The Nature of Office Market Heterogeneity: Empirical Evidence and Implications for Market Forecasting

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It has long been a theme of real estate professionals that real estate markets are economically fragmented. These markets are presumed to be characterized by product differentiation, by small and isolated sub-pools of participants, and by market segmentation. This view is intuitively compelling, but sobering. It taints the prospects for modern econometric forecasting of office markets because econometric models presume a high degree of market integration. A dilemma results because real estate, being an extremely durable capital asset, tends to have very dynamic market behavior, with wide-swinging cycles, the quintessential concern of econometric modeling. This dilemma is hyperbolized in the case of office markets where both market segmentation and cyclical behavior may be present in the extreme.

This paper addresses three questions relating to the market fragmentation/cyclical market conundrum. First, it investigates whether a local office market is better characterized as a collection of fragmented sub-markets or as a single, integrated market. The second question is what are the principal features of segmentation. Two types of features may be important: permanent and transitory. Segmentation by permanent features - vintage, location, design, size, etc. - might support the fragmentation view of office markets. On the other hand segmentation by transitory characteristics - occupancy, rental rate, lease structure - is unlikely to support fragmentation. The third question addressed is whether features of segmentation can be usefully employed to improve office market forecasting. Based on evidence that the local office market studied can be viewed as a single market, and based on evidence of significant transitory segmentation, the paper proposes a two stage approach to incorporating segmentation information into local area office market forecasting.

Data Source

This study was made possible by a uniquely long-standing and complete office market survey. This survey has been conducted in all but three years since January, 1973 in metropolitan Orlando, Florida by Barbour and Monroe, Inc.[1] The survey has covered at least 90 percent of privately owned rental office buildings having a size of 10,000 square feet or greater. A particularly unique feature of the survey is that its longevity spans two complete cycles of the office market. The number of buildings surveyed has ranged from 114 in 1973 to 450 in 1996. Location has been attached to each building record so that distance to any other building, or to any location of interest in the Orlando area can be generated.

Approach

To address the questions of the study, a measure of fragmentation/integration was necessary. From economic theory, the most compelling measure is the interaction between price (rental rate) changes of various office buildings. The reasoning is straight-forward: if two office buildings are treated by the market as being the same product (that is, in the same market) then

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[1]The company was sold in February of 1997 to Pardue, Heid, Church, Smith and Waller, Inc. in Orlando.

changes in the relative rental rate of one must be matched by changes in the relative rental rate of the other. Thus, the degree of market integration among the office buildings can be measured by the similarity of their rental rate changes over time. The study used an annual rental rate change history for every building that, in 1996, had rental rate and occupance data going back at least ten years.

Market Fragmentation?

In comparing the rental rate change histories among the population of office buildings, the study found no strong evidence of fragmentation. Six statistical characteristics of each office rental rate change history were constructed: mean, variance, correlation with the market average change, and first through third order serial correlation. These statistics were compared across the population of buildings both characteristic by characteristic, and as a group through statistical cluster analysis. These characteristics did not fall into distinct sub-clusters. Thus, the primary measure of economic similarity suggests a single market with characteristics that vary around some preponderant market value.

Segmentation Features?

Searching for features of segmentation revolved around the statistical cluster analysis, and around residuals from market forecasts. Investigating possible permanent features of segmentation involved two steps. First, the population of office buildings was sorted into two main clusters using statistical clustering based on the six time-series statistics for rental rate change. Then the characteristics of the buildings in the two clusters were analyzed through multivariate regression to identify features that could differentiate buildings between the two groups. The results were reassuring in that they indicated important differences by building vintage, and building location (distance to the CBD and, in some instances, distance from the nearest freeway). Thus, the data appear to confirm some aspects of conventional professional wisdom, suggestive of differences between AClass A≅ and non-Class A buildings.

Transitory features associated with segmentation were examined throught forecast residuals. A market forecast model for rental rate determination was constructed and fitted to the market-wide rental rate time series. Then the differences between individual rental rate changes the market forecast were computed and studied through multivariate regression. Both permanent features of the buildings and the transitory features of occupancy level and rental rate were used to "explain" variation in the residual changes. While the permanent features were found to have little power to explain the residual variation, the two transitory features were found to have very significant explanatory power.

An Approach to Market Forecasting that Learns from Segmentation

The results above suggest two important aspects of office market forecasting strategy. First, it is realistic in many cases to treat metropolitan office markets as integrated markets, capable of being modeled with econometric techniques. However, there is transitory, if not permanent segmentation that, when accounted for, may improve forcasting for sub-groups within the market.