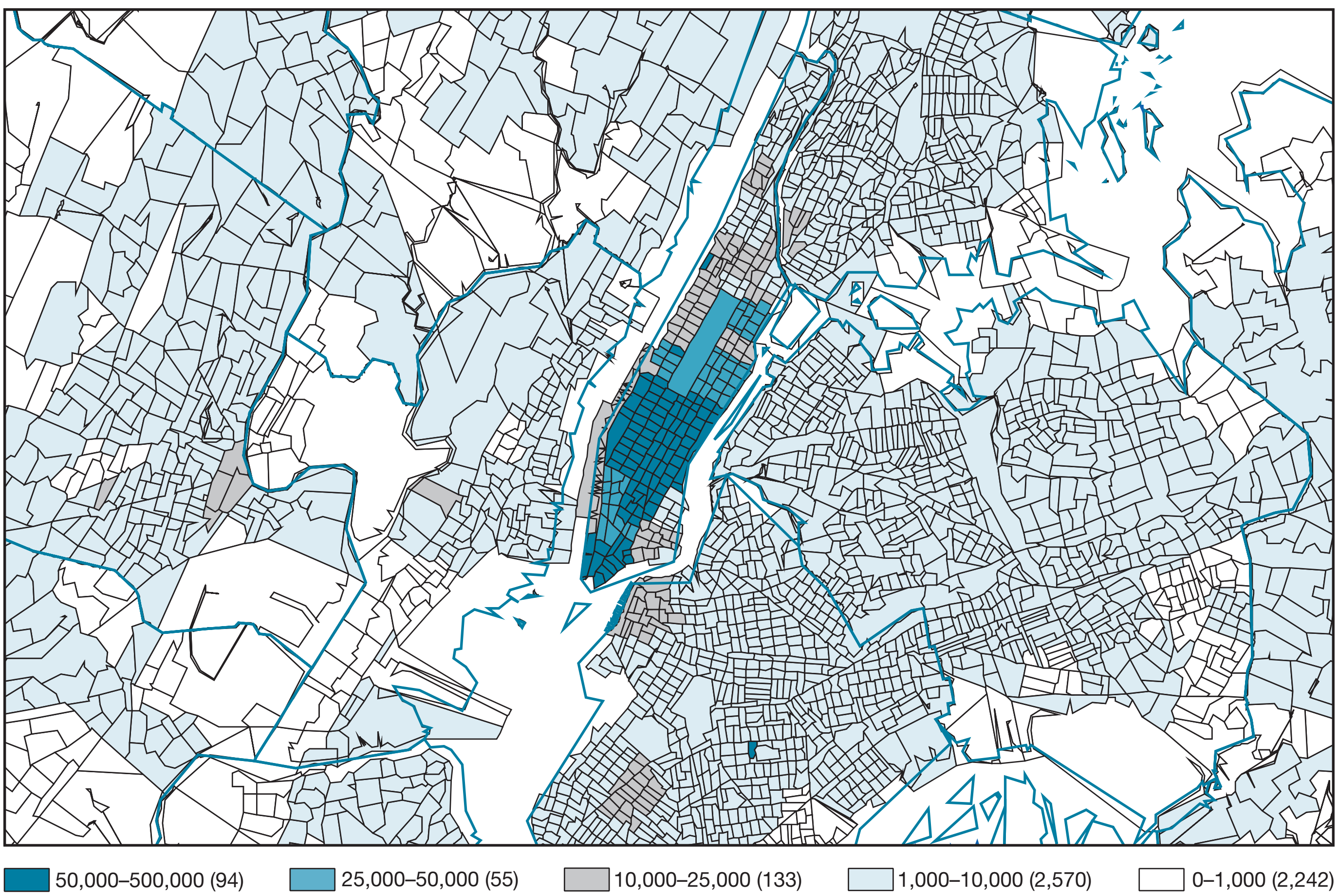
Taken together, the maps in Charts 1-4 and 5-8 paint a picture of a centralized city, both at the macro (county) and micro (census-tract) levels. The pattern varies by industry, with service employment reaching high densities across much of Manhattan and at least moderate densities in the adjacent areas. Other industries are concentrated more narrowly. Manufacturing and wholesale trade are still important for New York City; they are concentrated in Midtown. FIRE is also concentrated there, but another concentration also exists Downtown.

These maps describe the local business environment that confronts an entrepreneur making the decisions of whether to start up a new establishment, where to put it, and at what scale to operate it. These will essentially be the regressors in our models. The dependent variables are births of new establishments and new-establishment employment.

Chart 7

Services Employment Density (Workers per Square Mile)

Census-Tract Level, 2001:2



Source: Dun & Bradstreet, Inc., Second Quarter 2001 MarketPlace files.

Note: Figures in parentheses are the number of tracts in each category for the entire New York consolidated metropolitan statistical area.

Chart 8

FIRE Employment Density (Workers per Square Mile)

Census-Tract Level, 2001:2

Source: Dun & Bradstreet, Inc., Second Quarter 2001 MarketPlace files.

Notes: Figures in parentheses are the number of tracts in each category for the entire New York consolidated metropolitan statistical area. FIRE is finance, insurance, and real estate.

2.5 Entrepreneurial Density

The maps in Charts 9-12 illustrate the density of new-establishment employment at the tract level. Specifically, they describe geographic patterns of employment of establishments in 2004:2 that are less than three years old. It is well-known that many establishments have very short life spans (see the references in Caves [1998]). Our births variable thus understates the true amount of new-establishment creation that took place over the period because we do not take into account those companies that were created after 2001:2 but closed before 2004:2. Having said that, it is not obvious that using a shorter horizon would have been preferable. In this case, our initial period was chosen to characterize New York City before the destruction and disruptions associated with September 11. We chose to look at births over a longer horizon in part to allow some of the effects of September 11 to work through the system. Of course, adjustment remains incomplete as of this writing, but some terminal date needed to be set.

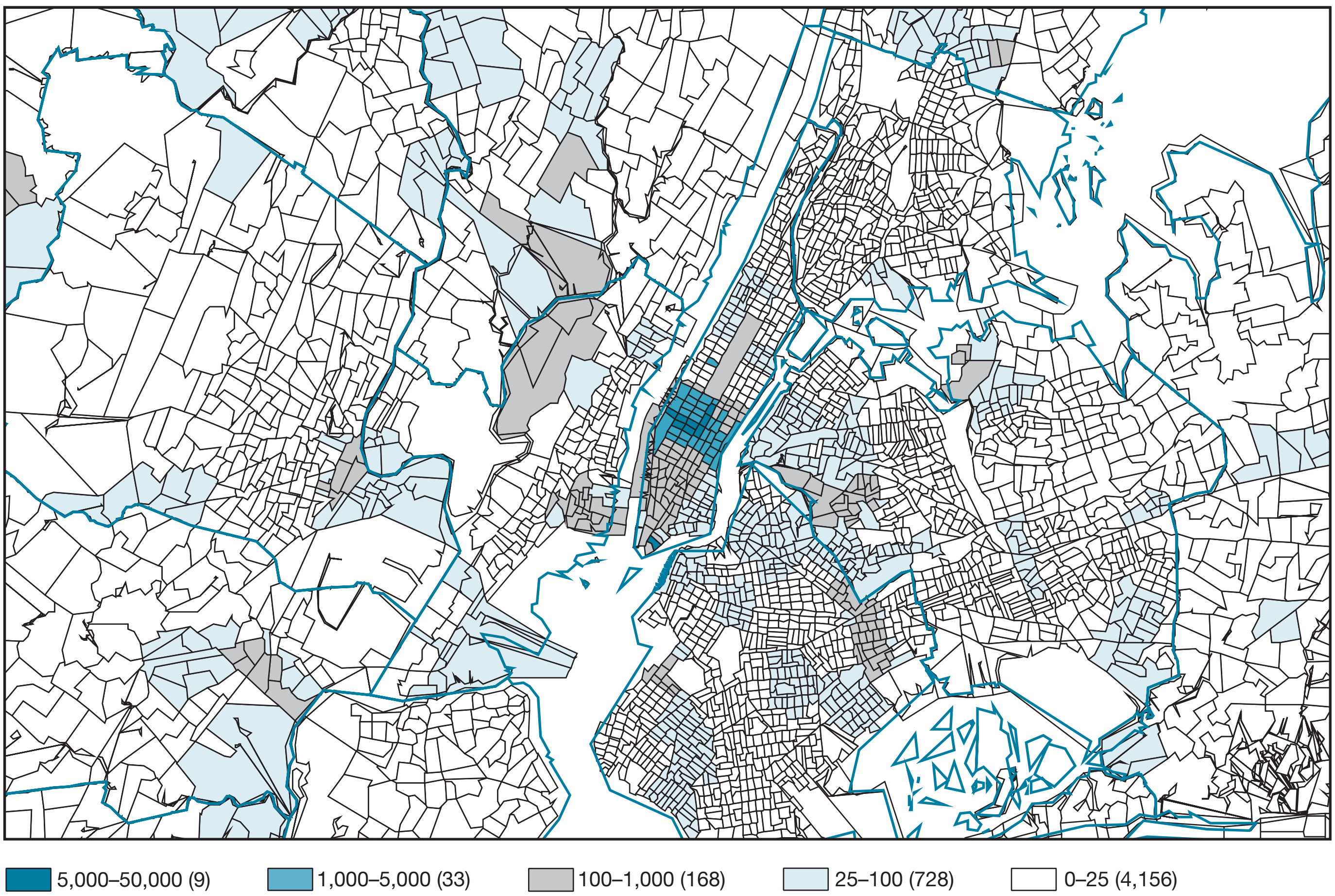
It is immediately clear from Charts 9-12 that entrepreneurial activity is highly concentrated. Furthermore, new-establishment employment is greatest near the locations identified in Charts 5-8 as having the most employment in the various industry groups. These maps suggest the presence of geographically attenuating agglomeration economies in entrepreneurship where the effect is at least partly associated with own-sector activity (localization).

In sum, the maps in this section paint a picture of the New York CMSA as remarkably centralized, both at the macro

Chart 9

Manufacturing Employment Density (Workers per Square Mile) at Establishments Three Years of Age or Less

Census-Tract Level, 2004:2



Source: Dun & Bradstreet, Inc., Second Quarter 2004 MarketPlace files.

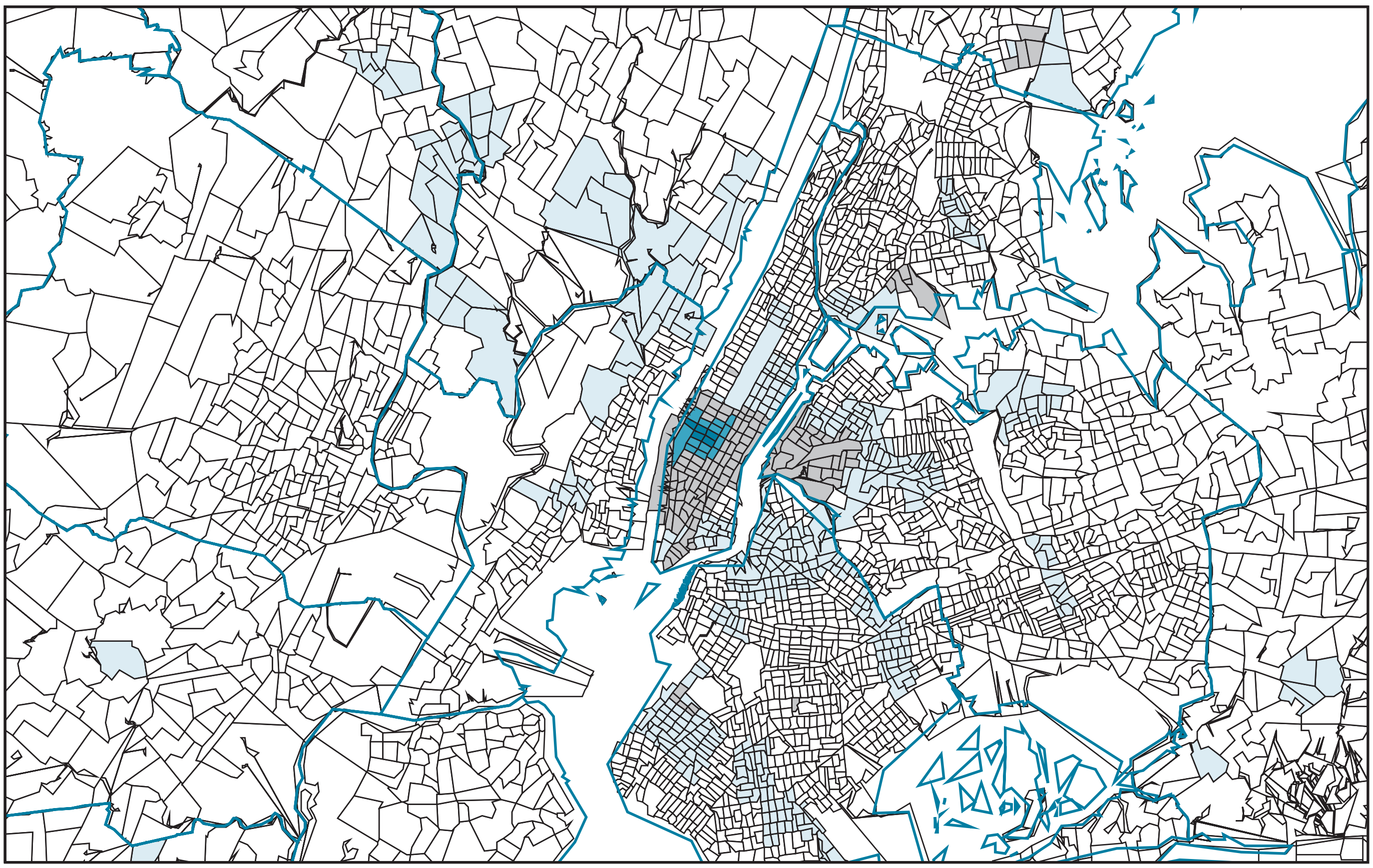
Note: Figures in parentheses are the number of tracts in each category for the entire New York consolidated metropolitan statistical area.

and micro levels. Both the number of new establishments and the employment they bring are also centralized. Entrepreneurial activity appears to be attracted to locations with large amounts of activity in the same sector. This is as far as simple descriptive devices like maps can take us. The next section sets out a model that forms the basis for our estimation of the relationship between the spatial allocation of business activities and entrepreneurship.

Chart 10

Wholesale Trade Employment Density (Workers per Square Mile) at Establishments Three Years of Age or Less

Census-Tract Level, 2004:2



5,000–50,000 (5) 1,000–5,000 (13) 100–1,000 (127) 25–100 (504) 0–25 (4,445)

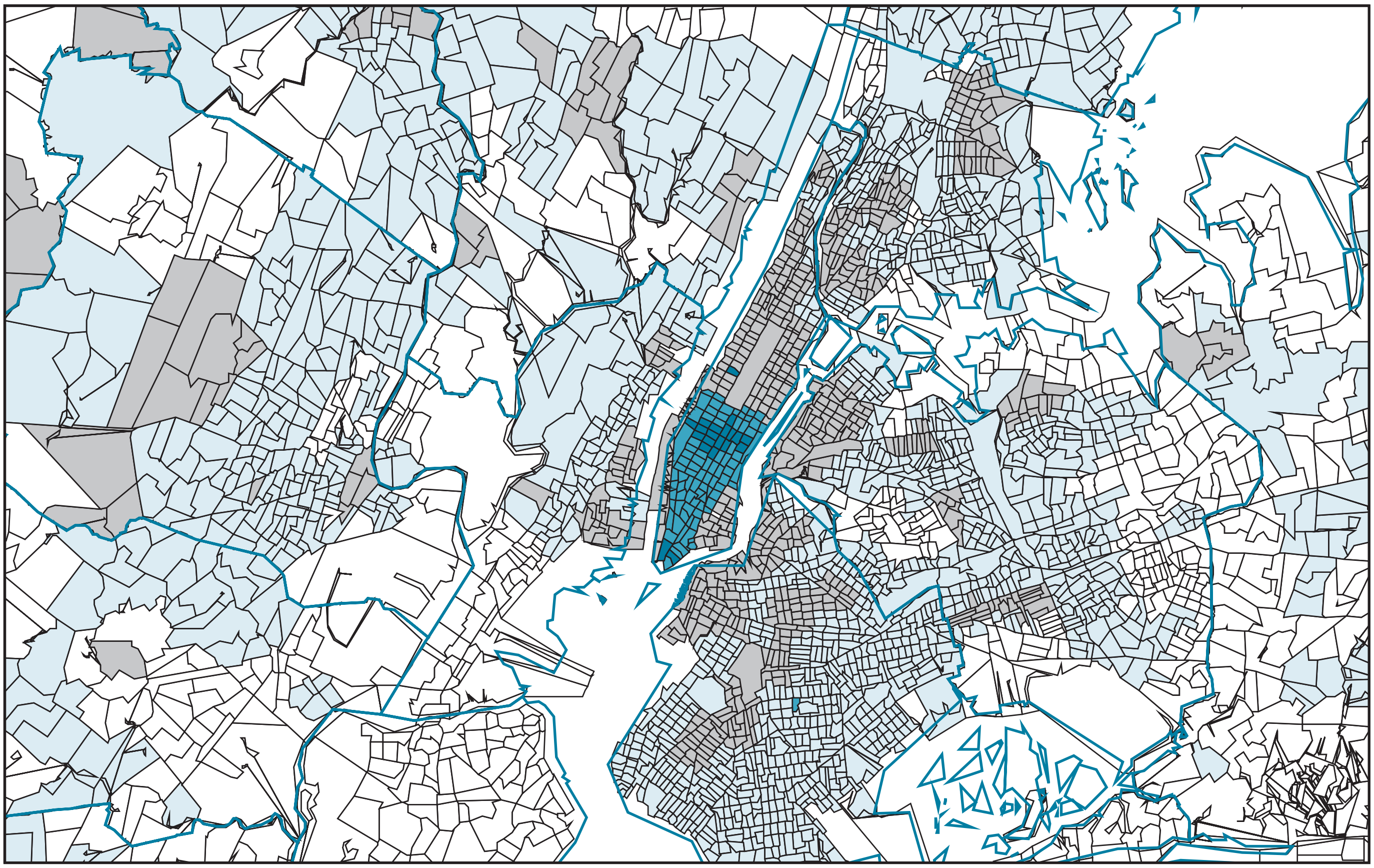
Source: Dun & Bradstreet, Inc., Second Quarter 2004 MarketPlace files.

Note: Figures in parentheses are the number of tracts in each category for the entire New York consolidated metropolitan statistical area.

Chart 11

Services Employment Density (Workers per Square Mile) at Establishments Three Years of Age or Less

Census-Tract Level, 2004:2



5,000–50,000 (20) | 1,000–5,000 (85) | 100–1,000 (661) | 25–100 (2,014) | 0–25 (2,314)

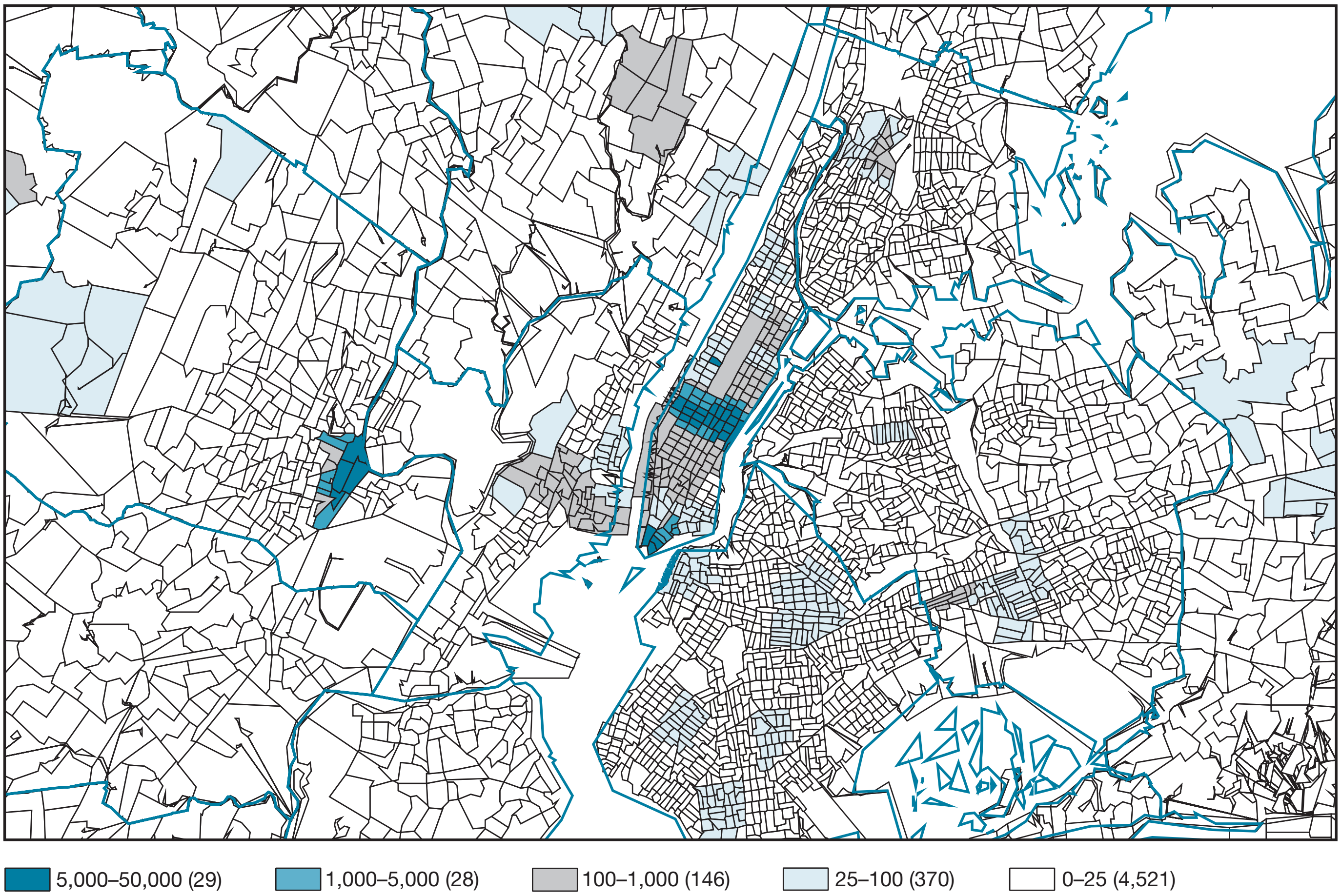
Source: Dun & Bradstreet, Inc., Second Quarter 2004 MarketPlace files.

Note: Figures in parentheses are the number of tracts in each category for the entire New York consolidated metropolitan statistical area.

Chart 12

FIRE Employment Density (Workers per Square Mile) at Establishments Three Years of Age or Less

Census-Tract Level, 2004:2



Source: Dun & Bradstreet, Inc., Second Quarter 2004 MarketPlace files.

Notes: Figures in parentheses are the number of tracts in each category for the entire New York consolidated metropolitan statistical area. FIRE is finance, insurance, and real estate.

3. Model and Estimation Strategy

3.1 Model

The heart of the model is agglomeration economies. If agglomeration economies exist, then productivity will vary spatially. This, in turn, implies that births of new establishments will take place near existing concentrations of employment, all else equal. However, all else may not be equal. If there were a local source of natural advantage, firms would agglomerate even though they had no external effect on each other. For example, as discussed in Rosenthal and Strange (forthcoming), the wine industry is concentrated in California because of favorable climate and other natural features that facilitate the growing of grapes. As we observed earlier, our within-city approach controls for natural advantages that operate at a regional level. To take that idea a step further, we also include two-digit SIC-fixed effects in all of the models. This allows the influence of regionwide natural advantages to differ across two-digit industry subgroups by stripping away all factors common to enterprises belonging to a given subgroup. Even with these fixed effects, we cannot rule out the possibility that local variation in natural advantages may still account for a portion of the estimated attraction of new economic activity to existing concentrations of employment. However, for two reasons, which we elaborate on later, we believe that our results largely reflect the influence of external economies of scale rather than natural advantages. To anticipate, the first reason is that some of our industry groups seem to be quite footloose, such as services and FIRE. In addition, the attenuation patterns we document implicitly suggest the presence of factors whose influence dissipates rapidly, a feature that seems to better fit local variation in agglomeration than natural advantages.

We begin with a model adapted from Rosenthal and Strange (2003). Suppose that the price of output is normalized to 1. In this case, an establishment generates profit equal to $\pi(y) = a(y)f(x) - c(x)$, where $a(y)$ shifts the production function $f(x)$, y is a vector of local characteristics (the components of which will be clarified below), and x is a vector of factor inputs that cost $c(x)$. Input quantities will be chosen to maximize profits by satisfying the usual first-order conditions. Employment (n), for example, is chosen such that $a(y)\partial f(x)/\partial n - \partial c(x)/\partial n = 0$.

Establishment births occur if a firm can earn positive profits, with all inputs chosen at their profit-maximizing levels. Establishments are heterogeneous in their potential profitability. This feature is captured by rewriting the profit function as $\pi(y,\varepsilon) = max_x a(y)f(x)(1+\varepsilon) - c(x)$. We suppose that ε is independent and identically distributed across establishments according to the cumulative distribution function $\Phi(\varepsilon)$. For any y, there is a critical level $\varepsilon^*(y)$ such that $\pi(y,\varepsilon^*(y)) = 0$ and $\pi(y,\varepsilon) > (<)\ 0$ as $\varepsilon > (<)\ \varepsilon^*(y)$. In this case, the probability that an establishment is created is $\Phi(\varepsilon^*(y))$.

We assume that new establishments are opened at locations chosen from among all of the census tracts in the New York CMSA, $j = 1, \ldots, J$. We also assume that location and employment decisions are made taking the prior economic environment (2001:2) as given. Let the vector y_j describe the local characteristics of each tract. Aggregating over establishments in a given tract gives the number of births (B) and total new-establishment employment (N) in industry i and tract j. We express these as follows:

$$B_{ij} = by_{ij} + b_m + b_i + \varepsilon_{b,ij}, \tag{1}$$

$$N_{ij} = ny_{ij} + n_m + n_i + \varepsilon_{n,ij}, \tag{2}$$

where ε_b and ε_n are error terms, b and n are vectors of coefficients, b_m and n_m are metrowide constant terms, and b_i and n_i are industry-fixed effects. The b_m and n_m terms capture any characteristics that impact entrepreneurship that are common across all industries in the New York metropolitan area. The industry-specific fixed effects capture any attributes that are common to entrepreneurship throughout that industry in the New York area. Together, the metrowide constant and the industry-fixed effects control for a range of natural advantages, as we observed earlier.

In addition, these terms are also likely to capture a number of other unobserved determinants of entrepreneurship that might vary geographically.[5] For example, Blanchflower, Oswald, and Stutzer (2001) report that "latent entrepreneurship," the unfulfilled desire for self-employment, varies substantially across countries. It is reasonable to suspect that it might also vary between cities. Black, de Meza, and Jeffries (1996) show the availability of collateral to be an important determinant of new-enterprise creation in the United Kingdom. The entrepreneur's own housing is shown to be the single most important source of such collateral. Since housing markets in larger cities are different than in smaller cities, this may be another metrowide effect captured in the model-fixed effects. Furthermore, there is a well-documented correlation between entry and failure. See Caves (1998) for a review of this literature. This correlation implies that resources that can be used by new establishments may be more plentiful where there has previously been activity of a similar sort. Carlton (1983) includes this in his concept of the "birth potential" of an area. This is clearly an important issue in estimation where identification is based on intercity variation in the data. In our case, however, the identification comes from intracity variation. As long as firms that fail are free to choose any location within the CMSA, this effect will be captured by the fixed effects.

As discussed above, local variation in agglomeration that influences productivity will affect births and employment at the new establishments. Thus, the vector y_{ij} will characterize the spatial distribution of employment as perceived by industry i in tract j. Specifically, y_{ij} includes the level of employment within and outside industry i (for $i = 1, \ldots, I$) within various distances of the geographic centroid of tract j. These variables define the level of agglomeration associated with a given tract and can be measured with our data. We now explain how.

3.2 Concentric Ring Variables

As discussed above, we employ data from Dun & Bradstreet in our analysis. Our goal is to assess the relationship between a census tract's local business environment and establishment births and birth employment. To do this, we characterize the environment of each tract in our sample according to the 2001:2 level of employment. The first step is to compute for each tract both the total level of employment and the level of employment in each two-digit industry. It is worth emphasizing that in our estimation, our employment variables will then measure activity at the two-digit industry level, and not at the more general one-digit-level industry group.

The next step is to create a set of concentric ring variables for both own-industry and aggregate employment. These variables will allow the measurement of the geographic extent of agglomerative externalities. They are calculated as follows. First, employment in a given tract is treated as being uniformly distributed throughout the tract. Then, using mapping software, we draw circles of radius r_i, i = 1, 5, and 10 miles around the geographic centroid of each census tract in the New York CMSA. The level of own-industry employment contained within a given circle is then calculated by constructing a proportional (weighted) summation of the own-industry employment for those portions of the tracts intersected by the circle. For example, if a circle includes all of tract 1 and 10 percent of the area of tract 2, then employment in the circle is set equal to the employment in tract 1 plus 10 percent of the employment in tract 2. The same procedure is used to calculate the level of other-industry employment within each circle. Differencing employment levels for adjacent circles (by employment type) yields estimates of the levels of own- and other-industry employment within a given concentric ring. Thus, the 5-mile ring (r_5) reflects employment between the 1- and 5-mile circles, and so on out to 100 miles. Table 1 describes our data, including the rings.[6]

3.3 Tobit Estimation

We estimate (1) and (2) using a Tobit specification to account for the censoring of both kinds of entrepreneurial activity at zero. An alternative would have been to estimate the number of new establishments in a count model, while estimating new-establishment employment by Tobit. We chose to estimate both by Tobit in order to treat both aspects of entrepreneurship symmetrically. This raises an econometric issue because noisy estimates of the fixed effects in nonlinear models typically lead to inconsistent estimates of the slope coefficients (see, for example, Chamberlain [1980, 1984] and Hsiao [1986]). Also, Tobit models are known to be more sensitive to distributional assumptions than are linear regressions. Our primary response to this issue is that bias resulting from noisy estimates of fixed effects in nonlinear models tends to go toward zero as the number of observations per fixed effect becomes arbitrarily large. Since our sample has 5,211 tracts per fixed effect (the number of tracts in the New York CMSA), inconsistency arising from noisy estimates of the fixed effects is hoped to be small.[7]

4. The Geography of Entrepreneurship

4.1 Births

This section presents estimates of models relating entrepreneurship to the local business environment as defined by the concentric ring variables described above. We begin with estimates of (1), the new-establishment births model. All estimation is carried out at the census-tract level.

Table 2 presents two models: Model 1 deals only with urbanization, the scale of aggregate activity; Model 2 adds variables capturing localization, the scale of activity in an establishment's own industry. In all models, we include variables capturing activity in an establishment's immediate vicinity (within one mile), nearby (between one and five miles), and further away (within ten miles).

Table 1

Variable Means per Two-Digit Industry and Census Tract by County: All Industries

State	County	County FIPS Code	New Census-Tract Own-Industry Establishments	New Census-Tract Own-Industry Establishment Employment	Existing Own-Industry Employment: Within One Mile	Existing Own-Industry Employment: Within One to Five Miles	Existing Own-Industry Employment: Within Five to Ten Miles	Existing All-Industry Employment: Within One Mile	Existing All-Industry Employment: Within One to Five Miles	Existing All-Industry Employment: Within Five to Ten Miles
CT	Fairfield	9001	0.21	1.25	72	976	1,806	5,807	79,052	146,311
CT	Litchfield	9005	0.14	0.64	7	157	439	564	12,709	35,570
CT	Middlesex	9007	0.16	0.66	17	314	962	1,344	25,469	77,939
CT	New Haven	9009	0.13	0.80	61	889	1,748	4,959	71,989	141,613
NJ	Bergen	34003	0.29	1.57	128	3,949	18,220	10,334	319,865	1,475,853
NJ	Essex	34013	0.14	2.39	200	3,590	14,174	16,240	290,762	1,148,106
NJ	Hudson	34017	0.12	0.82	277	22,067	26,047	22,428	1,787,452	2,109,836
NJ	Hunterdon	34019	0.24	1.65	9	182	689	708	14,771	55,775
NJ	Mercer	34021	0.18	1.68	167	1,454	2,081	13,521	117,810	168,560
NJ	Middlesex	34023	0.19	1.04	75	1,547	4,004	6,081	125,333	324,359
NJ	Monmouth	34025	0.20	1.13	33	605	1,453	2,662	49,032	117,726
NJ	Morris	34027	0.25	2.43	46	1,085	3,073	3,717	87,850	248,917
NJ	Ocean	34029	0.19	0.58	18	356	795	1,471	28,865	64,362
NJ	Passaic	34031	0.24	1.28	153	2,638	7,713	12,410	213,670	624,716
NJ	Somerset	34035	0.25	2.45	40	933	3,017	3,264	75,579	244,397
NJ	Sussex	34037	0.14	0.48	5	122	438	442	9,856	35,474
NJ	Union	34039	0.19	0.99	114	2,610	7,319	9,223	211,406	592,868
NJ	Warren	34041	0.16	0.52	7	158	464	581	12,825	37,622
NY	Bronx	36005	0.05	0.23	255	5,454	27,965	20,622	441,752	2,265,155
NY	Dutchess	36027	0.11	0.51	17	250	478	1,350	20,259	38,752
NY	Kings	36047	0.06	0.25	327	11,182	28,917	26,514	905,770	2,342,297
NY	Nassau	36059	0.15	0.91	108	2,313	5,898	8,736	187,393	477,736
NY	New York	36061	0.36	4.21	3,460	25,347	21,184	280,283	2,053,141	1,715,933
NY	Orange	36071	0.17	0.81	10	199	490	811	16,148	39,704
NY	Putnam	36079	0.16	0.47	5	162	666	394	13,153	53,913
NY	Queens	36081	0.05	0.25	247	8,984	25,563	19,979	727,692	2,070,562
NY	Richmond	36085	0.07	0.24	70	1,684	13,967	5,669	136,435	1,131,321
NY	Rockland	36087	0.16	0.63	37	870	2,533	3,032	70,450	205,175
NY	Suffolk	36103	0.14	0.74	41	926	2,349	3,341	75,021	190,269
NY	Westchester	36119	0.13	0.79	93	1,694	4,923	7,551	137,237	398,743
PA	Pike	42103	0.15	0.58	1	23	83	72	1,843	6,713
Total			0.14	0.98	348	6,193	14,429	28,151	501,593	1,168,765

Source: Dun & Bradstreet, Inc., Second Quarter 2001 and Second Quarter 2004 MarketPlace files.

Notes: Eighty-two industries are represented (standard industrial classifications codes 1-97). "New" refers to establishments three years of age or less. New-establishment and new-employment counts are from 2004:2; existing employment counts are from 2001:2. FIPS is federal information processing standards.

Table 2

Number of Establishments Three Years of Age or Less in 2004:2

	All Industries	Manufacturing	Wholesale Trade	FIRE	Services	Business Services
Model 1						
All workers (1,000)						
Zero to one mile	1.56E-03	6.70E-04	5.67E-03	1.79E-03	2.73E-03	1.44E-02
	(101.60)	(45.40)	(45.70)	(54.66)	(62.50)	(37.64)
One to five miles	2.36E-06	2.37E-05	-1.10E-04	-3.08E-05	3.53E-06	-1.59E-04
	(1.71)	(9.96)	(-6.42)	(-6.15)	(0.56)	(-3.03)
Five to ten miles	-9.64E-05	-5.22E-05	-5.58E-05	-7.11E-05	-1.34E-04	-5.69E-04
	(-66.74)	(-33.31)	(-5.49)	(-23.55)	(-35.53)	(-18.43)
Memo:						
SIC-fixed effects	82	20	2	7	15	–
Censored observations	235,198	76,421	830	16,793	20,092	22
Uncensored observations	186,893	27,799	9,592	19,684	58,073	5,189
Log-likelihood	-275,426.87	-34,760.02	-14808.08	-22,357.75	-92536.19	-11,720.36
Pseudo R^2	0.27	0.21	0.07	0.20	0.14	0.07
Model 2						
Own SIC workers (1,000)						
Zero to one mile	8.32E-02	5.52E-02	2.81E-01	3.85E-02	9.78E-02	2.86E-01
	(137.09)	(50.78)	(40.72)	(37.00)	(89.26)	(15.55)
One to five miles	-6.17E-04	1.19E-04	3.84E-03	-2.20E-04	-7.50E-04	6.46E-02
	(-7.04)	(0.61)	(2.31)	(-1.22)	(-4.35)	(12.85)
Five to ten miles	-2.39E-03	1.13E-03	4.35E-03	-1.65E-04	-3.66E-03	2.04E-02
	(-36.96)	(8.30)	(3.84)	(-1.30)	(-34.61)	(8.18)
All workers (1,000)						
Zero to one mile	2.79E-04	3.21E-04	-3.86E-03	6.04E-04	1.30E-07	-1.89E-02
	(11.69)	(20.08)	(-14.83)	(13.54)	(-1.35)	(-8.43)
One to five miles	5.82E-06	2.24E-05	-1.66E-04	-1.70E-05	1.64E-05	-6.74E-03
	(2.94)	(8.49)	(-3.04)	(-2.41)	(2.10)	(-12.11)
Five to ten miles	-5.27E-05	-5.68E-05	-1.80E-04	-6.31E-05	-2.68E-05	-2.00E-03
	(-30.56)	(-31.96)	(-5.13)	(-14.40)	(-4.26)	(-7.67)
Memo:						
SIC-fixed effects	82	20	2	7	15	–
Censored observations	235,198	76,421	830	16,793	20,092	22
Uncensored observations	186,893	27,799	9,592	19,684	58,073	5,189
Log-likelihood	-263,299.55	-33,372.00	-14035.75	-21,624.79	-87,534.67	-11,523.95
Pseudo R^2	0.31	0.24	0.12	0.23	0.19	0.08

Source: Dun & Bradstreet, Inc., Second Quarter 2001 and Second Quarter 2004 MarketPlace files.

Notes: *t*-ratios are in parentheses. SIC is standard industrial classification (code); FIRE is finance, insurance, and real estate.

The first result to notice from Model 1 is that the urbanization of the immediate environment has a positive effect on births for all four industry groups. Overall, the effect is that adding 1,000 workers is associated with .0016 new-establishment births. For manufacturing, adding an additional 1,000 workers within one mile adds .0006 births. For wholesale trade, the marginal effect of 1,000 workers within one mile is .0057 births. For services, the effect is .0027 births. For FIRE, it is .0018 births. For business services, the effect is the largest, .0144. The effect is significant for all four industry groups.

The effects are also economically meaningful. As we noted earlier, the mean population density is much greater in Manhattan than in Dutchess County at the edge of the city (66,940 per square mile compared with 350 per square mile). Commuting patterns within the metropolitan area cause differences in employment density to be even greater: for the one-mile ring, the mean level of employment is 280,283 in Manhattan and 3,717 in Dutchess County (Table 1). Changing only the one-mile employment level in Dutchess County to the Manhattan level would result in .43 additional new establishments per tract. By comparison, the mean number of new establishments in a tract in Dutchess County is .25.

The next result to notice in Table 2 is that the effect attenuates fairly rapidly. For each industry group, the coefficient for employment in the one-to-five-mile ring is at least an order of magnitude smaller than the coefficient in the one-mile ring. This attenuation is very clear in Chart 13. The decay is especially pronounced in business services. The attenuation of the effect of the local business environment is a result that persists through nearly every specification in this paper. The result suggests that urban interactions are highly local in nature. In other words, a business's neighborhood matters.

Model 2 considers urbanization and localization together. It is immediately apparent that controlling for activity in a firm's own industry impacts the estimates of the effect of employment in all industries. For wholesale trade, services, and business services, the effect of additional total employment within one mile is either no longer significant or is negative. It is significant for all industries, FIRE, and manufacturing, but the effect is reduced by an order of magnitude in the first two cases by half for the last.

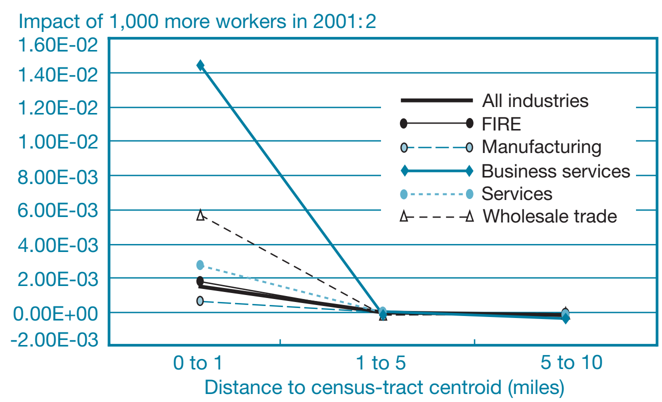
In contrast, the effects of localization are positive and significant in every case. For all industries, adding 1,000 workers in a firm's own industry (two-digit SIC) within one mile is associated with .0832 additional new-establishment births. For manufacturing, an increase of 1,000 of own-industry employment within one mile produces an additional .0552 births. It is important to reiterate: this is the effect of 1,000 additional workers in the establishment's own two-digit SIC code. It is not the effect of 1,000 additional workers in the entire manufacturing industry group. For wholesale trade, the effect is even larger, at .2810 births; in services, the effect is .0978 births. In FIRE and business services, respectively, the effects are .0385 and .2860. These effects are all significant. To sum up, it appears that some of the urbanization effects present in Model 1 are instead really localization effects.

One result that Model 2 shares with Model 1 is that if agglomeration effects exist, they attenuate. The top panel of Chart 14 presents the urbanization coefficients. As we discussed, many are negative or are insignificant. The rest are small. Nevertheless, these coefficients attenuate. The picture in the bottom panel of Chart 14 is much clearer. Localization coefficients attenuate in much the same way that urbanization coefficients do in the urbanization-only Model 1. In this case, attenuation is most sharp for business services and wholesale trade.

Chart 13

Model 1: Urbanization Effects

Dependent Variable: Number of Establishments Three Years of Age or Less in 2004:2



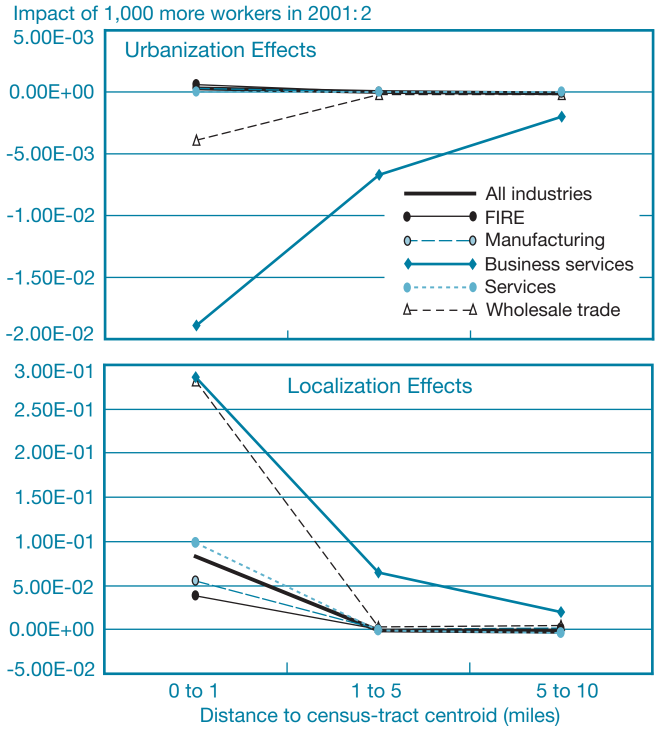
Source: Dun & Bradstreet, Inc., Second Quarter 2001 and Second Quarter 2004 MarketPlace files.

Note: FIRE is finance, insurance, and real estate.

Chart 14

Model 2: Urbanization and Localization Effects

Dependent Variable: Number of Establishments
Three Years of Age or Less in 2004:2



Source: Dun & Bradstreet, Inc., Second Quarter 2001 and Second Quarter 2004 MarketPlace files.

Note: FIRE is finance, insurance, and real estate.

The discussion thus far has focused on the number of new-establishment births taking place in a census tract. This is one natural measure of the amount of entrepreneurial activity taking place there. Yet it misses one particularly important aspect of entrepreneurship: the scale of entry. We now estimate a model that addresses this aspect.

4.2 Birth Employment

The results reported in Table 3 are estimates of (2), the model of employment at new establishments. As we observed, these are firms created between 2001:3 and 2004:4. As before, we begin with a model including only urbanization coefficients, Model 1. The evidence of urbanization effects here is similar to the evidence in Table 2 (Model 1). For all industries, the presence of an additional 1,000 workers within one mile is associated with .0375 more workers at new establishments. For all industry groups, total employment within one mile also has a significant effect on birth employment. The presence of 1,000 additional employees within one mile of a census tract increases new-establishment employment by .0368 in manufacturing, by .0510 in wholesale trade, by .1270 in FIRE, by .0296 in services, and by .1420 in business services. All are highly significant.

As with the new-establishment births model in Table 2, the attenuation of the urbanization effects is striking. Chart 15 depicts these effects. For all employment and for each of the individual industry groups, the effect attenuates by an order of magnitude between the one- and five-mile rings. As with the urbanization effects in the births model (Chart 13), business services exhibits the largest one-mile ring coefficient and the sharpest attenuation.

Table 3 also presents a model that includes both localization and urbanization variables in a regression of new-establishment employment. As in Table 2's births model, including localization variables impacts the estimates of urbanization effects. In this case, wholesale trade takes on a negative sign for the one-mile ring (see the top panel of Chart 16), as do all of the ring coefficients for business services. The other three industry groups and all employment have positive and significant coefficients. Although these coefficients are smaller than they are in Model 1, they are not as reduced in size as they are when moving between the urbanization-only and urbanization-and-localization models for births.

Table 3

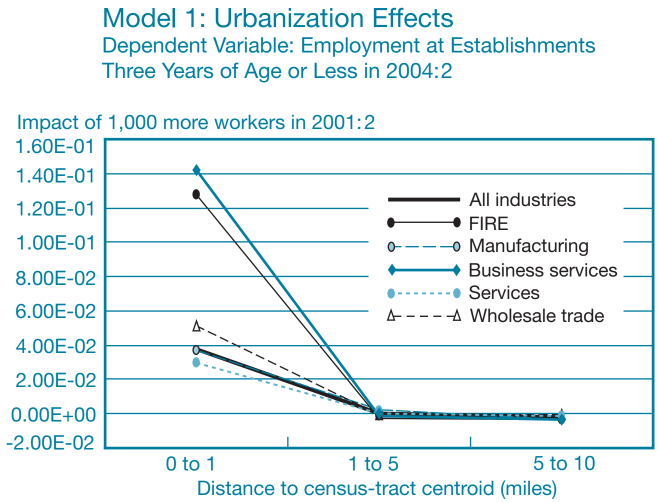
Employment at Establishments Three Years of Age or Less in 2004:2

	All Industries	Manufacturing	Wholesale Trade	FIRE	Services	Business Services
Model 1						
All workers (1,000)						
Zero to one mile	3.75E-02	3.68E-02	5.10E-02	1.27E-01	2.96E-02	1.42E-01
	(49.08)	(25.91)	(36.41)	(19.88)	(49.57)	(30.87)
One to five miles	4.56E-04	2.35E-03	-8.89E-04	-2.71E-03	-2.37E-05	-1.40E-03
	(4.71)	(10.45)	(-4.60)	(-2.76)	(-0.28)	(-2.21)
Five to ten miles	-1.90E-03	-3.63E-03	-5.64E-04	-3.31E-03	-1.01E-03	-3.39E-03
	(-27.66)	(-24.51)	(-4.91)	(-5.64)	(-19.67)	(-9.10)
Memo:						
SIC-fixed effects	82	20	2	7	15	–
Censored observations	235,198	76,421	830	16,793	20,092	22
Uncensored observations	186,893	27,799	9,592	19,684	58,073	5,189
Log-likelihood	-973,247.04	-152914.36	-38023.11	-123836.86	-241323.35	-24641.01
Pseudo R^2	0.05	0.04	0.02	0.01	0.03	0.02
Model 2						
Own SIC workers (1,000)						
Zero to one mile	1.37E+00	3.31E+00	2.30E+00	2.72E+00	8.87E-01	2.20E+00
	(41.68)	(31.47)	(28.28)	(12.98)	(55.40)	(9.66)
One to five miles	-3.86E-02	-2.32E-02	2.08E-02	4.89E-02	-1.27E-02	4.56E-01
	(-7.88)	(-1.23)	(1.07)	(1.34)	(-5.09)	(7.32)
Five to ten miles	9.88E-03	1.58E-01	3.01E-02	-4.86E-03	-2.57E-02	1.18E-01
	(4.64)	(11.87)	(2.25)	(-0.19)	(-16.67)	(3.82)
All workers (1,000)						
Zero to one mile	1.57E-02	1.44E-02	-2.68E-02	4.38E-02	4.77E-03	-1.15E-01
	(17.39)	(9.01)	(-8.77)	(4.86)	(6.67)	(-4.13)
One to five miles	1.05E-03	2.64E-03	-1.01E-03	-3.51E-03	2.68E-04	-4.82E-02
	(8.02)	(10.21)	(-1.58)	(-2.46)	(2.25)	(-6.99)
Five to ten miles	-2.06E-03	-4.61E-03	-1.42E-03	-2.81E-03	-2.67E-04	-1.07E-02
	(-24.99)	(-26.35)	(-3.44)	(-3.20)	(-3.45)	(-3.32)
Memo:						
SIC-fixed effects	82	20	2	7	15	–
Censored observations	235,198	76,421	830	16,793	20,092	22
Uncensored observations	186,893	27,799	9,592	19,684	58,073	5,189
Log-likelihood	-972,094.22	-152333.34	-37636.15	-123735.40	-239348.99	-24571.90
Pseudo R^2	0.05	0.04	0.03	0.01	0.04	0.02

Source: Dun & Bradstreet, Inc., Second Quarter 2001 and Second Quarter 2004 MarketPlace files.

Notes: *t*-ratios are in parentheses. SIC is standard industrial classification (code); FIRE is finance, insurance, and real estate.

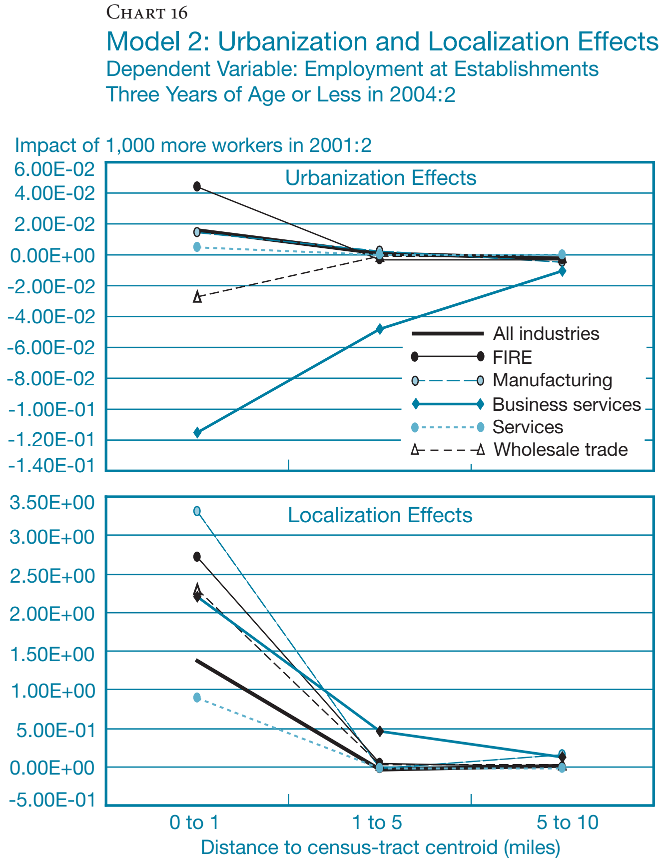
Chart 15



Source: Dun & Bradstreet, Inc., Second Quarter 2001 and Second Quarter 2004 MarketPlace files.

Note: FIRE is finance, insurance, and real estate.

Chart 16



Source: Dun & Bradstreet, Inc., Second Quarter 2001 and Second Quarter 2004 MarketPlace files.

Note: FIRE is finance, insurance, and real estate.

Table 3 and the bottom panel of Chart 16 clearly show that localization has a positive and significant effect on new-establishment employment for all industries and for the various individual industry groups. The one-mile coefficient is greatest for manufacturing. It implies that an increase in the number of own-industry workers within one mile is associated with an increase in new-establishment employment of 3.3100 workers. The effects are of the same order of magnitude for (in order of size) FIRE, wholesale trade, and business services. They are positive and significant, if somewhat smaller, for all industries and services. Once again, for each industry regression, the effects attenuate sharply with distance.

4.3 The Sources of Agglomeration Economies

We have thus far shown that both urbanization and localization are related to two aspects of entrepreneurial activity: the births of new establishments and the total employment of new establishments. These results relate most closely to the findings of Rosenthal and Strange (2003), who also estimate models of births and birth employment. One very important difference is that the authors look at six select manufacturing industries (including a computer software aggregate), chosen in part because each receives large numbers of births and each exports nationally and internationally. A large number of births reduces the number of censored observations in the Tobit models, while marketing abroad likely increases the degree to which a company's location is influenced by local variation in agglomeration economies as opposed to within-city variation in natural advantages. This paper extends Rosenthal and Strange (2003) by focusing on broad one-digit industry groups, using fixed effects to control for two-digit industry subgroups. This procedure restricts the slope coefficients to being alike across industry subgroups, but grouping industries at the one-digit level reduces the number of censored observations. Despite the difference in specification, the results in this paper are consistent with those in Rosenthal and Strange (2003) in terms of showing that rapid attenuation is the norm.

The result that attenuation is rapid is also consistent with the finding in the few other studies that consider the decay of agglomeration economies. Anderson, Quigley, and Wilhelmson (2004) consider the local impacts of a shift in the organization of higher education in Sweden. The policy change—a significant decentralization—is a kind of natural experiment. The key finding is that the effects are highly localized. Arzaghi and Henderson (2005) show that external economies in advertising are also highly localized.[8]

An important issue touched on earlier is the ability of the estimation to separate agglomeration effects from natural advantages or other potential reasons why entrepreneurs should be attracted to locations with high levels of existing activity. This would not be a problem for any natural advantage that affected the entire metropolitan area. There are, however, natural advantages that are more local. For instance, a port location may be more productive for a firm engaged in wholesale trade. In this situation, natural advantages will lead to high levels of employment, so the coefficients on employment levels may reflect both natural advantages and agglomeration effects. Our results show that the effect of existing activity attenuates rapidly. For this to be explained by a natural advantage, it would have to be one that attenuated rapidly as well. This does not seem to describe a port, since shipping costs are relatively low, especially for information-oriented industries such as FIRE and services.

If the influence of within-city variation in natural advantages is at most weak, this naturally leads to the question of what agglomeration economies might be present locally that are so much weaker at larger distances. This is a particular aspect of the more general question of what the sources of agglomeration economies might be. This larger question has proven very difficult to address. Many plausible sources of agglomeration economies have been proposed. Marshall's (1920) list involves labor market pooling, input sharing, and knowledge spillovers. Other explanations involve the availability of consumption externalities (Glaeser, Kolko, and Saiz 2001) and the management of uncertainty (Strange, Hejazi, and Tang 2004). There are many other possibilities, as set out in the survey by Duranton and Puga (2004). Unfortunately, in many respects, the implications for births, wages, and productivity of these possible sources are fairly similar. This makes it difficult to identify particular forces that give rise to agglomeration economies.

This paper's key result regarding microfoundations is that agglomeration economies attenuate rapidly. This does seem to favor some sources of agglomeration economies over others. In a sense, agglomeration economies are a transportation cost issue. Glaeser (1998) suggests the following way to think about this issue: There are costs of moving goods, costs of moving people, and costs of moving ideas. The first set of costs is not especially important for the modern business because the costs of moving goods have shrunk dramatically over the past 100 years. People are more costly to move, with urban commuting being a particularly salient example. Although information can easily be transported electronically, ideas and knowledge are almost certainly costly to transport. The type of unexpected synergies that Jacobs (1969) sees as being responsible for the creation of new work depend on random interactions. These are much more likely to occur if the interacting parties are quite close to each other.

All of this suggests that our attenuation result is more consistent with the high costs of moving ideas than with the other sources of an agglomeration economy. To the extent that this interpretation is correct, the ideas being transported must be Marshallian knowledge spillovers or some other type of social interaction. In either case, high transportation costs would be associated with rapid decay. Of course, it is important to recognize that this interpretation of the observed patterns has been quite casual. Future research is required to disentangle more precisely the many agglomerative forces at work.

5. Conclusion

This paper analyzes the spatial pattern of entrepreneurial activity in the New York consolidated metropolitan statistical area. Since entrepreneurship takes place against a backdrop of current activity, we begin by looking at the geography of activity in four industry groups: manufacturing, wholesale trade, services, and FIRE. All are shown to be centralized around Manhattan and the nearer boroughs, with FIRE being the most centralized. Entrepreneurial activity is also centralized, with the pattern being quite similar to the pattern for levels of activity. This suggests that some force is leading entrepreneurs to agglomerate. There are many candidates that are consistent with the data, including natural advantages and Marshallian external economies.

In order to understand the relationship better, we estimate models of new-establishment births and new-establishment employment as functions of the local business environment. In a model that includes only one agglomeration variable—urbanization, total nearby employment—urbanization is shown to be positively related to both births and birth employment. If instead an additional agglomeration variable is also included—localization, employment in an establishment's own industry—then the results change. For all of the industry groups, localization is shown to be positively associated with both measures of entrepreneurship. For most of the industry groups, the influence of urbanization is greatly reduced, sometimes negative, and no longer significant after controlling for localization.

In our analysis of entrepreneurship, we take a geographic approach to agglomeration rather than a political one. Specifically, we estimate the effects of activity taking place very close to a census tract (within one mile), fairly close (between one and five miles), and further away (between five and ten miles). For nearly all of our many models, the effects of a tract's business environment are shown to attenuate sharply. The effect at five miles is typically at least one order of magnitude smaller than the effect within one mile. This result speaks to the question, what is a city? The answer seems to be that many of the spatial interactions that are central to cities are quite local. When entrepreneurs must decide on the best location to open an establishment, they choose one that is close to existing activity, especially in their own industry. It should be recognized, however, that by estimating these effects within one city, we hold constant those factors that are common to businesses throughout the New York CMSA. Thus, the fact that we identify a local effect does not preclude the existence of other effects that operate across cities and regions.

There are many forces that can explain our paper's agglomeration results. Unfortunately, the estimation does not enable us to identify specific agglomerative forces that are at work. Whatever the forces may be, however, they appear to operate at a narrow level of geography. If there are Marshallian agglomeration economies, then the economies must attenuate rapidly. This observation suggests—but of course does not prove—that the effect might be some type of social spillover, since ideas and learning are costly to transport and allegiances are costly to maintain over a great distance. If there are also, or are instead, natural advantages that favor particular locations, then these too must attenuate rapidly. This could reflect access to particular neighborhood amenities, for example. In either case, the important result is rapid attenuation.

Endnotes

1. See Rosenthal and Strange (2004) for a more complete survey.

2. Aharonson, Baum, and Feldman (2004) show the importance of the local environment for biotechnology.

3. For example, see O'Hara (1977), Ogawa and Fujita (1980), Imai (1982), Helsley (1990), or Krugman (1993).

4. U.S. Postal Service ZIP code boundaries are established "at the convenience of the U.S. Postal Service" (<http://www.census.gov/epcd/www/zipstats.html>). They are based on postal logistics rather than on a geographic or socioeconomic concept of a neighborhood, in contrast to census-block or -tract geography. In response, the U.S. Census Bureau has created a boundary file that approximates the geographic region associated with each U.S. postal ZIP code based on the associated year 2000 census blocks found in that ZIP code. The resulting geographic polygons correspond to an agglomeration of block-level geography and provide a close approximation of the U.S. postal ZIP code boundaries. The resulting boundary file is referred to as the ZCTA file on the Census Bureau's website and is available for download. Using that file, we matched the ZIP code IDs from Dun & Bradstreet to geocode the data. This procedure worked for the great majority but not all of the ZIP codes in the New York CMSA (and the United States overall). To identify further the location of the remaining postal ZIP codes, we augmented the ZCTA file with a 1999 file available on the Census Bureau's website that reports the latitude and longitude of the U.S. postal ZIP codes in the United States in 1999. After merging those coordinates into the year 2000 ZCTA file, we were able to geocode all but a very small number of the year 2001 ZIP codes obtained from Dun & Bradstreet. Using that augmented ZCTA boundary file and the year 2000 census-tract boundary file (also available from the Census Bureau's website), we calculated the correspondence between ZCTA geographic units and census tracts. Those correspondence weights were used to calculate the number of establishments and employees present in each census tract given the original U.S. postal ZIP-code-level data from Dun & Bradstreet.

5. See the review by Shane and Venkataraman (2000).

6. See the Syracuse University Economics Department working paper version of this paper for a more extensive set of descriptive statistics (<http://www.maxwell.syr.edu/econ/>).

7. Although for most of the industry regressions to follow there are a large number of tracts with zero arrivals of new enterprises (and their associated employment), it should also be noted that for each industry regression, a large fraction of tracts do receive arrivals. This is clear in Tables 2 and 3.

8. It is important to emphasize that the attenuation of agglomeration economies does not mean that separate parts of a city are completely unrelated. See Haughwout and Inman (2002) for a full study of this issue.

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