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J. Nathaniel Holland, Ph.D.
Chief Research & Data Scientist

Rising Office Vacancies May Soften the Market Sufficiently that Class B Tenants Shift to Class A Buildings
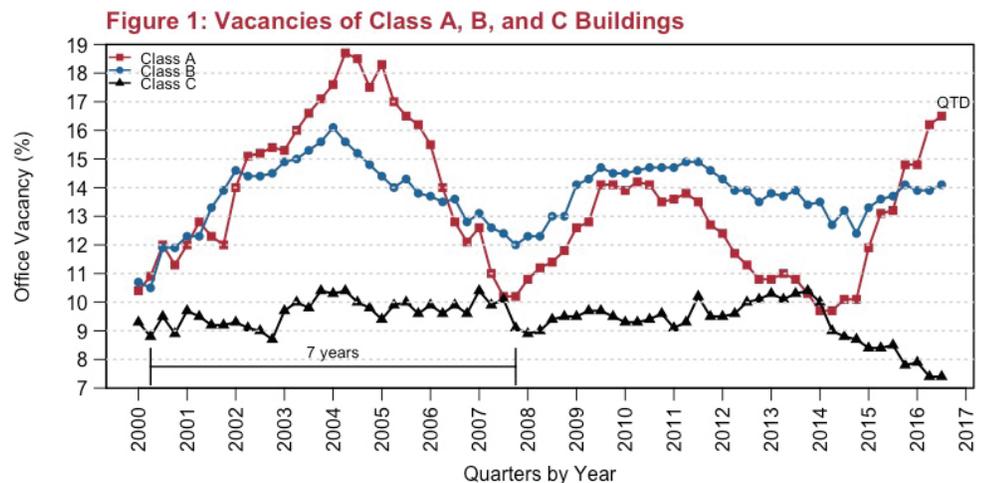
Executive Summary

Houston is well into the falling phase of its office market cycle, a market environment which favors tenants and buyers over landlords and sellers. The current falling phase of the office market began in early to mid 2014, prior to the oil downturn. Nevertheless, the falling office market has been greatly exacerbated by the downturn in the energy industry, likely leading to a deeper bottom than might otherwise be seen. In particular, Houston is seeing a drastically softer Class A market than Class B, as large amounts of Class A space are being vacated by oil and associated service companies. Here, we use office vacancy to examine Houston's office market cycle, including forecasts of how deep the bottom may be and how differences may manifest among Class A, B, and C buildings.

Figure 1 shows current and historic vacancies of Class A vs. Class B vs. Class C office buildings from 2000 through August 2016. Percent vacancy in Figure 1 is inversely related to the phase of the market cycle; increases in vacancy equate with a falling market and decreases in vacancy equate with a rising market. As can be seen in Figure 1, the cyclic behavior of the office market includes rising, peaking, falling, and bottoming vacancies. This cyclic pattern has been repeated in Houston for Class A and Class B buildings from 2000 to 2007 and 2007 to 2014, but not in Class C buildings, vacancies of which tend to

be more stable (mean 9.4%, range 8.8-10.4%). In the past two years, however, Houston has seen a strengthening of the Class C market, in which vacancies have steadily creeped down from 9% to a current 17-year low of 7.4%.

Figure 1: Vacancies of Class A, B, and C Buildings

In the current falling phase of the office market cycle, Class A vacancies have increased from 9.7% to 16.5% in Q3 2016—much higher than Class B buildings at 14.1% and representing a pattern similar to the 2000-2007 market cycle. Our statistical forecasts show that Class A buildings have the potential to trend upwards of 19% in the coming two years, while the Class B market will fluctuate modestly around a bottom of 14-15%. However, the forecast for Houston as a whole is less dramatic, as

the horizontal trend of Class B buildings stabilizes the vertical trend of Class A buildings, whereby overall office vacancies climb from the current 15.3% to the low- to mid-16% range. In a worst-case scenario, if all occupied sublease space turned to direct vacant space overnight, the resulting vacancy would be 17.9%. In whichever case, Class A vacancies will likely remain well above Class B, indicative of a substantially softer Class A market. This can lead rents of Class A buildings to decline to the point where Class B tenants may be able to negotiate their way into Class A buildings.

Motivation

Office markets are not static, but rather dynamic. The industry fluctuates, whereby markets rise, peak, fall, and bottom, a market cycle that repeats itself through time. Much attention has been given to the oil downturn as underlying the slowing office market in Houston. Indeed, a large majority of the 12 million sq. ft. of sublease availability is related to the energy industry. Yet, in early- to mid-2014 prior to the oil downturn, Houston's office market had already peaked near 11% vacancy, and was also already entering the falling phase of the office market cycle. While this 11% peak is consistent with peaks in late 2007 and early 2000, the falling phase of the office market is nevertheless exacerbated by the downturn in Houston's energy industry. Understanding CRE market cycles is critical, as they shape key variables such as vacancy (supply), net absorption (demand), rental rates, and construction. To this end, a slowing office market may well represent opportunities for office tenants, investors, and others.

Vacancy is a key indicator of the office market, as it measures changes in supply through new construction, demand through net absorption, and existing stock inventory. Vacancy is empty space in sq. ft. of stock inventory of rentable building area (RBA) that is not occupied by a tenant, whether or not that space has a lease obligation or is available for lease or sublease. When expressed as a percentage, vacant sq. ft. is divided by total sq. ft. of stock inventory RBA to produce a percent of market that is vacant. Because percent vacancy is inversely related to the phase of the market cycle, increases in vacancy rates equate with a falling or bottoming market, whereas decreases in vacancy rates equate with a rising or peaking market.

We use office vacancy to examine differences among Class A, B, and C buildings during the falling phase of office market cycles. We further forecast how vacancies are likely to change in coming quarters and years, which may influence how tenants, landlords, and investors navigate the office market. For example, as Class A vacancies continue to rise, will those products soften to the extent that they then become affordable for Class B tenants to leave their current office space for Class A amenities?

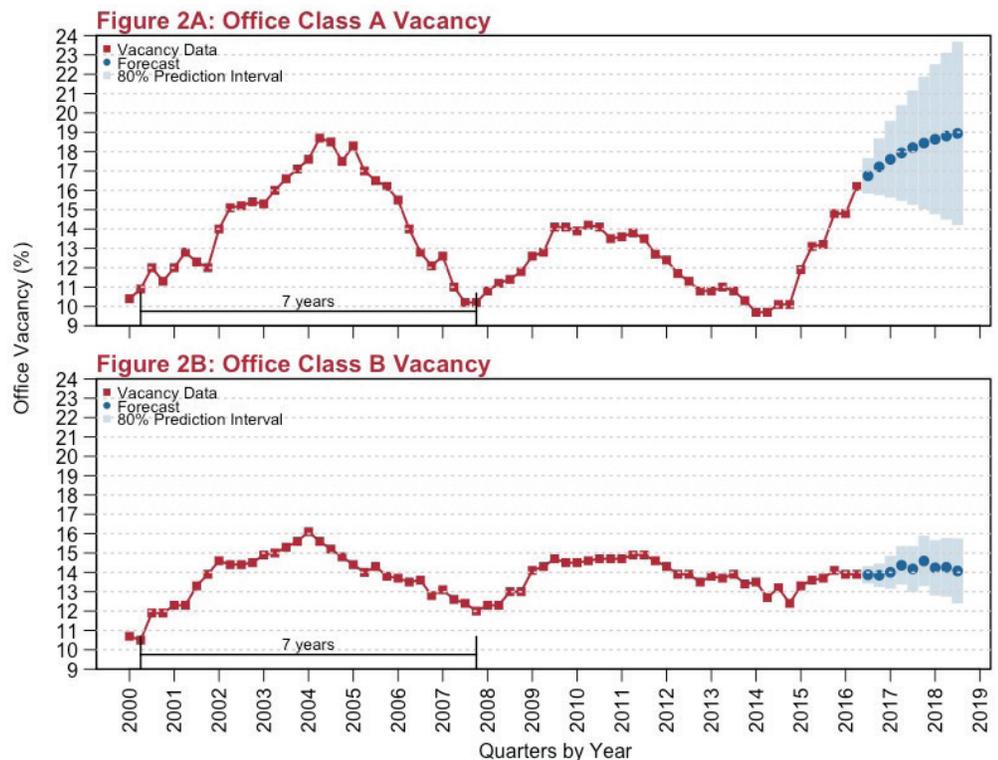## Office Vacancy: Class A vs. B vs. C

Figure 1 shows percent vacancy for Class A, Class B, and Class C office buildings from 2000 through August 2016.

Current and past patterns in vacancy differ most strongly between Class C vs. Class A and B buildings. Specifically, Class C buildings have averaged 9.5% vacancy, with a typical range of 8.8% to 10.4%. While vacancy of Class C buildings has tended to remain relatively stable (mean 9.4%, range 8.8-10.4%), in the past two years we have seen a strengthening of this market as vacancies have moved outside this typical range, steadily creeping down from 9% to a current low of 7.4% vacancy.

Class A and Class B buildings show markedly different patterns in their vacancy from Class C. While there are mild up and

Figure 2A: Office Class A Vacancy

Figure 2B: Office Class B Vacancy

down swings in the vacancy of Class C buildings, they have not shown market cycles like that of Class A and Class B buildings. Both Class A and Class B buildings show cycles in their vacancies, the patterns of which correspond to the rising, peaking, falling, and bottoming phases of the office market cycles from 2000-2007 and 2007-2014. The time frame or periodicity of the market cycle is around seven years for both Class A and Class B buildings.
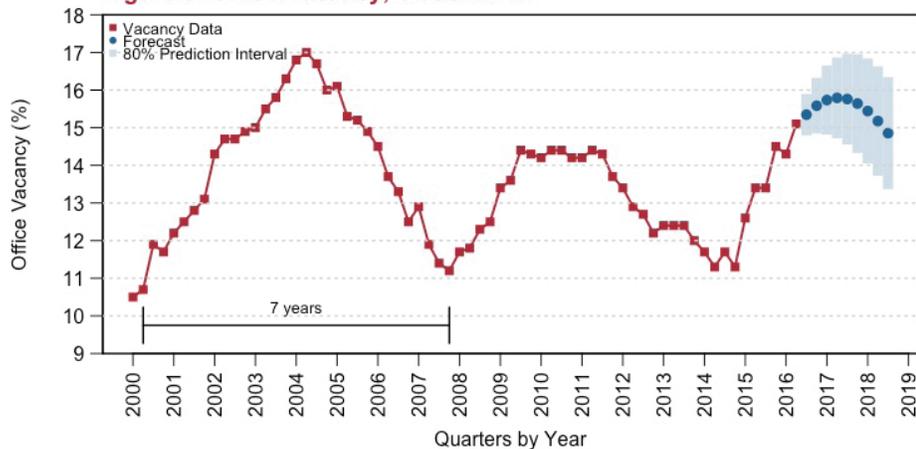
Despite the similarities in market cycles between Class A and Class B buildings, their cycles have differed in a couple of important, but subtle ways. In the 2000-2007 cycle, Class A and Class B vacancies were similar during the initial falling phase, but then as it progressed, Class A vacancies jumped dramatically from 15.3% to 18.7% over 6-8

quarters from 2003 to 2004. During this same falling phase, Class B vacancies only jumped from 14.9% to a bottom of 16.1%. Thus, the Class A market softened much more than the Class B market. The 2007-2014 market contrasts in that the opposite occurred, whereby Class B vacancies were greater than Class A vacancies, but only marginally so, suggesting a softer Class B than Class A market.

In the current falling phase of the office market cycle, we are seeing a pattern more similar to 2000-2007 cycle, whereby the vacancy of Class A buildings is climbing much higher than that of Class B buildings.

In fact, it appears that Class B buildings are nearing their bottom around 14% to 15%, while the vacancies of Class A buildings continue a steep trend upwards toward 19%, approaching their 2004 bottom. This is important because the softer Class A market could lead to Class B tenants being able to shift and move into Class A buildings, as former Class A tenants, particularly those of the oil and energy service companies, vacate.

Forecast of Office Vacancy

We focused our forecasting efforts of market dynamics on Class A, Class B, and Class A + B combined. Figures 2 and 3 show vacancies (red lines and squares), our forecasts for the next nine quarters (blue circles), and 80% prediction intervals (shaded

Figure 3: Office Vacancy, Class A + B

J. Nathaniel Holland, Ph.D.
Chief Research and Data Scientist

Dr. J. Nathaniel Holland is a research scientist with 20 years of experience in using the scientific method to extract information from complex multi-dimensional data. He joined NAI Partners in 2014 as Chief Research and Data Scientist. At NAI Partners, Nat leverages his sharp intellectual curiosity with his skills in statistical modeling to guide data-driven business decisions in commercial real estate. Like many data scientists in the private sector, Nat joined NAI Partners following a career in academia. Prior to taking up data analytics at NAI Partners, he held professorial and research positions at Rice University, University of Houston, and the University of Arizona between the years of 2001 and 2014. Nat is the author of more than 50 scientific publications, and he has been an invited expert speaker for more than 60 presentations. Trained as a quantitative ecologist, he holds a Ph.D. from the University of Miami, a M.S. from the University of Georgia, and a B.S. from Ferrum College.

light blue regions) for the forecasts. The prediction intervals are the 80% probabilities that vacancies will be in that range. Figure 2A shows vacancies and our forecasts for Class A buildings, while Figure 2B shows that for Class B buildings. Figure 3 then examines Houston's market as a whole by grouping Class A and B buildings into one combined analysis. We analyzed Class A and B office buildings separately, as they are showing slightly different patterns which could influence the market, and how individual tenants, landlords, investors or otherwise respond to current and future shifts in the office market.

While Class A and Class B do show similar periodicity and cycles in the rises and falls of vacancy for the two cycles from 200-2007 and 2007-2014, they differ a bit for the falling phase of the current market cycle which started in early to mid 2014. Class A vacancies have steadily climbed to 16.5% as of August 2016. Our statistical forecast model indicates that Class A vacancies will continue to climb toward 19% well into 2018. In contrast, we see that while Class B vacancy has increased in the falling phase of recent market cycles, in the current falling phase it has only increased modestly from about 13.2% to a stabilized 14.1% over past 4-5 quarters. Our statistical forecast model indicates that Class B vacancies will continue to remain relatively stable, fluctuating around 14-15% into 2018. With these high vacancies of Class A buildings, combined with strong discrepancies in vacancy between Class A and Class B (Figure 2), it may well be that the tenant market is sufficiently strong that Class B tenants are able to shift and acquire Class A leases at rental rates they may not otherwise be able to tackle. In turn, this could lead to Class A vacancies dropping with Class B tenants moving over, then resulting in Class B vacancies climbing.

The forecast for Houston as a whole is less drastic, as the horizontal trend of Class B buildings stabilizes the vertical trend of Class A buildings, resulting in overall vacancies that climb from the current 15.3% to the low to mid 16% range. In a worst-case scenario, if all occupied sublease space turned to direct vacant space during the falling phase, the resulting vacancy would be 17.9%. We forecast that the slowdown of the current phase of the market cycle is likely to last about 3.5 years, bottoming out in late 2017 to early 2018, with overall vacancy rates around 16-17% (Figure 3). While this is high, it is within the vicinity of the 17% high of the 2004 bottom. The office market is then projected to rise and peak in 2020-2021, a time span that will then represent a landlord-favorable market.

Methodology

Commercial real estate data on office space were obtained from CoStar in early August 2016. The statistical analyses and data visualization were performed using the R software and programming language, including the 'forecast' package:

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/.

The time series analyses were performed using both exponential smoothing and ARIMA methods. In our case, the ARIMA models captured more variation than the exponential smoothing model, though both were reasonable and on par with the other. We compared accuracy of the two time series and forecasting models using MPE, MAPE, and MASE. We examined the cyclic nature of vacancy in the office market using autocorrelations, which showed a highly significant partial autocorrelation of one lag, and a market cycle of ~28 quarters. Our statistical analyses also showed no seasonal/quarterly influences on vacancy rates.