The Interaction of Apartment Rents, Occupancy Rates and Concessions

Key words: Apartment and Multi-family Housing

By

Charles Tu
Burnham-Moores Center for Real Estate
School of Business Administration
University of San Diego
5998 Alcala Park
San Diego, CA 92110-2492
Tel: (619) 260-5942
Fax: (619) 260-7496
tuc@sandiego.edu

January 20, 2005
The Interaction of Apartment Rents, Occupancy Rates and Concessions

Abstract

The multifamily housing (apartment) market has been the subject of academic research for decades. Special attention has been paid to the interaction between effective rents and vacancy rates, and many studies have investigated how market rents respond to changes in the vacancy level. The existing literature, however, has two limitations. First, many studies in this area use time-series aggregate data to examine how vacancy rates affect rents. A drawback of this type of study is that it does not take the use of concessions into account. When vacancy rate rises, landlords sometimes offer free rent or other forms of concession to boost demand without adjusting the stated rent. Another problem of using aggregate data is that it ignores the heterogeneity among apartment buildings, and therefore, the findings would not be useful to apartment developers, investors and managers to improve the performance of a specific property.

The second type of study uses property-level survey data to examine the interrelationship between rent, vacancy rate and concessions. These studies incorporate property-specific characteristics in the analysis, thus being able to identify apartment features and amenities that many enhance demand. The limitation, however, is that the survey period is short (usually only one or two years). As a result, the findings may not be generalized into various economics and demographic conditions.

1 See Sirmans and Benjamin (1991), Jud, Benjamin and Sirmans (1996), and Zietz (2003) for comprehensive reviews of the literature.
In this study, a unique dataset will be used. The data is compiled by Research Network Ltd., a consulting firm in Rancho Santa Margarita, CA, which started conducting a survey of the apartment market in Orange County, CA in 1985. The survey includes all apartment complexes with 20 or more units in the County. Over the 16-year period from 1985 to 2000, the survey sample grew from 18,500 apartment units to more than 113,000 units. It includes basic information of each type of apartment unit, such as monthly rent, number of bedrooms, number of bathrooms, square footage, and amenities in the unit (e.g. balcony, fireplace, refrigerator, etc.). The dataset also has information on the apartment complex, including age of project, amenities offered (such as pool and spa, gym, clubhouse, playground, BBQ, sports courts, etc.), condition of the building, type of security, and information on the management company. Also available is the information on any special deals offered by the landlord, such free rent, move-in discount, or security deposit waiver. The data is very comprehensive and covers almost all determinants of rent mentioned in the literature.

Another special feature of the dataset is that it covers a long period of time, including both economic expansion and recession. This provides the opportunity to investigate how the interactions of rent, occupancy and concessions may be affected by economic conditions as well as demographic changes.

The simultaneous equation system developed by Sirmans, Sirmans and Benjamin (1994) will be utilized in this proposed study. Their model is a variation of the hedonic pricing
technique commonly used in real estate and urban economic research. Three equations are specified in their model—rent, occupancy and concessions:

\[
Rent = f(Occupancy, Concessions, Physical Characteristics, Amenities, Location)
\]

\[
Occupancy = f(Rent, Concessions, Physical Characteristics, Amenities, Location)
\]

\[
Concessions = f(Rent, Occupancy, Physical Characteristics, Amenities, Location)
\]

Since rent, occupancy and concessions are considered endogenous when their values are determined, the three equations must be estimated simultaneously. The three-stage least squares (3SLS) methodology will be employed to estimate the equations. Additionally, multicollinearity, autocorrelation and heteroscedasticity will be tested and various functional forms will be compared to ensure the robustness of the estimation results.

In their analysis, Sirmans, Sirmans and Benjamin examine the interrelationships between rent, occupancy and concessions in a single year. Therefore, in their model, supply of rental property is fixed and demand determines the market clearing prices. In the proposed study, however, the data covers a 16-year span and therefore, both supply and demand are elastic with respect to rent. Therefore, changes in the stock of rental property, changes in population, and several other macroeconomic variables will also be included in this study.

The apartment survey conducted by Research Network is very comprehensive and covers a long period of time. Using this unique dataset, the current study will be able to test
hypotheses that have not been tested by other researchers before, such as the interactions of the three factors under different economic conditions and demographic changes. Findings of this study are expected to not only have significant contribution to the academic literature but also provide insights for landlords to establish strategies when setting apartment rents and concessions.

References


