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MULTIVARIATE ANALYSIS OF REAL ESTATE PRICES*

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Relatively little is known about the dynamics of prices and returns for local housing markets within metropolitan areas. Most previous economic research has concentrated on developing overall price indexes at the metropolitan or national level. In this paper, we formulate a general equilibrium model of real estate prices for communities within a metropolitan area. The model uses a multivariate, time series framework to generate expected price and return series for different communities. It generalizes earlier models proposed by Case and Shiller (1989) and permits empirical tests of market efficiency within metropolitan areas.

We also give an overview of the multivariate data base under development to estimate the model. The data provide detailed information on 300,000 real estate transactions for twenty cities in the Los Angeles metropolitan area from 1971–1991. Preliminary analysis shows substantial variation in prices, volume, and housing characteristics over time and across the different cities. The results have implications for the construction of housing price indexes to reflect this variation.

1. Introduction. Research into housing prices, rates of appreciation and volatility is fundamental to our understanding the economic behavior of real estate markets. Equity in the home dominates the wealth portfolio of the average household (in the USA, over twice the value of stocks and bonds). Even so, little is still known about housing market performance. Often quoted median or average price indexes may be a biased measure of true quality adjusted house price changes because the sample of houses that sell each period may have different characteristics. Indexing techniques have evolved to deal with the problem that arises because individual houses have different characteristics and are bought and sold at lengthy intervals. These include the repeat sales methodology of Bailey, Muth and Nourse (1963) (BMN) and the hedonic approach of Case and Quigley (1990).

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