
The Impact of 9/11 on the Geography of Financial Services in New York: A Few Years Later*

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An economic census and a survey of seventy-nine firms revealed a changing geography of financial services after 11 September 2001. Although the suburbs benefited from the outward relocation of financial services from Manhattan immediately afterward, they lost considerably two years later, demonstrating the interdependence of the central city and its suburbs. Executives of financial services firms ranked highly locational attributes such as prestige, public transportation, and proximity to clients and other financial services before 11 September, but terrorism also emerged as a major locational factor after 11 September. The impact of terrorism and how it interacts with agglomeration economies, technological changes, and globalization to shape the geography of financial services is examined under the framework of quaternary place theory. **Key Words:** financial services, New York, terrorism, urban geography.

一个经济普查和对 79 个企业的调查显示, 在 2001 年 9 月 11 日之后的金融服务业的地理变化。虽然郊区随即受益于从曼哈顿外移的金融服务, 但是两年后, 它们又流失了相当大的一部分, 这展示了中心城市及其郊区的相互依存关系。金融服务公司高管在 9 月 11 日之前把区位优势, 如声誉, 公共交通, 和客户的接近性以及其它金融服务业等排名很高, 但在 9 月 11 日之后, 恐怖主义也作为一个重要的区位因素出现。我们在第四系位置理论的框架下, 研究恐怖主义的影响, 以及它如何与集聚经济, 技术变革和全球化相互作用来塑造金融服务业。关键词: 金融服务, 纽约, 恐怖主义, 城市地理学。

Un censo económico y una encuesta de setenta y nueve empresas revelan una geografía cambiante de los servicios financieros después del 11 de septiembre de 2001. A pesar de que los suburbios se beneficiaron de la expansión en la reubicación de servicios financieros de Manhattan, inmediatamente después perdieron mucho luego de dos años, demostrando la interdependencia de la ciudad central con sus suburbios. Ejecutivos de empresas de servicios financieros categorizaron como altos atributos de localización al prestigio del lugar, el transporte público, la proximidad a los clientes y otros servicios financieros antes del 11 de septiembre, pero el terrorismo también surgió como un importante factor de ubicación después del 11 de septiembre. El impacto del terrorismo y cómo este interactúa con las economías de aglomeración, los cambios tecnológicos y la globalización para dar forma a la geografía de los servicios financieros se examina en el marco de la teoría del lugar cuaternario. **Palabras claves:** servicios financieros, Nueva York, terrorismo, geografía urbana.

The impacts of the terrorist attacks of 11 September 2001 (hereinafter 9/11) on New York City have been well documented (Office of the Comptroller 2001; M. Sorkin and Zukin 2002; Bram 2003). A theoretical base for understanding the effects of terrorism on urban form and office location strategy within the Western world is also taking shape (Marcuse 2002; Coaffee 2003, 2004; Davis and Weinstein 2008). The emerging research points to a growing consensus that understanding the effects of terrorism on cities is an important endeavor

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(Graham 2004; Savitch 2008). In the meantime, the frequent disclosure of terrorist plots against New York City, such as the ones to blow up the Holland Tunnel (O'Neil 2006) and John F. Kennedy Airport (Buckley and Rashbaum 2007), provide reminders of the importance and urgency of research on terrorism and cities.

This study focuses on financial services, an industry that contributes over a third of business income tax revenues and provides one in every nine jobs in New York City (Bloomberg and Schumer 2007). The destruction of the World Trade Center was an attack on New York as a global financial center. Terrorists have increasingly attacked global financial centers, as in the Tokyo gas attack in 1995 and the London bombings in 2005, to transmit powerful international terrorist messages (Savitch and Ardashev 2001). A study of the impact of 9/11 on the geography of financial services in New York provides insights into the effect of this terrorist trend and lies at the heart of research on the geographic dimensions of urban terrorism.

Further, most of the existing studies were either short-term or long-term research, leaving a gap of medium-term studies, such as this one, to understand the full picture of the impact. On one hand, studies on the impact of 9/11 mostly used 2001 or 2002 data to analyze the immediate damages of the terrorist attacks (for examples, see NYC Partnership and Chamber of Commerce 2001; Hughes and Nelson 2002; Makinen 2002). On the other hand, studies on the impact of terrorism or warfare on urban growth were mostly long term (i.e., ten to twenty years afterward) and usually found no real impact of these human-induced disasters on urban growth (Davis and Weinstein 2002, 2008; Glaeser and Shapiro 2002). By using data up to 2004 and also inquiring about the location tendencies of some establishments after 2009, this empirical study contributes a medium-range perspective to understanding the impact of terrorism, allowing us to go beyond the immediate effects of 9/11 and look into some processes of change a few years out.

The rest of the article is organized into five sections. In the first section, we discuss a geographical framework for studying terrorism and other major locational forces that might affect the geography of financial services. A data section follows the review and offers detail about the data used at the county level or collected

at the establishment level. The third section evaluates changes in the geography of financial services in New York before and after 9/11, as well as future relocation tendencies of financial services establishments. The fourth section analyzes pre- and post-9/11 locational attributes of financial services establishments. Finally, a discussion of terrorism as a rising factor in the geography of financial services concludes the study.

A Geographical Framework

The geography of financial services in New York is a result of the balance of many locational forces. Terrorism is emerging as a new force, but it is difficult to evaluate its impact without knowing the geographic context in which it operates and other locational forces with which it interacts. Quaternary place theory provides a theoretical background to understand the office location of corporate functions and is adopted as the framework to place the changing geography of New York's financial services in the national and metropolitan contexts. Major locational forces, such as agglomeration economies, technological changes, and globalization, are reviewed to understand how they have shaped the geography of financial services in New York and might manifest the effects of terrorism.

Quaternary Place Theory

Semple and others (Semple and Phipps 1982; Semple 1985) proposed a quaternary place theory that explains the size, number, and spatial distribution of quaternary activities such as corporate headquarters and financial services. They conceptualized the concentration and dispersion of quaternary activities into a six-stage model (Semple 1985). In the first three stages of the model, businesses became increasingly concentrated and eventually reached the maximum geographic concentration in one national center—the New York metropolitan area in the case of the United States (Wheeler 1990). The last three stages portray a progressive dispersion of quaternary activities after 1950, from the national center to all urban centers in the urban hierarchy and from urban cores to suburbs within large metropolitan areas. Studies on the location of corporate headquarters in the United States (Quante 1976; Lyons 1994; Rice and Pooler 2009) support the hierarchical

dispersion in the second half of the twentieth century. Klier (2006) found that New York's share of the Fortune 500 companies fell from 31 percent in 1955 to 17 percent in 1999 and the five largest metropolitan statistical areas' (MSAs) share fell from 35 percent to 33 percent during the 1990s.

There are strong functional and locational linkages between corporate headquarters and producer services at both the intermetropolitan and intrametropolitan levels (Noyelle and Stanback 1984; Coffey and Polèse 1989; Gong and Wheeler 2002). As typical producer services, financial services are often found colocated with corporate headquarters. For example, corporate headquarters in New York City are highly concentrated in Lower Manhattan, particularly in three locations (ZIP codes 10279, 10281, and 10080) where financial firms are also concentrated (Ono 2006). Accompanying the dispersion of corporate headquarters, there is evidence that financial services (Immergluck 1999; DeYoung, Klier, and McMillen 2004) and business and professional services (Gong 2001; Gong and Wheeler 2002) have also been decentralizing. Within the New York metro area, financial services such as banking and securities experienced "central city employment decline and modest suburban growth" (Warf 2000, 495) between 1990 and 1996. The dispersion of producer services from the urban core to the suburbs has changed "New York from a monocentric to a polycentric metropolis" (Godfrey 1995, 436).

Despite the suburbanization of corporate headquarters and producer services, Schwartz (1992, 1993) argued that suburban firms rely mostly on central city firms for financial and professional services. Many others (Hill, Wolman, and Ford 1995; Rusk 1995; Goetzmann, Spiegel, and Wachter 1998; Leichenko 2000) also support the notion that central cities and their suburbs are interdependent. Along the same line, a report by New York City Mayor Michael Bloomberg and U.S. Senator Charles Schumer called for collaboration of New York with Connecticut and New Jersey to "provide the most effective advocacy possible for a robust and efficient financial services industry regionally" (Bloomberg and Schumer 2007, 28). It no longer makes sense to analyze the financial services industry by studying it within localized municipal boundaries. Rather, the web of connections between the municipal

center and its surrounding suburbs must be considered.

Agglomeration Economies, Technological Changes, and Globalization

These are the well-recognized major forces affecting the location of financial services. Agglomeration economies offer advantages to financial services firms through a large pool of highly qualified professionals, proximity to clients, and a broad range of urban infrastructure, as well as drawing financial services firms into clusters by offering proximity to other financial services and easier face-to-face communications (Parr and Budd 2000; Cook et al. 2007). They are responsible for the national and international dominance of New York's financial services. Harrigan and Martin (2002, 98) asserted that agglomeration forces led to the formation of New York City and will enable it to "continue to thrive despite any ongoing threat of terrorist activity." On the other hand, in large agglomerations such as Manhattan, diseconomies also abound. The high concentration of office functions to bid up rents on the land and salaries paid. These factors can contribute to the expectation that greater profits will result from locating in suburbs where land and labor costs are cheaper, resulting in spatial dispersal of financial services (Sassen 1990).

Technological progress, particularly the revolution in communications and information technologies, has enabled greater mobility of financial services firms. Electronic communications networks, for example, are bypassing traditional floor-based exchanges and bringing market access to institutional and individual investors in various locations (Fernandez 2006). Information technology was cited by Longcore and Rees (1996) as a reason for the declustering of the financial services industry. They identified a donut effect around Manhattan's Downtown financial district, with the Wall Street area emptied of major financial institutions and the areas immediately surrounding this historic street seeing greater financial services employment than in the past. The impact of these technological changes on the location of the financial services industry in New York is best summarized as follows:

(T)echnology, trading markets, and communication infrastructures are evolving to make real-time interactions and transactions possible and

affordable from virtually anywhere, thus reducing some of the benefits of physical co-location in major financial centers such as New York. (Bloomberg and Schumer 2007, 11)

Globalization explains why New York did not lose its dominance in financial services in the U.S. urban system (Immergluck 1999; Warf 2000), as global cities are the command-and-control centers for global capital and contain massive concentrations of wealth (Sassen 1991; Warf 2004). New York has lost jobs in producer services, bearing out the prediction of progressive dispersion in the later stages of the quaternary place theory, but the banking and financial industry is one of the “only major producer services in which New York’s relative specialization was not eroded” (Markusen and Gwiasda 1994, 180; Rice 2006). In global cities, the “prices commanded by central locations and by the ‘right address’ for offices or residences were extremely high” (Sassen 1991, 186). Prestigious addresses in Manhattan are highly sought after by financial services firms, especially by the hundreds of foreign banks who seek to penetrate the U.S. market (Warf 2000) or those corporate headquarters that have international markets. This is exemplified by “the acquisition of a major share of Rockefeller Center by Japanese investors” and “the emergence of Japanese firms as the major investors in New York City real estate at the end of the 1980s” (Sassen 1991, 187).

Has 9/11 made prestigious addresses, such as Wall Street or New York, the “wrong address” for financial services? Does terrorism moderate the agglomeration tendency of financial services or amplify their dispersal brought about by technological changes? Through a study of landmark buildings in Downtown Chicago, Abadie and Dermisi (2008, 452) found that “the higher perceived level of terrorist risk in Chicago after 9/11 induced centrifugal forces powerful enough to counteract the effects of agglomeration economies.” It is as important to examine how agglomeration economies, technological changes, and globalization manifest the effects of terrorism as to study the direct impact of terrorism on financial services.

Terrorism

There is a growing literature on the impact of terrorism and other human-induced disas-

ters on urban and economic growth. It can be broadly grouped into short-term and long-term impact studies. The short-term studies emphasize the costs of terrorism to cities. New York City’s “Gross City Product (GCP) was estimated to have been reduced by approximately \$27.3 billion over the last 3 months of 2001 and all of 2002” (Makinen 2002). For the financial services industry, the “World Trade Center disaster has dislocated more than 50,000 financial services employees from Lower Manhattan, of whom 19,000 have moved into office space outside of NYC, primarily in New Jersey” (NYC Partnership and Chamber of Commerce 2001, 23). In addition to economic loss, numerous studies assessed the social, health, and political impacts of the 9/11 attack (Foner 2005; Korenman 2005; Mollenkopf 2005).

After 9/11, the U.S. Securities and Exchange Commission (2003) issued an interagency paper on sound practices to strengthen the resilience of the U.S. financial system. It called for maintaining sufficient geographically dispersed resources, including staff, equipment, and data for business continuity. Financial firms are expected to have backup sites on different infrastructure components (e.g., transportation, telecommunications, water supply, and electric power) from the primary site. The location strategy of financial services firms also changed from the urban corporate campus model, where a firm has major corporate functions concentrated in several buildings close together (Hughes and Nelson 2002), toward “a split-operations model in which two or more active sites provide backup for one another, one site can absorb some or all of the critical work of the other for an extended time” (Federal Reserve Board 2002). These post-9/11 changes in location strategies further contributed to the decentralization of financial services beyond the city and the metropolitan limits.

Long-term studies of terrorism and other disasters mostly revealed little lasting impact on the cities. The effects of the World Wars on European and Japanese cities produced great destruction, but those cities resumed growth after the war (Davis and Weinstein 2002, 2008; Glaeser and Shapiro 2002; Brakman, Garretsen, and Schramm 2004). The examples of Jerusalem and London and their histories with terrorism and warfare reveal how cities can continue to grow despite widespread terrorism

and near complete destruction (Savitch 2005). Although 9/11 has not happened long enough ago for any long-term study, Harrigan and Martin (2002) used two economic geography approaches to model the impact of 9/11 on New York City and concluded:

Although a continued threat of terrorism in large cities may make them a somewhat less attractive place to live and conduct business, terrorism is quite unlikely to cause massive changes in the structure of urban life. New York City in particular is likely to continue to thrive despite any ongoing threat of terrorist activity. . . . The physical damage sustained from a single terrorist attack, despite its scale, is unlikely to represent a threat to the continued vitality of large cities. (98, 107).

After an initial assessment in 2002, Bram, Haughwout, and Orr (2009) estimated the impact of 9/11 again in 2009 and found that “the attack was far less damaging to the city’s long-term economic prospects than many had predicted,” especially in prices of residential and commercial real estate.

Consensus is obvious on the overall impact, both short and long term, of terrorist attacks on cities. Giglio (2002, 20) summarized their impact on cities in the developed world in three phases. In the first phase, there is “immediate disruption of normal life and economic activity within the affected region. . . . But fairly soon, a wave of reconstruction kicks off several years of economic boom and repairs the disaster damage with surprising speed.” In the third phase, “the long-term impact of both disaster and reconstruction turns out to be minimal as the region returns to its pre-disaster growth path. Within a decade, its long-term economic trend lines show little evidence that the disaster even occurred.”

We employ a medium-range perspective in this study to understand the spatial processes and potential policy interventions that link the short-term disruption to long-term return to predisaster growth path discussed earlier. In addition to filling in some blanks in the literature between the short- and long-term studies, this medium-range perspective is especially important in a study of the impact of 9/11 on location decision making of financial services. Because of long real estate leases, the general consensus of real estate analysts was that the effect of 9/11 would not be fully detectable until 2004 or

later (Johnson and Kasarda 2003; Abadie and Dermisi 2008). A study of the impact of 9/11 on New York (Bram, Haughwout, and Orr 2009) found that whereas the vacancy rate in Downtown Manhattan shot up after 9/11 and stayed up until 2005, the rate in Midtown did not peak until late 2003 and early 2004. Our medium-range study is expected to find location changes beyond the first two or three years after 9/11.

Data and a Mixed-Method Approach

This study uses data from the U.S. Census Bureau to gain insights into how financial services changed in New York before and after 9/11. To understand why these changes happened, a survey of financial services establishments in Manhattan was conducted. These two approaches complement each other to give both quantitative and qualitative information on the location decision making of the financial services firms.

County Business Patterns data from the U.S. Census Bureau (2006) were used to evaluate the employment change in financial services within the thirty-county New York consolidated metropolitan statistical area (CMSA), defined as of 30 June 1999. Analyses were conducted for three time periods. The first is the ten years from 1988 to 1997, after a major change in the U.S. Standard Industrial Classification (SIC) Code in 1987. Financial services in this time period include SIC 60 (depository institutions), 61 (nondepository credit institutions), and 62 (security and commodity brokers). Since 1998, the North American Industrial Classification System (NAICS) has been used for these data sets. Financial services are defined as NAICS 521 (monetary authorities), 522 (credit intermediation), and 523 (securities intermediation). These two definitions in SIC and NAICS are not directly comparable, although the difference between the two is not substantial. The second time period in this study is 1998 to 2001, representing the four years before 9/11. The third period is from 2002 to 2004. Because the *County Business Patterns* collects data in mid-March every year, the 2002 data represent the situation of financial services in March 2002, six months after 9/11.

A survey of financial services establishments in Manhattan was conducted in 2004. Contact information for the establishments

was purchased from Dun and Bradstreet (<http://www.zapdata.com>). Out of 476 usable leads (one per establishment), 223 requested a copy of the survey instrument. A total of seventy-nine establishments (a response rate of 16.6 percent) eventually participated in the survey. Of these seventy-nine establishments, thirteen were interviewed to test the clarity of the survey instrument. The other sixty-six establishments participated by filling out and mailing back the survey. The survey instrument, an eight-page questionnaire, instructs the respondent to respond with data only for the establishment to which the survey was mailed (not for the firm as a whole). We use the term *establishment* to refer to the individual office where the survey is received, recognizing that firms might have multiple establishments in different locations. This reporting unit for the survey is consistent with the definition of establishment used in the *County Business Patterns*.

Overwhelmingly, the survey data come from the highest levels of financial services management in Manhattan and should provide valid information on the location decision making of the financial services. Twenty-eight presidents, chief executive officers (CEOs), or chairs of the board claimed responsibility for completing the questionnaire. The second level of management, including vice presidents, chiefs, or heads of departments, account for thirty questionnaires. The remaining questionnaires were completed by lower level management, such as executive directors, directors, and other staff. Establishments in various types and sizes participated in the survey. Forty-four establishments identified themselves as the headquarters for their firms, fifteen as branch offices of larger firms, and nineteen as single-location firms. The respondents represent the full complement of establishment sizes in Manhattan, with some of the largest (ten establishments with 1,000 or more employees) participating in the survey. Although the survey data come from informed sources and have good representation of the types and sizes of the establishments in Manhattan, we are aware of one major concern. Respondents participated in the survey after 9/11 and their memories and perceptions of pre-9/11 locations are likely to be colored by the events of 9/11, thereby leading to less accurate responses. To deal with this concern, during the telephone contacts with respondents,

the researchers asked them to cross-check all answers—to the extent possible—with internal documents and corporate archives.

Location Changes

Financial Services Employment by County

Between 1988 and 1997, both Manhattan and the New York CMSA experienced absolute decline in financial services employment (Table 1). Excluding Manhattan, the rest of the New York CMSA, especially many suburban counties such as Hudson, Middlesex, Somerset, Westchester, Fairfield, and Suffolk (Figure 1), actually gained in financial services employment. Meanwhile, U.S. financial services employment increased during this period, weakening the dominance of Manhattan (from 10.5 percent to 8.2 percent) and the New York CMSA (from 16.82 percent to 14.72 percent) in U.S. financial services. This vertical dispersal of financial services employment from the national center (New York CMSA) down the urban hierarchy and the horizontal dispersal from Manhattan to suburban counties parallel those of corporate headquarters (Semple and Phipps 1982) and of producer services (Immergluck 1999; Gong 2001). They are results of dispersion as described in quaternary place theory. Our review of the literature suggests that the dispersions are caused by agglomeration diseconomies in Manhattan (Sassen 1990), advancement in technologies (Longcore and Rees 1996), and the growth of and competition from regional financial centers elsewhere in the United States (Semple 1985; Lyons 1994).

Manhattan improved substantially in financial services employment between 1998 and 2001, gaining 14 percent in these three years. Manhattan's share of U.S. financial services employment increased slightly as well, from 7.6 percent to 7.7 percent. Comparing these three years to the last time period, the vertical dispersal of financial services from New York down the urban hierarchy was reversed, as New York had been well recognized as a global city by the end of the twentieth century.

Manhattan, however, did not grow as fast as the New York CMSA as a whole, because of the continued decentralization of financial services from Manhattan to suburban counties

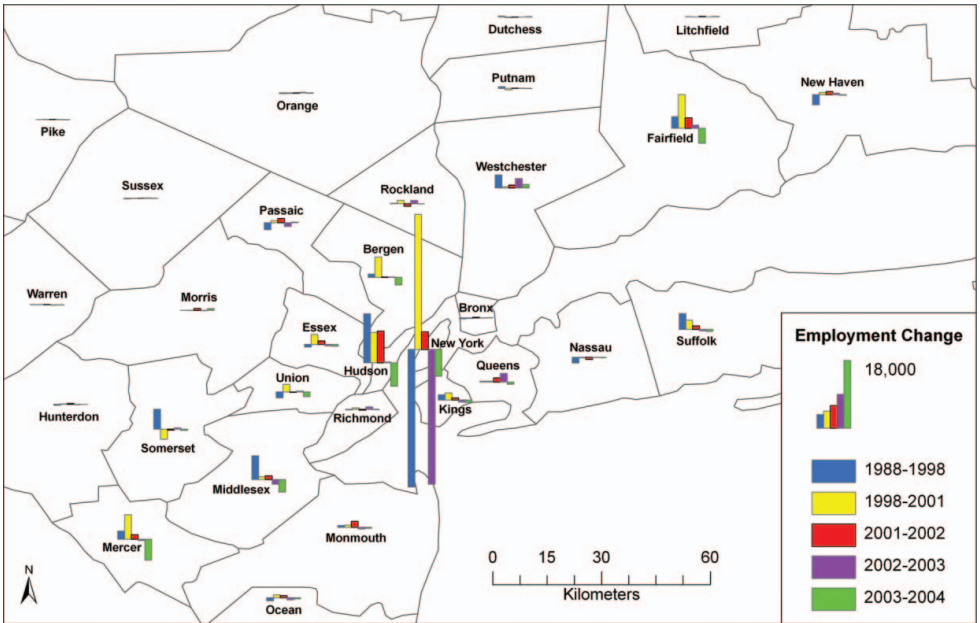


Figure 1 Financial services employment changes by county within New York consolidated metropolitan statistical area. (Color figure available online.)

such as Hudson (New Jersey), Bergen (New Jersey), and Fairfield (Connecticut; Figure 1). As a result, Manhattan’s share of the New York CMSA’s financial services employment shrank from 56.3 percent to 55.1 percent (Table 1). The horizontal dispersal from Manhattan to the suburbs in the last time period continued into the three years from 1998 to 2001.

Between 2001 and 2004, Manhattan lost about 39,000 financial services jobs, a 13 percent decline (from 298,000 to 258,900). Manhattan’s share of U.S. financial services employment decreased from 7.7 percent to 6.4 percent, in contrast to the increase in the three years before 2001. It is hard to attribute this sharp decline to the advancement

Table 1 Financial services employment and total employment in Manhattan and New York metro area

	1988	1997	1998	2001	2002	2003	2004
Financial services employment:							
United States (1,000)	2,928.6	3,308.7	3,433.9	3,888.2	4,038.3	4,037.7	4,073.8
New York CMSA (1,000)	492.7	487.0	464.1	540.5	566.6	533.4	501.0
% of United States	16.8%	14.7%	13.5%	13.9%	14.0%	13.2%	12.3%
Manhattan (1,000)	308.3	271.0	261.4	298.0	302.8	266.2	258.9
% of United States	10.5%	8.2%	7.6%	7.7%	7.5%	6.6%	6.4%
% of New York CMSA	62.6%	55.6%	56.3%	55.1%	53.4%	49.9%	51.7%
Rest of New York CMSA (1,000)	184.4	216.1	202.7	242.5	263.8	267.2	242.1
% of United States	6.3%	6.5%	5.9%	6.2%	6.5%	6.6%	5.9%
Total employment							
United States (1,000)	87,881.6	105,299.1	108,117.7	115,061.2	112,400.7	113,398.0	115,074.9
Manhattan (1,000)	2,025.5	1,925.2	1,951.6	2,122.7	1,991.8	2,022.7	1,988.3

Note: CMSA = consolidated metropolitan statistical area. Source: U.S. Census Bureau (2006).

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in information technologies that was well underway between 1998 and 2001 but did not result in a loss in Manhattan's financial services employment. The two reasons that most likely explain this loss in Manhattan's financial services employment are the 2001 economic recession and 9/11. As Gordon et al. (2007) and Park et al. (2009) pointed out, it is difficult to model the separate effects of the 2001 recession and 9/11. We therefore attempt to shed light on their different effects on financial services by making the following two comparisons.

First, we compare New York and Chicago to examine the possible effect of the recession on financial services employment.¹ Although Chicago is not as globalized as New York City, it is the home of the Chicago Mercantile Exchange and the world's largest market for derivatives trading (Bloomberg and Schumer 2007). It is the second largest city in financial services employment (U.S. Census Bureau 2006) and the third largest city in population in the United States, although its population is not as diverse as that of New York City or Los Angeles. It is not as densely developed as New York City, but it has the tallest building in the United States (the Willis Tower, formerly known as Sears Tower) and other landmark buildings (e.g., the Aon Center and the Hancock Center) in its central business district (Abadie and Dermisi 2008). Among all cities that were subjected to the U.S. recession in 2001 but not directly affected by the destruction of the 9/11 attacks, Chicago is the most appropriate for the comparison with New York City to detect the possible effect of the 2001 recession on financial services. If the loss of 39,000 financial services jobs in Manhattan between 2001 and 2004 had been the result of the recession, we would have seen a similar loss in Cook County in Chicago, the counterpart of Manhattan in New York City. As shown in Table 2, however, Cook County gained jobs in financial services every year between 2001 and 2004, for a total of 15,000 financial services jobs in those three years. This suggests that the 2001 recession is not likely to be the main reason for the loss of 39,000 financial services jobs in Manhattan.

Second, we explore the different effects of the 2001 economic recession and 9/11 on total employment and financial services employment in Manhattan and the United States. Whereas the

total employment in both Manhattan and the United States declined between March 2001 and 2002 as a result of the economic recession,² the financial services employment in both Manhattan and the United States increased during this time (Table 2). This is also true for Chicago's Cook County. The recession had a far more significant impact on jobs in industries other than financial services.

On the contrary, the total employment in Manhattan and the United States increased between March 2002 and 2003, recovering from the recession, whereas the financial services employment in Manhattan and the United States declined (Table 2). The change in financial services employment between March 2001 and 2002 might not reveal much of the negative impact of 9/11, because the continued gain in financial services in the six months before 9/11 (from March 2001, when the 2001 data were reported, to September 2001) hid some loss in the six months after 9/11 (from September 2001 to March 2002 when the 2002 data were reported).³ The repercussions of 9/11 as recorded in Manhattan's loss in the two years between 2002 and 2004, however, are apparent (Table 2). In the absence of the direct attacks of 9/11, Chicago's Cook County continued to gain jobs in financial services after March 2002. Although we cannot quantify the effects of the 2001 recession and 9/11, our comparisons indicate that the job loss in Manhattan's financial services between 2001 and 2004 was primarily the aftermath of 9/11, not of the recession.⁴

Within the New York CMSA, Manhattan's share of the financial services employment dropped from 55.1 percent to 51.7 percent between 2001 and 2004 (Table 1), continuing the trend of horizontal dispersal in the last two periods. Compared to the decline from 56.3 percent to 55.1 percent in the three years before 2001, the drop between 2001 and 2004 almost tripled. There are overwhelming reports (Bagli 2001; Office of the Comptroller 2001; Beunza and Stark 2005; Rose et al. 2009) on how 9/11 had caused financial firms to move from Manhattan to New Jersey and Connecticut, accelerating the ongoing horizontal dispersal set off by agglomeration diseconomies (Sassen 1990) and advancement in technologies (Longcore and Rees 1996; Bloomberg and Schumer 2007). We evaluate how 9/11 and other location attributes affect the intrametropolitan location of

Table 2 Average annual changes in financial services and total employment in Manhattan and New York metro area

	1998–2001	2001–2002	2002–2003	2003–2004
Financial services employment				
United States (1,000)	151.4	150.1	-0.6	36.1
New York CMSA (1,000)	25.5	26.1	-33.2	-32.4
Manhattan (1,000)	12.2	4.8	-36.6	-7.3
Rest of New York CMSA (1,000)	13.3	21.3	3.4	-25.1
Chicago Cook County (1,000)	5.6	3.2	4.7	2.0
Total employment				
United States (1,000)	2,314.5	-2,660.5	997.3	1,676.9
Manhattan (1,000)	57.0	-130.9	30.9	-34.4
Chicago Cook County (1,000)	69.8	-162.4	3.1	-14.3

Note: CMSA = consolidated metropolitan statistical area. Source: Calculated from U. S. Census Bureau (2006).

financial services in a later section using our survey data at the establishment level.

Immediately after 9/11, the rest of the New York CMSA (Manhattan excluded) benefited from the outward relocation of financial services from Manhattan. Between 2001 and 2002, the rest of the New York CMSA gained 21,000 jobs in financial services (Table 2), much higher than the average annual increase of 13,000 from 1998 to 2001. The extra 8,000 financial services jobs gained between 2001 and 2002 in the rest of the New York CMSA more than compensated the loss in Manhattan, if the loss can be roughly estimated as the difference between the average annual increase of 12,000 in Manhattan from 1998 to 2001 and the increase of only 5,000 from 2001 to 2002. Therefore, it is rather safe to say that the financial services jobs that left Manhattan immediately after 9/11 were almost all captured by the other counties within the New York CMSA. Unfortunately, this did not last long. The negative impact of 9/11 extended to the rest of the New York CMSA, which lost 25,000 financial services jobs between 2003 and 2004. The impact of 9/11 on the rest of the New York CMSA turned from positive to negative in two years.

The decentralization of Manhattan financial services employment after 9/11 went mostly to surrounding counties such as Hudson (New Jersey), Queens (New York City), and Westchester (New York State), as these counties experienced greater increases in financial services employment in the one year between 2001 and 2002 than the three years between 1998 and 2001 (Figure 1). Among these counties, Hudson was obviously the prime destination of financial services that left Manhattan immediately

after 9/11. It had the biggest increase within the CMSA in financial services employment between 2001 and 2002, twice as much as that of Manhattan, whereas the increase in Hudson between 1998 and 2001 was only about one fifth of that in Manhattan. Because of 9/11 and the relocation of financial services from Manhattan to Hudson, Hudson surpassed Fairfield in 2002 (lasted until 2003) to be the second largest county within the CMSA in financial services employment. The aftermath of 9/11 became evident, however, when the gain of financial services jobs in Hudson reduced to nominal between 2002 and 2003 and many suburban counties, such as Middlesex, Monmouth, Ocean, Mercer, Essex, Passaic, and Suffolk, experienced their first loss of financial services employment since 1998 (Figure 1). For those counties that gained in financial services employment between 2002 and 2003, many lost considerably a year later, including Hudson, Bergen, Union, Fairfield, and Queens.

Pre- and Post-9/11 Locations of Survey Participating Establishments

The survey provides information about the location of financial services at the establishment level, with much more detail than the county level. Of the seventy-nine establishments surveyed, fifty-four stayed put, fifteen changed their locations permanently, and ten moved after 9/11 but returned to their pre-9/11 locations⁵ (Figure 2). All of those establishments that moved but returned are located in Downtown, especially around the World Trade Center site. As revealed in the survey, all of these establishments moved because of

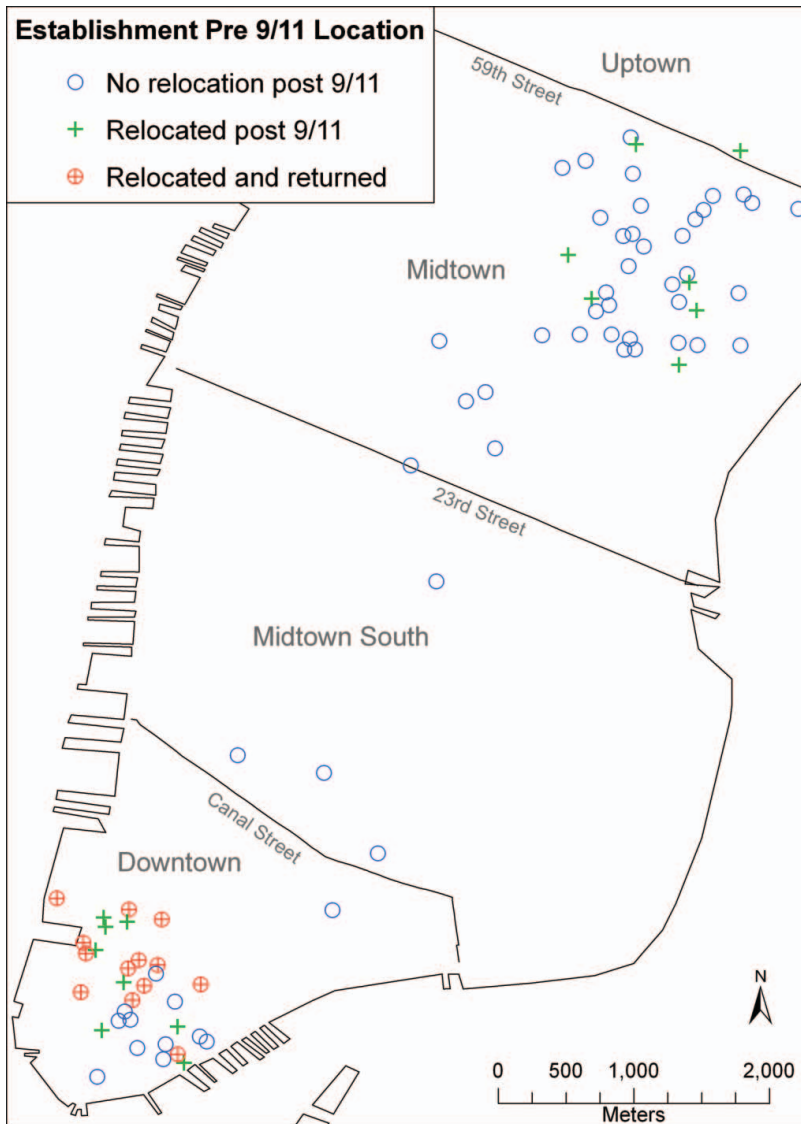


Figure 2 Pre-9/11 location of all survey participating establishments. (Color figure available online.)

9/11. They had to temporarily use office space in other parts of Manhattan, in Brooklyn, and in New Jersey. Some cramped into the office space of other establishments within the same firm, found new office space, used their clients' office space, or used hotels as temporary office space. They stayed in the temporary office space from one month to a year and a half before moving back to their pre-9/11 locations.

Figure 3 depicts the fifteen establishments that changed their locations permanently. Two trends of relocation are worth notice. One is the relocation from Downtown to eastern Midtown, which was much anticipated after 9/11. According to the CEOs interviewed, eastern Midtown is farther away from the World Trade Center site, has newer building infrastructure than Downtown to accommodate

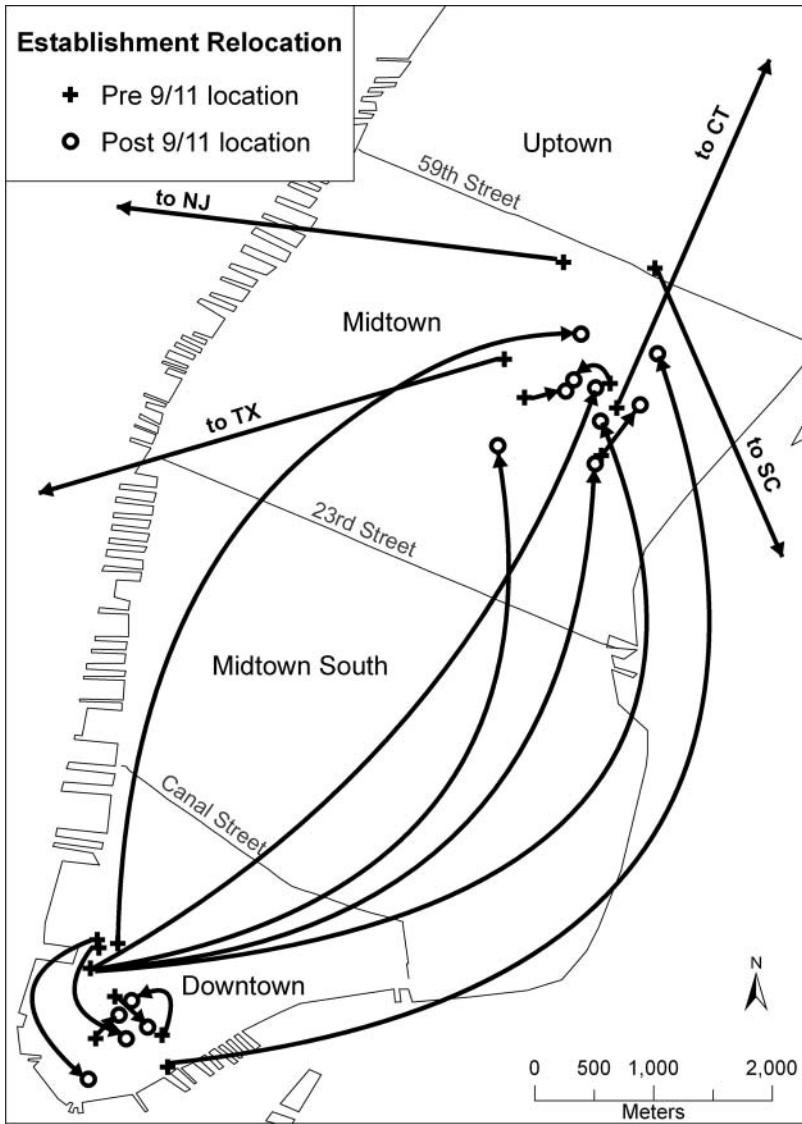


Figure 3 Pre- and post-9/11 locations of permanently relocated establishments.

new telecommunication technologies, and has better public transportation access to financial services professionals mostly living in Westchester County, New York, and in Connecticut. Another trend is the relocation from Midtown out of Manhattan. Four small establishments moved all or a majority of their businesses to New Jersey, Connecticut, South Carolina, and Texas. The most common reason cited for the

move by the CEOs was cheaper land or rental costs in the new locations. Other reasons included proximity to the homes of executives or managers and better building infrastructure.

Most of those fifty-four establishments that stayed put are located outside of Downtown and were not directly affected by the damage in Downtown. Three of them (all in Midtown), however, relocated some employees after 9/11.

Table 3 Employment change for establishments that relocated all or some employees

Number of employees	1 January 2001	1 July 2001	1 January 2002	2004 ^b
Average (<i>n</i> = 26 ^a)	1,658	1,739	1,646	
Average (<i>n</i> = 19)	1,186	1,283	1,179	973

^aTwo of the twenty-eight establishments did not provide employment data.

^bA question on current employment at the time of the survey was added to the questionnaire later on. The question was not available on the questionnaire to seven of the twenty-eight establishments.

Two reduced their number of employees substantially, by a quarter to half. They are not unique cases, as many of those that relocated permanently or relocated but returned downsized as well after 9/11. Some specifically explained that they split their operations into two locations, one in Manhattan and another outside of Manhattan for business continuity during unforeseen disasters, reflecting the new location strategy of split-operations discussed earlier. Table 3 lists the change in the average number of employees in twenty-eight establishments that relocated all or some employees after 9/11 (three stayed put, fifteen moved permanently, and ten moved but returned). In the first set of establishments (*n* = 26), the average number of employees was 1,739 on 1 July 2001. After 9/11, it dropped 5.3 percent to 1,646 by 1 January 2002. In the second set of establishments (*n* = 19), the average was 1,283 on 1 July 2001 but reduced by 8.1 percent to 1,179 on 1 January 2002 and by almost a quarter to 973 in 2004 when the survey was conducted.

We also asked for the number of employees in January 2001, the month when the economic recession started in New York City (Bram 2003). In both sets of establishments in Table 3, the number of employees increased in the first half of 2001. This supports two of our discussions at the county level earlier in the article. One is that the gain in financial services employment before 9/11 covered some loss after 9/11 to bring about an increase in Manhattan's financial services employment between March 2001 and 2002. Another is that the loss of financial services jobs in Manhattan between March 2002 and 2004 is primarily the aftermath of 9/11, not of the economic recession, because financial services employment

and total employment in Manhattan changed in very different patterns during the latest recession. The total employment in New York City (mostly in Manhattan) bottomed out in August 2003 and has gradually recovered since, but the financial services employment remained almost flat (Steinhauser 2005; Bram and Orr 2006).

Future Relocation Tendencies of Survey Participating Establishments

To understand the future relocation tendencies of financial services establishments, we asked the survey respondents whether they were currently seeking to relocate and how likely it was they would relocate in five years as well as when their current leases expire. These three questions were used to gauge the relocation tendency of financial services establishments in short, medium, and long time frames. The last one is intended to address the long-term tendency, as real estate leases are often as long as ten years.⁶ More important, the last question reveals whether there is latent desire among financial services establishments to relocate.

In the short term, 18 percent of the respondents were seeking to relocate in 2004 when the survey was conducted (Table 4). This is a relatively high percentage, reflecting the repercussion of 9/11 to some extent. Within the next five years (i.e., from 2004 to 2009), 14 percent of the respondents were extremely likely and 7 percent were likely to relocate.⁷ These two groups combined had a slightly higher percentage

Table 4 Likelihood of relocation

Relocation	<i>n</i>	%
Currently seeking to relocate	78	100
Yes	14	18
No	64	82
Likelihood of relocation in the next five years	71	100
Extremely unlikely	27	38
Unlikely	16	23
Possible	13	18
Likely	5	7
Extremely likely	10	14
Likelihood of relocation when the current lease expires	49	100
Extremely unlikely	9	18
Unlikely	7	14
Possible	20	41
Likely	4	8
Extremely likely	9	18

(21 percent) than the 18 percent currently seeking to relocate. When the current lease expires, the percentages of respondents who were extremely likely (18 percent) and likely (8 percent) to relocate are even higher. In addition, 41 percent of the respondents indicated that it was possible they would relocate when the lease expires, much higher than the 18 percent who were possible to relocate within the next five years. We ran a Mann–Whitney U test on the last two groups of responses (the likelihood of relocating in the next five years and when lease expires). They are significantly different at the 0.05 level (Mann–Whitney U value = 1,294.5, two-tailed asymptotic significance = 0.014).

The fact that these establishments are more likely to relocate when their current leases expire points to a latent desire of financial services establishments to relocate after 9/11. This is supported to some extent by the increasing likelihood of relocation from the short term to medium term (five years) and long term. Some financial services establishments might have wanted to relocate after 9/11, from Downtown to Midtown or from Manhattan to the suburbs, but had financial difficulty implementing the relocation in the short term. One reason is “sunk costs and financial exposure to existing lease,” as one survey respondent put it. They might have postponed their post-9/11 relocation to a later time to avoid the excessive financial burden of relocation in the short term. Another reason is the implementation of a business continuity plan, which involves splitting an establishment into more than one location or building backup data centers in power grids that do not supply Manhattan (Carroll 2002). This unavoidably creates redundancy among multiple locations and takes time and resources to implement.

Although the latent relocation tendency might suggest further dispersion of financial services establishments out of Downtown or even Manhattan than has already occurred, it also provides time and opportunities for governments at all levels to intervene. Subsidy programs, recovery and improvement of infrastructures (e.g., public transportation, telecommunications, and the power network), and improvement of the business environment in general could be short-, medium-, and long-term tools to counter the latent relocation

Table 5 *Locational attributes ranked for pre-9/11 location for all respondents*

Locational attributes	Ranking score (n = 63)
Prestige	1,280
Public transportation options	1,120
Proximity to clients	1,070
Amount of available office space	960
Building infrastructure	940
Proximity to other financial services	860
Land costs/rental prices	730
Proximity to executives'/managers' homes	600
Access to higher quality employees	490
Interaction within the firm	480
Ability of space to accommodate new technologies	390
Concerns about securing the facility from terrorism	40
Salaries paid to employees	10
Highway access	0

possibility. When relocation is unavoidable, policies could play a role in guiding the relocation of financial services establishments to other parts of Manhattan, outer boroughs of New York City, and the suburbs of the New York CMSA (compared to moving out of the metro area completely).

Locational Attributes

Pre-9/11

To understand the location decision making of financial services establishments, survey respondents were asked to evaluate the importance of fourteen locational attributes (Table 5) that relate to agglomeration economies (e.g., the availability of public transportation and proximity to other financial services), technological progress (e.g., the ability to accommodate new technologies), globalization (e.g., prestige), terrorism, and other locational forces.

We asked establishments to list the five most important locational attributes before 9/11 and designed a simple scoring system to determine which locational attributes the financial services sector valued most highly before the attacks. We assigned fifty points for selection as number one, forty points for selection as number two and so on, decreasing by ten points for each lesser response and culminating with zero points if the attribute was not selected at all.

Table 6 Locational attributes ranked for pre- and post-9/11 locations for establishments that relocated all or some employees

Pre-9/11 (n = 24)		Post-9/11 (n = 24)		Change	
Locational attributes	Score	Locational attributes	Score	Locational attributes	Difference
Proximity to other financial services	440	Office space	530	Concerns about terrorism	210
Building infrastructure	400	Building infrastructure	420	Land costs/rental prices	200
Public transportation options	390	Land costs/rental prices	410	Office space	170
Proximity to clients	380	Other financial services	350	Salaries	80
Prestige	380	Public transportation	270	Space for new technologies	60
Amount of available office space	360	Space for new technologies	250	Building infrastructure	20
Proximity to executives/managers' homes	230	Proximity to clients	230	Interaction within the firm	0
Land costs/rental prices	210	Concerns about terrorism	210	Highway access	0
Ability of space to accommodate new technologies	190	Executives' homes	170	Access to employees	-30
Interaction within the firm	160	Interaction within the firm	160	Executives' homes	-60
Access to higher quality employees	120	Prestige	150	Other financial services	-90
Concerns about securing the facility from terrorism	0	Access to employees	90	Public transportation	-120
Salaries paid to employees	0	Salaries	80	Proximity to clients	-150
Highway access	0	Highway access	0	Prestige	-230

The total point value from this scoring system, or the ranking score, is listed in Table 5 for each locational attribute. A higher score indicates that a locational attribute is more important to the survey respondents. For all survey respondents, the most important locational attribute is prestige, followed by the availability of public transportation, proximity to clients, amount of available office space, building infrastructure (e.g., Class A office space), and proximity to other financial services. Financial services establishments were attracted to Manhattan to gain advantages in these locational attributes. Of the fourteen locational attributes, highway access is the least important, followed by salaries paid to employees and concerns about securing their establishments from terrorism. To these financial services establishments, paying high salaries to employees is less important than access to high-quality employees, which is also reflected in their disadvantageous situation in the former and the advantageous situation in the latter for their pre-9/11 locations.

Post-9/11 Compared to Pre-9/11

Among all establishments surveyed, twenty-eight moved some or all employees to different locations after 9/11. These twenty-eight

respondents ranked the locational attributes again taking their post-9/11 locations into consideration. Table 6 lists their ranking scores before and after 9/11 and the difference between the two. A positive difference indicates that a locational attribute was considered more important after 9/11; a negative difference indicates that the locational attribute was considered less important after 9/11. Understandably, the locational attribute that gained the most importance after 9/11 was concerns about terrorism, as many of these establishments relocated employees because of 9/11. Before 9/11, none of the twenty-eight respondents considered terrorism to be an important locational attribute (a ranking score of zero) based on a retrospective account. After 9/11, it was ranked eighth of the fourteen locational attributes. To those establishments affected by 9/11, terrorism has emerged as an important locational attribute to consider in their location decision making. Land costs or rental prices and amount of available office space also moved up significantly in Table 6, as they are directly and imminently linked to relocation that was forced after 9/11. In addition, ability of space to accommodate new technologies became more important after 9/11, adding to the dispersal effect of the technological advancement. On the contrary,

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prestige, proximity to clients and other financial services, and public transportation became less important.

The changes in how survey respondents ranked the locational attributes before and after 9/11 are results of the recognition that prestige, proximity to clients and other financial services on Wall Street, and having all employees in one location might increase the likelihood of, and damage from, terrorist attacks. Several comments offered by the executives indicate heightened awareness and concern for a neighborhood's security profile and avoidance of the financial district and signature buildings that might be more prone to terrorist attacks. One of the respondents indicated, "We were looking at space in the Empire State Building, but our employees didn't want to move to the Empire State Building as it was 'too much of a target.'" According to a *New York Times*/CBS News poll, nearly six in ten New Yorkers would not be willing to work on a high floor in a new building at the World Trade Center site (Toner and Connelly 2006). The falling influence of the globalization force (represented by prestige) and agglomeration economies (proximity to clients and other financial services and the availability of public transportation) after 9/11 is an urban manifestation of the terrorism force.

Concluding Remarks

Reversing the centralization trend toward New York, 9/11 set off a decline in financial services employment in both Manhattan and the New York CMSA. Although the decline is well expected, the study reveals an interesting change in the rest of the New York CMSA (Manhattan excluded). Immediately after 9/11, the rest of the New York CMSA benefited from the outward relocation of financial services from Manhattan and experienced an increase in financial services employment. By 2004, the impact had turned from positive to negative. This spatial and temporal change has never been reported in any previous short-term studies on 9/11. It was not included in the modeling or forecast by economists, as they expected gains in the suburbs as a result of 9/11 (see Treyz and Leung [2009] for an example). Our finding marks

the advantages of this study to examine the impact of 9/11 a few years later and in revealing intermediate spatial processes after a disaster. More important, this change demonstrates from the viewpoint of financial services that the fortune of the New York CMSA is closely tied to its central city, as stated by Schwartz (1992, 1993). Many financial services are located in the suburbs of the New York CMSA to be close to New York City, the global financial center. When New York City suffered from 9/11, the negative impact passed on to its suburbs. New York City and its suburbs are interdependent, as are many central cities and their suburbs across the country (Hill, Wolman, and Ford 1995; Rusk 1995; Goetzmann, Spiegel, and Wachter 1998; Leichenko 2000). For New York City and the New York CMSA to recover from 9/11, local governments in the tri-state area should avoid bidding wars among themselves for financial services firms, as reported by Bagli (2001) and indirectly by some of our survey respondents. "Active collaboration between local authorities in New York and the rest of the Tri-State area would be critical in ensuring that any new tax program would not have unnecessarily deleterious effects on neighboring areas" (Bloomberg and Schumer 2007, 122).

Our survey of financial services establishments in Manhattan revealed trends of relocation from Downtown to eastern Midtown and from Midtown out of Manhattan as well as downsizing after 9/11. We speculate that some financial services firms require face-to-face communications and have to locate in Manhattan (Midtown if not Downtown) to function efficiently. An example of this kind of firm is provided in the work by Beunza and Stark (2005, 312), which vividly portrayed how a trading room in the World Financial Center was first moved temporarily to a converted warehouse in New Jersey immediately after 9/11, then to a rented office space in Midtown for "networking and informational advantages," before eventually moving back to its original location. Some other financial services firms, however, are more footloose and preferred Midtown over Downtown before 9/11 to conduct their businesses. After 9/11, these firms could afford to move out of Manhattan or the New York CMSA. For those firms that stayed put after 9/11 or moved but returned to their pre-9/11 locations, many adopted the

new location strategy of split operations and moved some corporate functions out of Manhattan or even out of the New York CMSA for business continuity purposes. As a qualification, however, we note that the survey respondents that relocated after 9/11 are few in number and many establishments that had completely moved out of Manhattan between 9/11 and the time of our survey could not be included.

The survey also uncovered latent relocation desires among financial services establishments after 9/11 and opportunities for governments to intervene and prevent the potential relocation from materializing. In addition to many subsidy programs implemented after 9/11, Mayor Bloomberg has proposed to establish a public-private joint venture to manage the retention of financial services firms. "(T)he City should anticipate these companies' relocation plans years in advance and become a more active early contributor to the relocation decision-making process" (Bloomberg and Schumer 2007, 120). To some extent, the latent relocation and the government efforts after disasters explain why cities in the past slowly recovered in the long run even after suffering tremendous damages from disasters. By analyzing the spatial and temporal processes underway in the medium term, this case study helps bridge the short-term destruction and minimal long-term impact of human-induced disasters on urban growth, a research gap left by short-term and long-term studies.

The impact of 9/11 on financial services in New York is examined using a geographical approach in this study. The changing geographies of financial services within Manhattan and the New York CMSA are recognized as results from the interplay of globalization, agglomeration economies, technological changes, terrorism, and other major locational forces.⁸ Terrorism not only emerged as a major locational force by itself after 9/11 but also exerts its influence through other forces, such as counteracting the effects of agglomeration economies, reversing the centralizing trend of globalization, and adding to the dispersal effect of the technological advancement. Followed by the subprime mortgage crisis that triggered the demise of prominent Manhattan financial firms such as Bear Stearns, Lehman Brothers, and Merrill Lynch (A. R. Sorkin 2008), 9/11 might have reestablished the corporate dispersal

tendency for financial services. It might have helped fulfill the prediction of progressive dispersion in the later stages of quaternary place theory for the most dispersal-resistant producer services. Although the geography of financial services in New York will no doubt continue to manifest the effects of terrorism, urban and economic theories will benefit from attention to this line of research as the full effects of 9/11 become more apparent and amenable to study.

Our future research along this line will evaluate the effectiveness of government policies after 9/11 on retaining financial services firms in New York City and the tri-state New York metropolitan region. This policy evaluation is beyond the scope and space of this article but should be an important aspect to understanding the changing geography of financial services in New York, as many of the government subsidies programs after 9/11 were based on place or location. This future research is expected to provide more information on how latent relocation tendency by financial service firms, as revealed in this article, might turn into long-term resilience of the financial industry in New York. It is also expected to provide insights into how large sums of government subsidies could be effectively used to help recovery from urban terrorism. ■

Notes

¹ We thank one of the three reviewers for the suggestion of comparing New York with another major financial center such as Chicago.

² The 2001 recession lasted eight months, from March to November 2001 (Hall et al. 2003).

³ Our survey, discussed in the next section, provides data to support this.

⁴ This is similar to the finding by Abadie and Dermisi (2008) that the increase in office vacancy rates in downtown Chicago in the wake of the 9/11 attacks was not the result of "the recessionary events of 2001," but of "the higher perceived level of terrorist risk" (452).

⁵ One of these ten establishments provided the locations of its three branch offices in Manhattan, leading to thirteen establishments being mapped as "Relocated and returned" in Figure 2.

⁶ The average real estate lease time is nine years for financial services firms in New York City (Pohl 2004).

⁷ Because real estate leases are long and some financial establishments own their office buildings, it is normal in any given time frame that more

establishments would choose extremely unlikely and unlikely than extremely likely and likely.

⁸ A recent example of other major locational forces is financial industry regulation, the failure of which led to the financial meltdown in New York and elsewhere in 2008, after our study period.

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