Population Growth and Stock Inventory of Four Office Markets of Texas: Comparisons of Austin, Dallas, Houston, and San Antonio

Executive Summary

Supply and demand are perhaps the most basic concepts from economics which form the foundation of market dynamics in commercial real estate (CRE). Supply is the quantity of a product offered by a market, such as office space in the Houston market. Stock inventory measures the actual realized supply of the CRE product in square feet of building space. Here, we examine how growth in the supply of office space is changing across Texas in light of Houston, Austin, Dallas/Fort Worth, and San Antonio markets each being in the top 10 fastest growing cities in 2015.

Dallas and Houston have large population sizes of 7.0 and 6.6 million people, respectively, while Austin and San Antonio have smaller populations of about 2.0 and 2.4 million people. Figures 1A and 1B show population size and office stock inventory for Houston, Austin, Dallas/Fort Worth, and San Antonio from 1999 - 2016, for which both charts are indexed to values of 2006 to facilitate comparisons in time and among cities (actual populations and inventories are in Figures 2 and 3). For example, Austin had a population of just over two million people as of July 1, 2015 (Figure 2), which is 132 indexed to 2006 (Figure 1A). This equates with a 32% increase in population size since 2006, which 10-13% greater than the other three cities with 19-22% population increases since 2006 (Figure 1A).

Consistent with population growth, stock inventory of office space has increased substantially across the four Texas cities. Specifically, the four markets have increased by 15-31% since 2006 (Figure 1B), but with some striking differences occur among the four cities that were not prevalent with population growth. While population change since 2006 was greatest for Austin, San Antonio shows the greatest increase in office space since 2006 at 31%. Despite having the largest population size, Dallas office space increased the least since 2006, but still a substantial 15%. With 25% increase since 2006, Austin and Houston show the strongest rate of growth in office space with substantial increases occurring in both markets in 2014 and 2015, as indicated the steepness of their blue and black lines in Figure 1B. In summary, these analyses support office CRE increasing with population growth, and strengthening CRE in Texas, despite some economic woes in recent times with oil commodity prices.
Motivation

Supply and demand are fundamental concepts in economics which shape the commercial real estate (CRE) industry. Demand is most commonly estimated by net absorption, but is also occasionally measured by gross absorption or leasing activity. Supply is measured by stock inventory, construction, new deliveries, and building permits. Stock inventory estimates realized supply, that is how much of a particular product a market offers, such as 275 million sq. ft. of office space in the Houston market. The other measures of supply are estimates of new supply anticipated to be added to stock inventory in the future. Note, vacancy — which is often used as a surrogate for supply — is actually a function of both supply and demand.

Recent updates by the U.S. Bureau of Census indicate that the top three fastest growing cities in the United States in 2015 were Houston, Austin, and Dallas/Forth Worth, with San Antonio being the 10th fastest. Texas dominated the U.S. in having 40% of the top 10 fastest growing cities. Here, we examine how the supply of office space has increased over the past decade along side of population growth in these four cities.

Population Growth of Texas Cities

Figure 2 shows the population size of each of these four Texas cities that ranked in the top 10 fastest U.S. growing cities in 2015 (as of July 1, 2015, the last census of the bureau). Dallas and Houston have large population sizes of 7.0 and 6.6 million people, respectively, while Austin and San Antonio have smaller populations of about 2.0 and 2.4 million people. In terms of their overall population size, Dallas/Forth Worth > Houston > San Antonio > Austin.

Figure 1A presents each city’s population size indexed to a value of 100 for the year of 2006. In this way, changes in population size over the past 10 years and among the four fastest growing cities can be interpreted as percentages. For example, Austin had a population of just over two million people (Figure 2), that is 132 indexed to 2006, or a 32% increase in population size since 2006 (Figure 1A). Overall, all four cities have strong growth trends over the past 10 years, with a particularly strong leap forward by Austin. Each of Houston, Dallas and San Antonio have still grown substantially, by 19-22% since 2006, but Figure 1A shows that Austin has grown 10 - 13% greater than the other cities.

Growth in Stock Inventory Among Texas Cities

Consistent with their population sizes, stock inventory of office space has also increased substantially across the four Texas cities (Figure 3). Dallas and Houston have large stock inventories of 307 and 271 million sq. ft., respectively, while Austin and San Antonio have smaller stocks of 79 and 57 million sq. ft. In terms of their stock inventory, Dallas/Forth Worth > Houston > Austin > San Antonio, which is a minor difference from population size whereby San Antonio > Austin. As with population sizes (Figure 2), comparing growth and changes in the stock inventory...
among the markets is difficult without standardizing (or indexing) the numbers.

Figure 1B shows each city’s stock inventory of office space indexed to a value of 100 for the year of 2006. In this way, changes in inventory over the past 10 years and among the four fastest growing cities can be interpreted as percentages. Specifically, the four markets have increased by 15 - 31% since 2006 (Figure 1B). For example, despite being the largest market, Dallas/Fort Worth with 307 million sq. ft., that is 115 indexed to 2006, has increased the least (15%) among the four cities. On the other hand, San Antonio, with 2.4 million sq. ft. (131 indexed to 2006) has seen 31% increase in rentable building area since 2006. With 25% increase since 2006, Austin and Houston have the greatest increase in office space, particularly in 2014 and 2015, as indicated the the steepness of their lines (Figure 1B).

Methodology

Commercial real estate data on office real estate were obtained from CoStar in early April 2016 for Class A and B buildings for the total MSA of each of Austin, Dallas/Forth Worth, Houston, and San Antonio. The statistical analyses and data visualization were performed using the R software and programming language:


Data InSight

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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.