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RESEARCH AND THE REAL WORLD

Industrial Properties

By Harold D. Hunt

Real estate professionals sometimes question the value of applying academic research to "real world" situations. After all, computer models employing high-level mathematics and statistical analysis may seem completely unrelated to the day-to-day process of selling real estate. As the following discussion of industrial real estate research shows, however, real estate professionals can gain valuable insight from research.

Physical Factors Affecting Industrial Property Values and Rental Rates

A 1990 industrial property study published in the *Journal of Real Estate Research* defined physical property characteristics affecting industrial property values and investigated whether those physical characteristics affected industrial sales prices and rental rates. Data consisted of quoted asking sales prices and rental rates for 63 sale properties and 435 light industrial rental properties along an interstate highway in Atlanta in 1986 and 1987.

Physical characteristics found to affect the sales price and rental rates of industrial properties were contiguous available space, ceiling height, amount of office space available, rail availability, sprinkler system, number of dock-high and grade-level doors and age of property. Statistical analysis revealed that these characteristics accounted for about 75 percent of the variation in asking sales prices. Increases in building square footage, percentage of office space, number of dock-high doors and rail availability increased property sales price. However, the presence of a sprinkler system, the building's age and ceiling height had no effect on sales price.

Physical characteristics explained only 23 percent of the variation in quoted rental rates. Analysis showed that increases in the number of dock-high doors and the presence of sprinkler systems were the only physical characteristics that increased rents. Increases in property age and ceiling heights and the availability of rail siding actually decreased quoted rents.

The 1990 study suggests that because physical property characteristics affected quoted rents less than sales prices, other factors such as length of lease, inflation adjustments, free rent, frequency of rate adjustments and discounts must heavily influence rental rates. Because the average sale property was more than twice as large and had a smaller proportion of office space than the average lease property, the author concluded that **larger companies requiring more warehouse space and less finished office space prefer to purchase industrial property rather than lease it.** This finding is noteworthy for real estate professionals because it indicates that clients purchasing industrial space are a different market segment than those seeking to lease space.

Financial, Locational and Economic Factors Affecting Sales Price

A 1993 study in the *Journal of Real Estate Research* extended the 1990 study by adding financial, locational and economic factors to physical characteristics to further explore influences on industrial property sales prices.

Property data for the study were gathered from the sales of 228 Texas industrial properties in Dallas and Tarrant Counties between January 1987 and May 1991. Building size, ceiling height, amount of office space available, rail availability, number of dock-high doors and age were considered, along with two financial variables: industrial cap rates and the prime rate at the date of sale. Property location by county and distance in miles from the Dallas-Fort Worth International Airport were the locational factors considered. *The Dallas Morning News* Index, a three-month moving average composite of national and local economic indicators, was the only economic variable used in the study.

A variable distinguishing between single-tenant and multitenant buildings was also used with an assumption that single-tenant buildings are typically owner-occupied. Date of sale was used to determine any difference in sales price based on time.

Statistical analysis of these variables explained 98 percent of the variation in industrial sales prices. Specifically, increases in building size, proportion of office space and number of dock-high doors increased sales prices. Increases in ceiling height also caused a sales price increase, a finding that differs from the 1990 study. Difference in sales price by county was statistically significant, with Dallas County properties selling for more than those in Tarrant County.

The 1993 study found that increases in industrial cap rates, the prime rate, distance to DFW International Airport and the property's age caused a decrease in sales price. Date of sale was another factor affecting sales price, reflecting price appreciation or depreciation during the study period. Single-tenant properties sold for higher prices than multitenant properties, prompting the study's assertion that **owner-occupants will pay more for industrial properties.** The *Dallas Morning News* Index, representing economic conditions, surprisingly had no effect on sales prices.

Other Factors Affecting Industrial Property Rents

A 1997 study published in the *Journal of Real Estate Research* examined the effects of locational and general market conditions on quoted industrial rental rates. Quoted annual rents for 848 industrial warehouses were analyzed using M/PF Research Inc. data from 1989 through 1993, representing about 60 percent of the entire industrial warehouse market in the Dallas-Fort Worth area at that time. Sufficient data were gathered to allow an analysis of 29 of the 46 identified Dallas-Fort Worth industrial submarkets.

Physical characteristics included in this study were gross rentable area, ceiling height, proportion of office space, property age, number of dock-high doors and grade-level doors, presence of a sprinkler system and rail availability. Data were broken down by submarkets to examine any locational effects on rental rates. Annual net change in prior year non-agricultural employment was used as a measure of general market conditions.

These factors explained about 38 percent of the variation in rental rates, more than in the 1990 study. Increases in non-agricultural employment and the number of grade-level doors increased rents. Rents varied by submarket, with the highest rents occurring in north Irving and the lowest occurring in southwest Tarrant County. The age of property decreased rents, with this effect tapering off for properties more than 52 years old.

Number of dock-high doors and rail availability surprisingly had no effect on rental rates. On a per-square-foot basis, gross rentable square footage also had no effect on rents. The presence of a sprinkler system actually reduced the rental rate; an increase in the proportion of office space decreased rents until reaching 3 percent of the gross rentable area. Office space then began to increase rents as the proportion of office space grew beyond 6 percent of gross rentable space. Higher ceiling heights negatively impacted rents, with the strongest effect occurring until ceiling heights reached 28 feet. As heights rose above 28 feet, rents continued to decrease but at a slower rate.

Based on these findings, the authors of the 1997 study argued that **bigger industrial buildings should not be expected to command higher rents on a per square foot basis.** Further, renters of industrial space tend to be smaller firms demanding smaller, standard-sized space, while purchasers of industrial space tend to be larger firms demanding bigger, more specialized space. This finding matches those of the 1990 study. As a result, developers and investors may benefit more from building or purchasing smaller, standardized structures.

***NUMBER OF** dock-high doors affects both sales price and rental rates for industrial properties.*

The Bottom Line

These three studies seem to confirm that physical characteristics are important factors in determining industrial sales prices but are much less important in determining industrial rental rates. Furthermore, the studies show that those interested in purchasing industrial space seek a product significantly different than those interested in renting industrial space.

Industrial studies often cite a lack of high-quality data as a serious impediment to advanced academic studies in the field of industrial real estate. Increased collaboration between industrial real estate experts and academic reseachers may lead to expanding research in this area.

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