NAIOP RESEARCH FOUNDATION

The NAIOP Industrial Space Demand Forecast

Third Quarter 2015 Report

Slowing Economic Growth Predicts Slowdown in Industrial Expansion for 2016 and Beyond

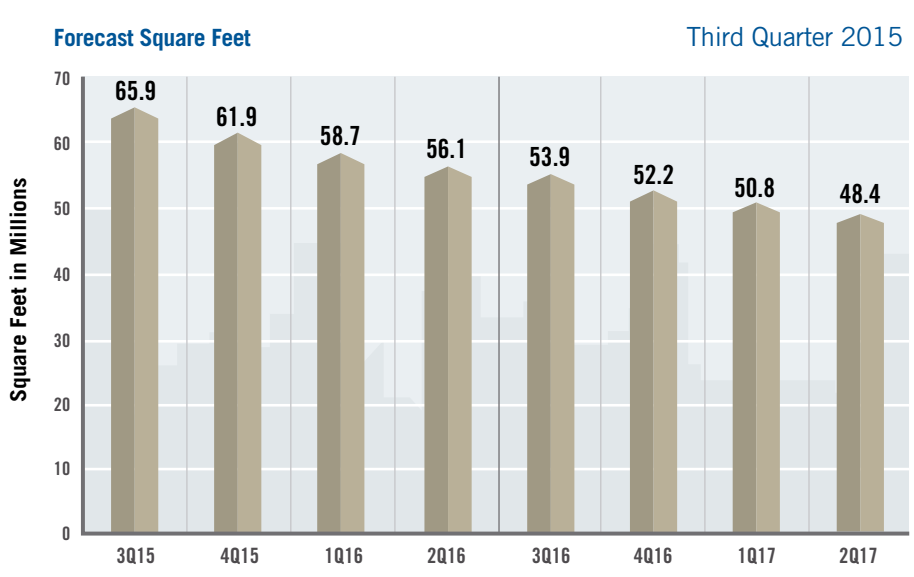
The U.S. economy remains in slow, moderate growth at the beginning of the second half of 2015. Second-quarter GDP is reported to have expanded at an annualized rate of 3.7 percent, which is up from the revised 0.6 percent rate in the first quarter of 2015. Many economists, including those at the Federal Reserve, are cutting their forecasts of GDP growth for 2015 and beyond, given the global economic climate. Thus Dr. Hany Guirguis, Manhattan College, and Dr. Joshua Harris, University of Central Florida, forecast net industrial demand to remain positive, with over 60 million square feet of quarterly net absorption in the rest of 2015, and to begin to decline to rates below 50 million square feet quarterly by late 2016. Declines in energy prices, and thus energy production and exploration, along with the slowdown in the Chinese economy, are two major forces impacting the domestic industrial space market.

"The good news is that the U.S. employment situation remains in a state of steady growth, with over 200,000 net gains in payrolls occurring almost every month," said Harris. "This has brought the unemployment rate down to 5.3 percent, which is very close to full employment, according to classical economic theory. Thus, we maintain our position that the largest source of new industrial demand will be from the manufacturing and distribution of consumer goods, which has continued a steady expansion since the end of the recession. Amazon, Wal-Mart and other major retailers are all competing to shorten the 'click-to-delivery' time for online sales, which means more capital must be placed into industrial facilities across the nation. We see this trend intensifying for the entire forecast window into 2017 as more retailers enter this competition."

The remaining curveball in the economy that will certainly have an impact on industrial demand is interest rates. Consensus opinion remains that the Fed will move its target short-term rate up by approximately 25 basis points by the end of 2015. How much or how fast it will move after that seems highly unpredictable. Rising rates could logically moderate the growth in new home and auto sales, which have been recovering well since the recession. Credit-reliant homebuyers would lose some affordability, and thus may delay purchases or downsize their expectations. Either result reduces their capacity and need for expenditures on items such as home furnishings and appliances, both of which use significant industrial space in their production and distribution.

TABLE 1

The NAIOP Industrial Space Demand Forecast
U.S. Markets, Quarterly Net Absorption



In forecasting future industrial demand, Guirguis and Harris believe there is much more certainty that energy prices will likely remain low for the near term. Thus, interest rate uncertainty — and, by proxy, inflation — has become the largest source of variance for 2016 and beyond.

Key Inputs and Disclaimers

The predictive model is funded by the NAIOP Research Foundation and was developed by Guirguis and Dr. Randy Anderson, formerly of the University of Central Florida. The model, which forecasts demand for industrial space at the national level, utilizes variables that comprise the entire supply chain and lead the demand for space, resulting in a model that is able to capture the majority of changes in demand.

While leading economic indicators have been able to forecast recessions and expansions, the indices used in this study are constructed to forecast industrial real estate demand expansions, peaks, declines and troughs. The Industrial Space Demand model was developed using the Kalman filter approach, where the regression parameters are allowed to vary with time and thus are more appropriate for an unstable industrial real estate market.

The forecast is based on a process that involves testing more than 40 economic and real estate variables that theoretically relate to demand for industrial space, including varying measures of employment, GDP, exports and imports, and air, rail and shipping data.

Leading indicators that factor heavily into the model include the Federal Reserve Board's Index of Manufacturing Output (IMO), the Purchasing Managers Index (PMI) from the Institute of Supply Management (ISM) and net absorption data from CBRE Econometric Advisors.

ISM, the Federal Reserve and CBRE Econometric Advisors assume no responsibility for the Forecast. The absorption forecast tracks with CBRE data and may vary when compared with other data sets. Data includes warehouse, distribution, manufacturing, R&D and special purpose facilities with rentable building areas of 10,000 square feet or more.

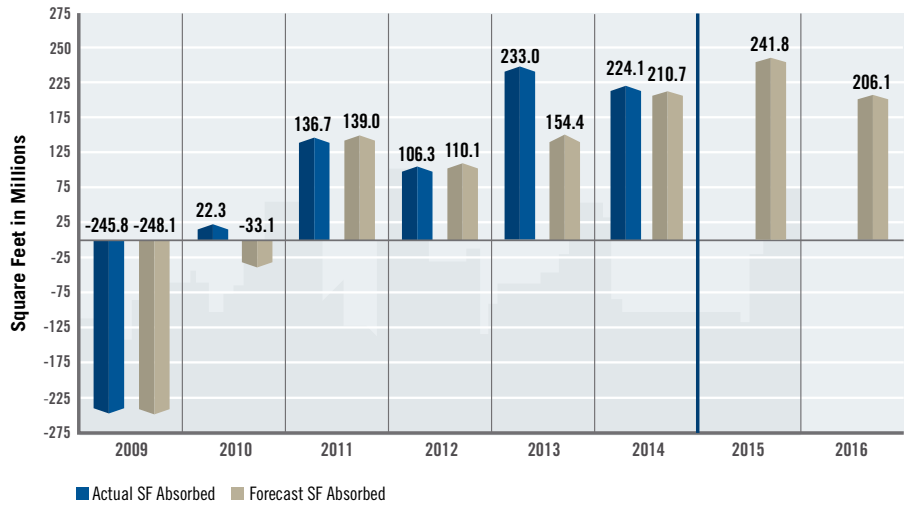
Actual versus Forecast

The Annual Net Absorption Table shows actual versus forecast net absorption. The model successfully projected a drop and rebound in net absorption in 2009 and 2010, as inventory supplies dwindled.

TABLE 2

The NAIOP Industrial Space Demand Forecast

U.S. Markets, Annual Net Absorption



Initial and Ongoing Research

In 2009, the NAIOP Research Foundation awarded a research grant to Anderson and Guirguis to develop a model for forecasting net absorption of industrial space in the United States. That model led to successful forecasting two quarters out. A white paper describing the research and testing behind the model for NAIOP's Industrial Space Demand Forecast is available on the NAIOP Research Foundation website.

The model was revised in 2012 to forecast eight quarters out. For this longer term forecast, Guirguis and Harris utilize the average central tendency forecast of the unemployment rate and growth rate of real GDP, provided by the seven members of the Board of Governors and the 12 presidents of the Federal Reserve Banks during the most recent Federal Open Market Committee meeting. Their forecasts are the independent variables in the equations. The forecasts usually vary from one year to another, so different techniques are applied to convert the yearly forecast to a quarterly one, in order to create the quarterly forecasts for net absorption. The estimated coefficients on the independent variables are estimated with the time-varying Kalman filter.

For more information about the work of the Research Foundation, contact **Bennett Gray** at 703-674-1436 or **gray@naiop.org**.