

**Tenant reaction patterns to the threat of a terrorist attack after September 11, 2001,  
in downtown Chicago office market**

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**Abstract**

The events of September 11, 2001 (9/11) spread the fear of other terrorist attacks targeting downtown office buildings across other major U.S. cities. Among them, Chicago owners and tenants were even more concerned because of the concentration of corporate headquarters and the site of the tallest office building in the U.S. This paper studies the tenant reactions in response to the 9/11 attacks in three locations within the Chicago's downtown office market, comparing the before and after 9/11 office market conditions and tenant distributions. These three locations were determined based on a specific (anchor) building with financial significance and its immediate surrounding area. The anchor buildings selected ranked as first (Sears Tower), third (Aon Center) and fourth (John Hancock Center) highest building in the U.S.; and although security measures were immediately heightened after the terrorist attacks some tenants decided to vacate their office space considering the risk involved. The results of this study indicate that the 9/11 attacks had and continue to have a significant impact on vacancy and sublease vacancy rates on all three areas studied. Although the gross rent levels were almost kept stable until today, in an effort to increase demand and lower vacancy, the three areas are still suffering. In addition, new office supply seems to hurt the old office stock, due to the lack of incentives. In general, we can conclude that the psychological and economic effect of terrorist attacks on tenants of high-rise office buildings and their immediate areas is significant.

## 1. Introduction

Although U.S. related buildings have been targeted a number of times by terrorists, mainly in foreign soils, never before a single terrorist attack has inflicted a so significant death toll and asset destruction as the attacks of September 11, 2001 (9/11) in New York. In addition, to the physical destruction, the NY attacks sent shockwaves across the U.S. economy and created fear and concern about other possible attacks in dense downtown office areas.

Focusing on terrorist attacks targeting office buildings on U.S. soil, three are the most significant, considering life endangerment or loss, property conditions and financial impacts:

- The bombing of the World Trade Center (WTC) in New York in 1993 killed six people and wounded 1,042 (Rubin, et al., 2003). Although the building withstood the blast, the crater was 130 feet wide by 150 feet long, five stories deep (United States Fire Administration – FEMA, 1994) and the damage was estimated at \$250 million. Although no significant damage was reported by the surrounding properties, many of the major tenants in the area started developing contingency plans in case of another event.
- Two years later, the bombing of the Alfred P. Murrah Federal Building in Oklahoma City in 1995 killed 169 and injured 500 people (Rubin, et al., 2003). In this case a significant part of the building collapsed and the blast effects were felt in over 30 blocks, severely damaging or destroying 25 nearby buildings and lightly damaging another 300 (RMS, 2001). Originally, the building was erected in 1977 at a construction cost of \$14.5 million. After the attack the House of Representatives requested \$40.4 million for expenses of real property management and related activities (The City of Oklahoma City, 1996; House of Representatives, 1995).
- Finally, the events of September 11, 2001 led to the death of 2,752 people in New York City (CBS news) and the total distraction of more than 13 million square feet of office space at New York's World Trade Center area. Massive debris fields were reported 1,300 ft from the WTC, thick airborne debris 0.5 miles and the far-field impacts up to 2 miles from the WTC site (RMS, 2001). The total cost for the city of New York was estimated close to \$105 billion by the city Controller, not considering however the impact on the U.S. economy and downtown office attractiveness. The destruction of the WTC buildings also raised significant concerns among insurance companies, office property owners and lenders, on the potential risks of downtown office buildings. In an effort to stimulate business investment that had slowed down significantly immediately after 9/11, the Terrorism Risk Insurance Act (TRIA) was signed into law in November of 2002, allowing the insurance market time to recover and develop new solutions (US Dept. of Treasury, 2004). With TRIA, the government has agreed to cover up to \$90 billion annually in insurance claims from future terrorist attacks.

The objective of this paper is to study the tenant reactions to the events of September 11, 2001 in the Chicago downtown office market, because of its high density and concentration of the tallest office buildings in the U.S.

## 2. Methodology & Data

This study focuses on the three tallest and most prominent office buildings in downtown Chicago and their immediate surrounding areas, therefore capturing the most accurate tenant reaction patterns to the events of September 11, 2001. The three buildings include: Sears Tower (110 floors), Aon Center (82 floors) and Hancock Center (100 floors – with some residential component). The study area surrounding these three buildings was defined based on:

- a. *Specified radius*: Considering the major debris field of the WTC, which ranged from more than 1,000 ft to 0.5 miles, a radius of 0.3 miles was selected in identifying the buildings participating in this study.
- b. *Class A<sup>1</sup> office space*: Another criterion for the selection of the participating buildings was a building's classification, allowing the comparison of buildings offering similar amenities.

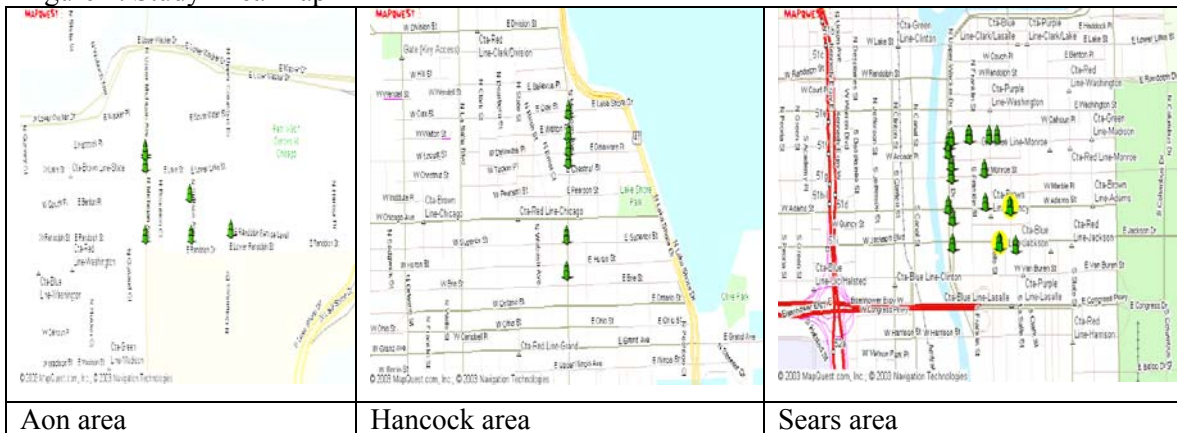
Six buildings in close proximity to Aon & Hancock centers and eighteen in the case of Sears Tower (Table 1, & Figure 1) met the criteria above.

Table 1. Study Area

Anchor	Addresses of buildings studied & their name	
Aon	1. 150 N Michigan Avenue 2. 205 N Michigan Ave – Michigan Plaza 3. 225 N Michigan Ave – Michigan Plaza	4. 233 N Michigan Ave – Two Illinois Center 5. 200 E. Randolph St – Aon Center 6. 180 N Stetson Ave – Two Prudential Plaza
Hancock	1. 676 N Michigan Ave 2. 737 N Michigan Ave – Olympia Center 3. 875 N Michigan Ave – Hancock Center	4. 900 N Michigan Ave 5. 919 N Michigan Ave 6. 980 N Michigan Ave – 1 Magnificent Mile
Sears	1. 175 W Jackson Blvd - Insurance Exchange 2. 222 W Adams St - USG 3. 1 N Franklin St 4. 190 S LaSalle St 5. 209 S LaSalle St – Rookery Bldg 6. 181 W Madison St 7. 200 W Madison St 8. 303 W Madison St 9. 227 W Monroe St – AT&T Center	10. 1 N Wacker Dr – UBS Tower 11. 1 S Wacker Dr 12. 10 S Wacker Dr – CME Center 13. 30 S Wacker Dr – CME Center 14. 71 S Wacker Dr – Hyatt Center 15. 111 S Wacker Dr 16. 200 S Wacker Dr 17. 233 S Wacker Dr – Sears Tower 18. 311 S Wacker Dr

<sup>1</sup> *Class A*: These buildings are extremely desirable investment-grade properties with the highest rents or sale prices compared to other buildings in the same market. They are well located and provide efficient tenant layouts, high quality, and in some buildings, one-of-a-kind floor plans. They can be an architectural or historical landmark designed by prominent architects. They contain a modern mechanical system and have above average maintenance and management as well as the best quality materials and workmanship in their trim and interior fittings (source: Costargroup).

Figure 1. Study Area Map



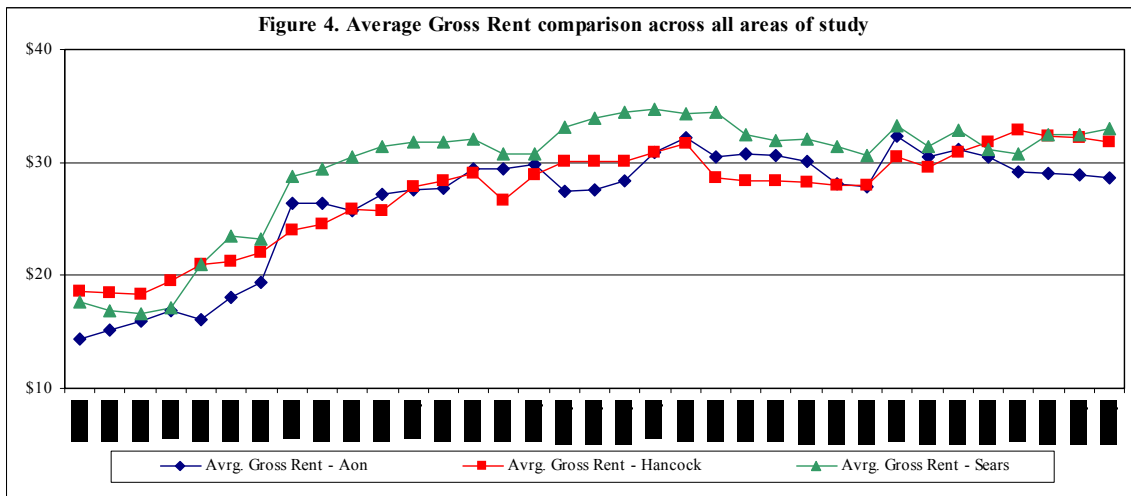
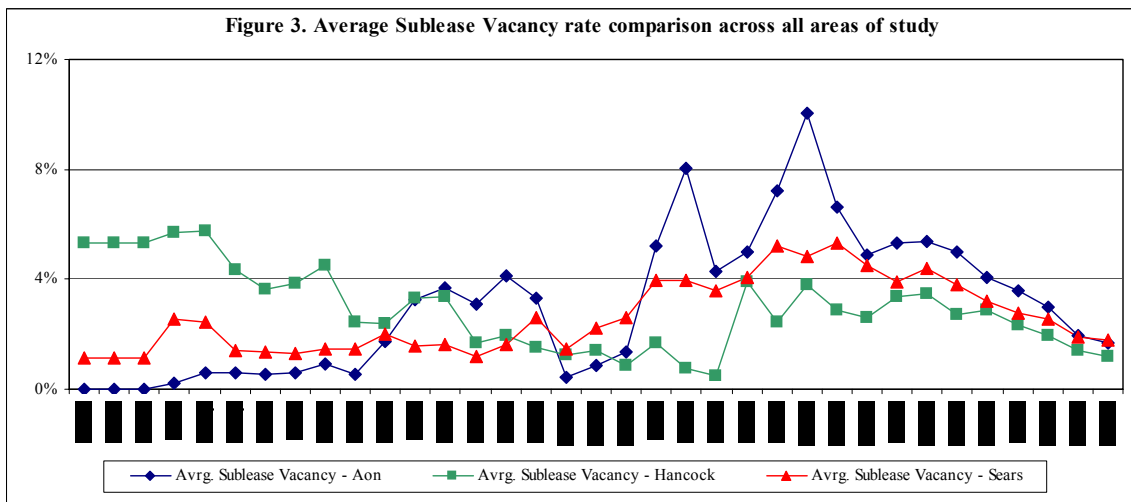
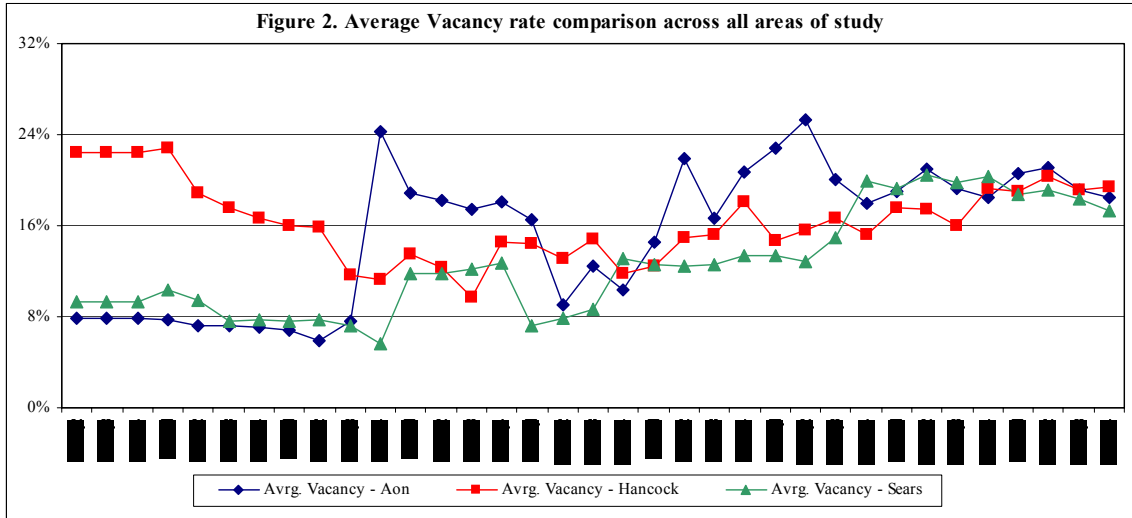
The tenant reaction patterns are captured, by identifying the before and after September 11 office market trends in all the specified areas of study, using Costargroup data. The most significant office market variables in which any type of tenant reaction could leave a significant impact are: vacancy rate (sublease and total), gross rent levels and lease signing activity. The number of tenants signing leases at any given time was also included, in order to highlight any changing pattern changes through time.

The before and after effect of the events of September 11 on Chicago’s office market are determined graphically, statistically and through the analysis of percentage differences. The graphic analysis provides a context of the office market performance in the three areas through time. The statistical analysis, using the t-test method determines the equality of means of the before and after market conditions and the percentage differences quantify the effect the events of 9/11 had on all the aforementioned variables. The statistical analysis and the percentage differences divide the data into two equal groups of observations: (a) the before group (beginning from the third quarter of 1998 to the third quarter of 2001) and (b) the after group (beginning from the fourth quarter of 2001 until the fourth quarter of 2004).

### 3. Results – Discussion

The graphical representation of the vacancy and sublease vacancy rates, gross rent levels, square feet of properties leased and the number of tenants signing leases provide a very interesting overview of the dynamics of the office market in the three areas (Figures 2 - 6). Figure 2, clearly presents increasing average vacancy trends across all three areas after the second quarter of 1998. From the second quarter of 1996 to the third of 1998 the Aon and Sears areas have approximately constant average vacancy rates and maintained their tenant base, in contrast to the fourth quarter of 1998 where the Aon area had a significant freefall. This freefall is

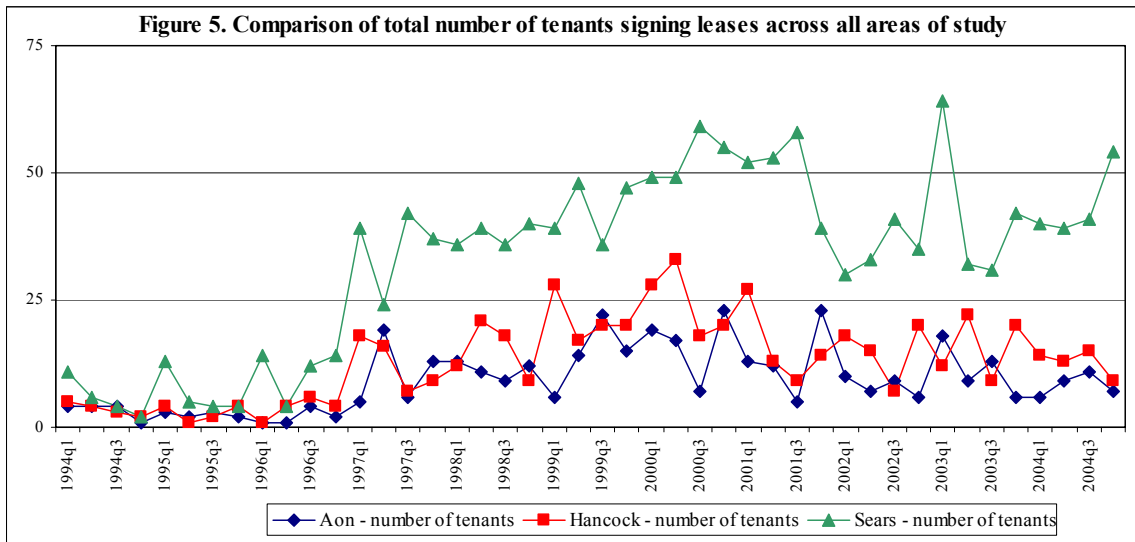
attributed to the relocation of a number of tenants to the suburbs and other areas of the city with lower rents as well as the significant renovations conducted in one of the area’s buildings. Hancock area also shows a decrease of vacancy rate from the second quarter of 1996 until the third quarter of 1998 attributed to the good economic climate and in contrast to the other areas seems to be less volatile than the other two.

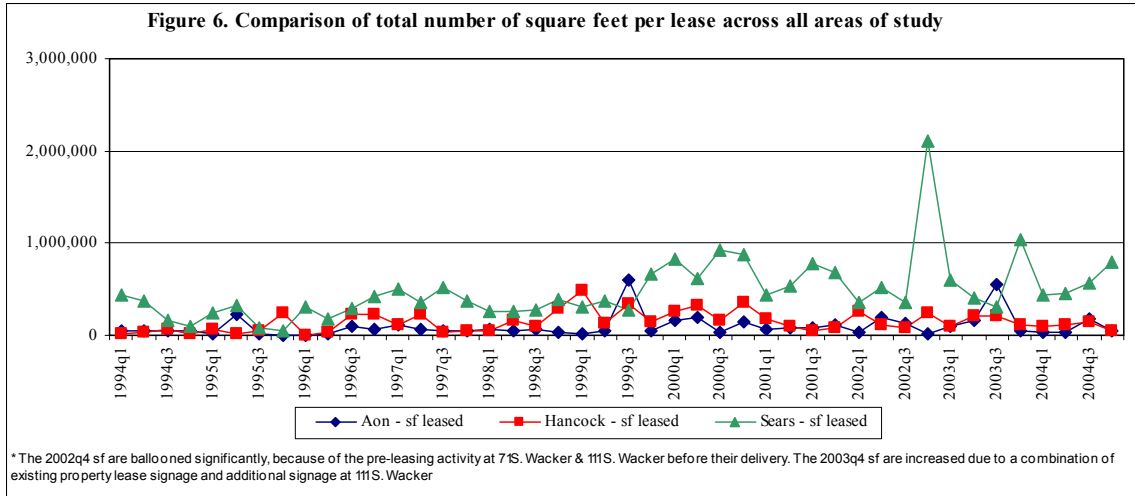


The timeline of average sublease vacancy highlights that although the downside of the market from 1998 through 2002 had a more significant effect on the Aon rather than Sears area, the Sears area recovered quicker (Figure 3). In addition, the Sears area before 9/11 had successfully almost eliminated their sublease vacancy. In contrast, the Aon and Hancock areas presented an increase in average sublease vacancy 1998-2002. The events of 9/11 also seem to increase the sublease vacancy at the Aon area far more than the Sears area. However, there seems to be a continuous decrease of such space since the first quarter of 2003, which is very promising for the future of the vacant space, indicating that the market demand has substantially decreased the sublease space and is not generating more.

Figure 4, indicates the lack of substantial deviation of the average gross rent levels throughout the years for all three areas, which is expected considering the high vacancy rates and the owners efforts to attract tenants. Rents are kept almost level from 2001 until the fourth quarter of 2004 in order to generate demand and decrease the existing vacancy. Although the gross rent timeline presents higher values at the Sears area, the vacancy is not the highest compared to the Aon and Hancock areas, indicating a longtime tenant preference for the Sears area.

Figure 5, highlights that the number of tenants signing leases has decreased through time compared to the late 1990s, although the effects of the 71 S. Wacker and 111 S. Wacker pre-leasing activity additions at the Sears area are significantly present both in Figure 5 and 6





The t-test of the average vacancy and sublease vacancy rates of all three areas indicated a significant difference before and after 9/11 at a 5% significance level, with the vacancy level before 9/11 being significantly lower than the one after (Table 1). However, in the case of gross rents and square feet leased before and after 9/11 there seems to be no significant statistical difference at the 5% level for either the Aon or the Sears area (Table 1). The Hancock area, however, shows an increase of the gross rents after 9/11, with a decrease of the square feet leased.

Table 1. T-test of average vacancy, sublease vacancy, rents and square feet leased before and after 9/11

Areas	Avg. Vacancy rate	Avg. Sublease vacancy rate	Avg. Gross Rents	Square feet of leases signed
Aon	t(13)= -3.26	t(13)= -1.98	t(13)= -1.46	t(13)= -0.01
Hancock	t(13)= -9.01	t(13)= -4.38	t(13)= -3.59	t(13)= 2.63
Sears	t(13)= -7.27	t(13)= -2.41	t(13)= 1.26	t(13)= -0.67

Although the t-test analysis highlighted the similarities and/or differences on average, before and after 9/11, it has not indicated the exact amounts of this effect. Therefore, the percentage differences are taken and presented in Table 2. It seems that the psychological and economic effect the 9/11 attacks had on the three areas' office market and the time since the attacks occurred have not allowed the office market to recuperate. In addition, although the Sears area has taken a very proactive approach, even decreasing the gross rent level, it has a staggering increase in vacancy. Considering the square feet leased before and after 9/11 in the Sears area provides an indication of an overbuild sub-market with new buildings being developed, but decreasing use of the old office stock.

Table 2. Percentage changes on average vacancy, sublease vacancy, rents and square feet leased before and after 9/11

Areas	Average Vacancy rate	Average Sublease Vacancy rate	Average Gross Rents	Square feet of leases signed
Aon	27.96%	59.35%	3.69%	0.79%
Hancock	34.26%	51.66%	5.13%	-36.81%
Sears	67.57%	61.53%	-1.97%	19.17%

The results of this study presents some deviation compared to the Miller et al. (2003) paper studying the 9/11 effects only on “trophy” buildings in 10 U.S. cities from the first quarter of 2000 until the third quarter of 2002. Although Miller et al. found a significant impact of 9/11 on rental-rates in certain truly famous landmark buildings such as Sears; this study suggests however that the impact of 9/11 on both rents and vacancy levels is beyond one “trophy” building and is spread in the immediate surrounding area. In addition, other signature buildings beyond Sears, such as Aon and Hancock along with their immediate areas seem to also suffer significantly even until today.

#### 4. Conclusions

The comparison of the before and after conditions of vacancy levels, sublease vacancy, gross rents and square feet leased indicated a significant impact of the 9/11 attacks in all three areas of study, with current conditions not improving substantially nor rapidly. Although vacancy levels started to decrease, the demand is still sluggish at a level where the before & after 9/11 comparison of percentage changes on average vacancy levels to still soar at 28% for the Aon area, 34% for Hancock and 67% for Sears. In addition, there is clear evidence that areas such as Sears preferred to decrease their rent levels compared to the before 9/11 market in order to decrease their vacancy. However, the addition of new office stock has hurt rather than helped the old stock of office buildings.

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