

Industrial Leasing Activity: Correlations with Texas Rig Counts and Lack of Quarterly Differences

Executive Summary

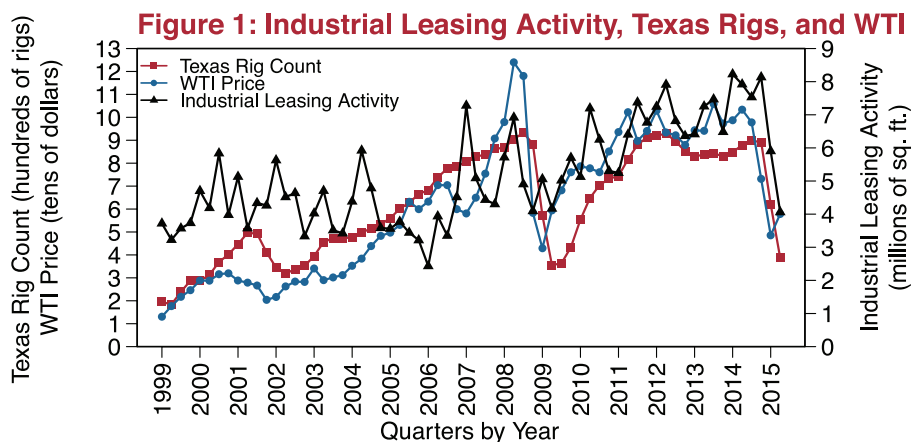
Realized demand for industrial products is measured in terms of net absorption, the change in occupied space over a quarterly period. Yet, net absorption can lag behind actual leasing deals, leaving a retrospective view of market conditions. Leasing activity is a more timely metric, as it measures direct, sublet, renewal, expansion, and pre-leasing before changes in occupancy have time to manifest as net absorption. **Here, we examine if recent declines in industrial leasing activity deviate from typical quarterly leasing activity, and if so whether or not leasing activity is correlated with the oil industry (Figure 1).** To this end, we tested the common assumption that some quarters of the year tend to under or outperform other quarters, such as slowdowns of summer doldrums or heightened year-end activity of fourth quarters.

Contrary to the commonly held belief, industrial leasing activity does not differ among quarters of the year. This is true for leasing activity of all industrial space combined, as well as flex, manufacturing, and warehouse/distribution space individually. Leasing activity of Q2 2015 is statistically lower than historic Q2 measures, indicating a small but significant slow down in the overall industrial market. Yet, at 10 million sq. ft. as of Q2 2015, industrial leasing activity is on target to hit its historic annual average of 20.7 million sq. ft. Industrial leasing activity

is not evenly distributed among these products. On average, 716,000, 303,000, and 4,000,000 sq. ft. are leased per quarter for flex, manufacturing, and warehouse/distribution space, respectively. Correcting for differences in rentable building area, quarterly leasing rates are on average 1.5%, 0.3%, and 1.0% for flex, manufacturing, and warehouse/distribution space, respectively. The volatility (as measured by the coefficient of variation) of quarterly leasing rates over the past 16 years has been 24%, 54% and 32% for flex, manufacturing, and warehouse/distribution space, respectively.

Texas rig count correlates with leasing activity, depending on the particular industrial product. Leasing activity of

warehouse/distribution space had a modestly strong positive correlation of 0.62, indicating that increases in Texas rig counts were associated with increases in leasing activity of warehouse/distribution space. Likewise, a positive, though weaker correlation of 0.30 occurred between Texas rig count and flex space. Yet, leasing activity of manufacturing space was not significantly correlated with Texas rig count. **With lower leasing activity per quarter, higher volatility, and less correlation with Texas rig counts, manufacturing space may beat to a different drum of other industrial products.** In turn, it appears that there is more stability in flex and warehouse/distribution products, with higher leasing activities and lower volatility.



Data InSight is a monthly business-to-community (B2C) whitepaper series that uses data analytics to look at current and historical trends in commercial real estate (CRE). Indeed, like many other industries, CRE is undergoing a revolution in the volume, velocity, and variety of data being generated. At NAI Partners, we are embracing this data revolution through data science --- the process of using the scientific method and statistics to extract knowledge from data. Complementing its full CRE platform and more than 500 years of combined broker and professional experience, NAI Partners offers a data analytics consulting service to guide its clients in their business intelligence and decision making in CRE.

Motivation

With changes in the local, national and global oil industry over the past year (Figure 1), and even more so in recent weeks, there is an ever growing concern for how Houston's commercial real estate (CRE) industry will adjust. While key pullbacks have manifested in certain office products of particular submarkets, industrial products do not seem to be showing large fluctuations outside their typical ranges. To gage fluctuations outside the typical bounds of a normal business cycle, it is essential to be able to estimate demand on as current a time scale as possible. Yet, net absorption — the typical measure of realized demand — lags behind the actual leasing deals (or lack thereof), leaving a hindsight view of market conditions.

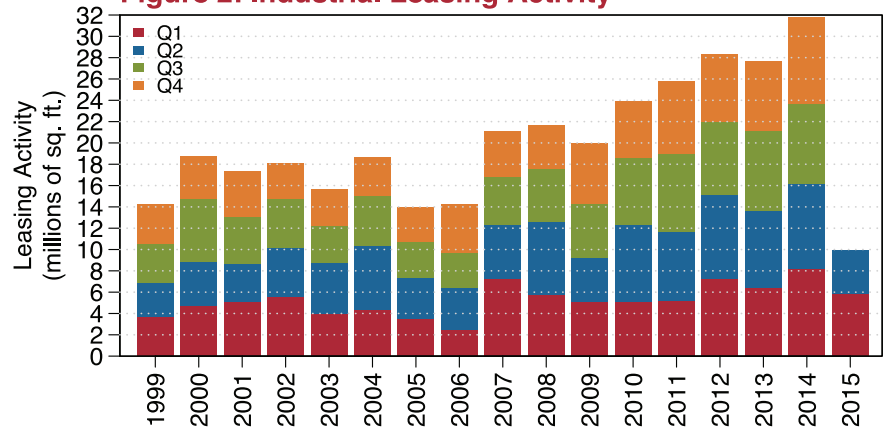
Leasing activity measures the total amount of space that is committed to and signed as direct leases, subleases, renewal leases, lease expansions, and pre-leasing. Leasing activity gives a more timely view of demand, as it is not predicated on realized occupancy of net absorption. Despite advantages of leasing activity in evaluating demand, the commonly held perception is that some quarters of the year tend to under or out perform other quarters, such as slowdowns of summer doldrums or heightened year-end activity of fourth quarters. **Here, we examine if recent declines in industrial leasing activity deviate from typical quarterly leasing activity, and if so whether or not leasing activity is correlated with the oil industry (Figure 1).**

Industrial Leasing Activity

Houston's leasing activity is depicted in Figure 2, from 1999 through Q2 2015 for all industrial space combined. The cumulative height of the four stacked quarters is the total annual leasing activity. Leasing activity in Q1 2015 for all industrial space combined was 5.9 million sq. ft. The historic Q1 average (\pm 95% confidence interval) for leasing activity for all industrial space combined is 5,243,000 sq. ft. (\pm 807,000). We are 95% certain that Q1 leasing activity typically falls between 4,393,000 to 6,007,000 sq. ft., such that **leasing activity in Q1 2015 was within the typical range for historic Q1 performance.**

Leasing activity of 4.1 million sq. ft. occurred in Q2 2015, compared with the historic Q2 average (\pm 95% confidence interval) of 5,419,000 sq. ft. (\pm 871,000). We are 95% certain that Q2 leasing activity typically falls between 4,548,000 to 6,290,000 sq. ft.

Figure 2: Industrial Leasing Activity



Leasing activity of Q2 2015 is statistically lower than historic Q2 measures, indicating a small but significant slow down in the overall industrial market. Yet, 10 million sq. ft. of leasing activity has occurred year-to-date (Figure 2). Extending this volume to the second half of 2015, leasing activity is on target to hit its historic annual average (\pm 95% confidence interval) of 20.7 million sq. ft. (\pm 2.9 million sq. ft.).

Quarterly Variation in Leasing Activity

The assumption is often made that leasing activity and CRE performance in general varies among quarters of the year. For example, summers are thought to experience reduced activity, while winters have heightened activity before year end. **Here, we examine whether leasing activity tends to have low and high performing quarters, and if quarterly performances differ among flex, manufacturing, and warehouse/distribution spaces.**

Figures 3a, 3b, and 3c show leasing activity (y-axis) per quarter (x-axis) from 1999 through 2014 for the industrial products of flex, manufacturing, and warehouse/distribution space. The red horizontal lines are the average (mean) leasing activity of each quarter (Q1, Q2, Q3, Q4). The 16 vertical lines extending up and down from each horizontal line represent the quarterly leasing activity for each year from 1999 to 2014. The average (mean) and coefficient of variation (CV) for leasing activity are indicated on each panel for each quarter. The coefficient of variation (expressed as a percentage) measures the dispersion of data around the mean. The larger the CV, the greater the scatter, spread, or variability in the data. **In this way, the coefficient of variation (CV) helps to assess which quarters or**

industrial products are more and less volatile.

Flex --- Figure 3a shows the leasing activity of flex space from 1999 to 2014 for each quarter of the year. Average leasing activity among the four quarters ranged from 676,000 to 771,000 sq. ft. **The coefficient of variation ranged from 18-32%, indicating some but not overly high volatility among quarters. While some variation does occur among quarters, statistical differences do not occur in leasing activity among the four quarters for flex buildings.** The historic average (\pm 95% confidence interval) for quarterly leasing activity of flex space is 716,000 sq. ft. (\pm 43,000). We are 95% certain that quarterly leasing activity of flex space typically falls between 673,000 to 759,000 sq. ft.

Manufacturing --- Figure 3b shows the leasing activity of manufacturing space from 1999 to 2014 for each quarter of the year. Average leasing activity among the four quarters ranged from 278,000 to 360,000 sq. ft. **The coefficient of variation ranged from 39-67%, indicating high volatility within and among quarters. Statistical differences do not occur in leasing activity among the four quarters for manufacturing.** The historic average (\pm 95% confidence interval) for quarterly leasing activity of manufacturing space is 303,000 sq. ft. (\pm 40,000). We are 95% certain that quarterly leasing activity of flex space typically falls between 263,000 to 343,000 sq. ft.

Warehouse/Distribution --- Figure 3c shows the leasing activity of warehouse and distribution space from 1999 to 2014 for each quarter of the year. Average leasing activity among the four quarters ranged from 3.8 to 4.2 million sq. ft. **The coefficient of variation ranged from 30-34%, indicating low volatility within and among quarters. Statistical differences do not occur in leasing activity**

Figure 3a: Flex Leasing Activity

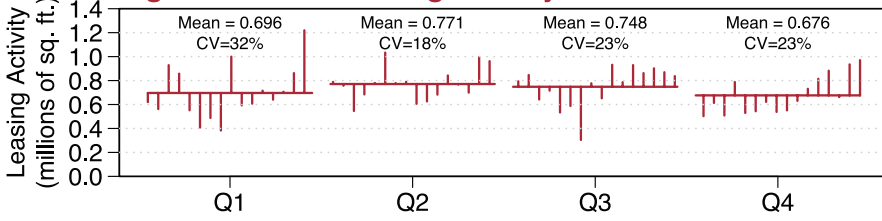


Figure 3b: Manufacturing Leasing Activity

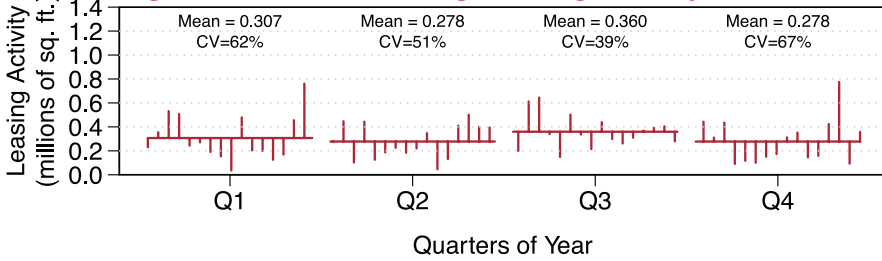
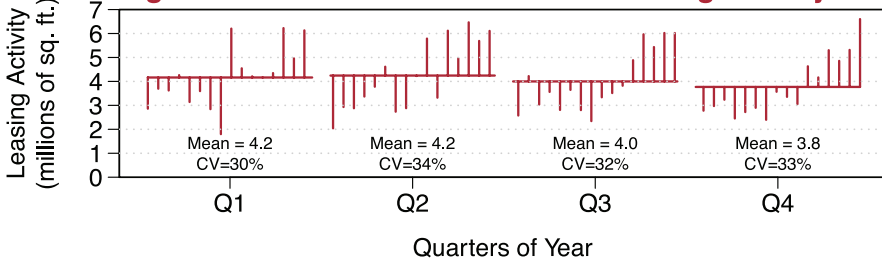


Figure 3c: Warehouse/Distribution Leasing Activity



among the four quarters for warehouse/distribution buildings. The historic average (\pm 95% confidence interval) for quarterly leasing activity of warehouse and distribution space is 404,000 sq. ft. (\pm 31,000). We are 95% certain that quarterly leasing activity of warehouse/distribution space typically falls between 373,000 to 435,000 sq. ft.

Substantial differences occur in the average quarterly volume of leasing activity among flex (716,000 sq. ft.), manufacturing (303,000 sq. ft.), and warehouse/distribution (404,000 sq. ft.) buildings. However, these leasing volumes do not account for differences in rental building area (RBA). Products with greater RBA are anticipated to have greater leasing activities per RBA, simply due to there being more product. Total industrial RBA for Houston is about 548 million sq. ft., with 49, 80, and 388 million sq. ft. accounted for by flex, manufacturing, and warehouse/distribution, respectively. If we express average quarterly leasing as percentage of RBA, then leasing activities are 1.5%, 0.3%, and 1.0% of RBA for flex, manufacturing, and warehouse/distribution, respectively. In sum, these analyses suggest that manufacturing space has more volatility to its leasing activity, than flex or warehouse/distribution buildings.

Industrial Leasing Activity and Texas Rig Count

To what extent is the lower leasing activity of Q2 2015 attributable to the oil industry? We used Texas rig count as a measure of the local and regional oil industry. We examined correlations between Texas rig count and leasing activity of all industrial space combined, as well as each of flex, manufacturing, and warehouse/distribution space individually.

Correlation does not necessarily equate with cause/effect. Correlation coefficients can range from +1.0 to -1.0. A value of 0 indicates no correlation. A positive value indicates that as one variable increases so does the other variable, while a negative value indicates that as one variable increases, the other variable decreases. Values between 0 and 0.3 (0 and -0.3) are considered *weak* positive (negative) correlations. Values between 0.3 and 0.7 (-0.3 and -0.7) are considered *moderate* positive (negative) correlations. Values between 0.7 and 1.0 (-0.7 and -1.0) are considered *strong* positive (negative) correlations.

Texas rig count did correlate with leasing activity, but it depended on the particular industrial product. The correlation coefficient for all industrial products combined was 0.61,

indicating moderate to strong increases in overall industrial leasing with increases in Texas rig counts. Leasing activity of warehouse/distribution space also had a moderate to strong positive correlation coefficient of 0.62, indicating that increases in Texas rig counts were associated with increases in leasing activity of warehouse/distribution space. Likewise, there was a positive, though weak to moderate correlation (0.30) between flex space and Texas rig count. However, leasing activity of manufacturing space was not significantly correlated with Texas rig count. This latter result is consistent with prior findings (*Data InSight, Vol 1, Issue 5*) in which vacancy (but not net absorption) of manufacturing space was associated with Texas rig counts.

Methodology

Commercial real estate data on office space were obtained from CoStar following at the end of July in 2015. Data for Class A and B buildings were combined and kept separate for various analyses. Class C buildings were omitted entirely. The statistical analyses and data visualization were performed using the R software and programming language:

R Core Team (2014). R: A language and environment for statistical computing. R Foundation for Statistical Computing, Vienna, Austria. URL <http://www.R-project.org/>.

We used coefficients of variation and 95% confidence intervals to assess differences in leasing activity among quarters. We employed Pearson product-moment correlation coefficient to assess associations between Texas rig count and industrial leasing activities. We do not report predictive analytics for leasing activity and rig counts due to violations of statistical assumptions in the time series data. For further information on the predictive analytics of leasing activity, please contact us.



HOUSTON | AUSTIN | SAN ANTONIO

NAI Partners

1900 West Loop South, Suite 500
Houston, TX 77027
tel 713 629 0500