

## The Supply Adjustment Process in Retail Space Markets

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A number of papers focusing on real estate markets report that real estate investment is slow to adjust to changing market conditions [such as Barth, Bradley, McKenzie, and Sirmans (1988), Grenadier (1995a, 1995b), Kling and McCue (1987), and Wheaton and Torto (1990)]. Among the sectors of the real estate market that have been found to be the slowest to adjust is the market for retail space [see for example, Benjamin, Jud, and Okoruwa (1994), Benjamin, Jud, and Winkler (1995), and Eppli and Shilling (1995)]. This slow adjustment of supply, on average, is thought to produce more protracted real estate cycles [Grenadier (1995b), Kling and McCue (1987), and Wheaton and Torto (1990)]. Although evidence of a slow adjustment process is important, research has yet to examine the nature of the adjustment process in more detail.

The particulars of the adjustment process have meaningful implications for investors, developers, and others trying to interpret recent market conditions and to understand the direction of future supply changes. Several important questions about the adjustment process arise when examining retail space supply in particular metropolitan markets: (1) Is a long mean lag the result of some areas having a short lag while others possess extremely long lags, or do the majority of MSAs have similarly long mean lags, (2) Is the elasticity of supply for retail space with respect to sales always inelastic in the short-run (long-run), and why might some MSAs have greater short-run (long-run) elasticities than others, (3) How do regulatory restrictions and land availability affect the elasticity of supply for retail space, and (4) Which metropolitan markets have the greatest mean lags, and what implications and risks do these differences pose for developers? This study addresses these consequential questions.

A unique feature of the analysis is its focus on the supply of retail space in individual metropolitan markets, an emphasis that has not heretofore received attention in more aggregative studies. The paper provides evidence about the nature of the supply of new retail space in 56 major metropolitan statistical areas (MSAs) and how these markets respond to changes in retail sales and the cost of capital.

To examine the speed of adjustment for retail space investment by MSA, a stock-adjustment model is employed. The nature of retail real estate investment for new space or expansion of existing space is that construction dollars follow sales dollars.

The stock adjustment model of retail space investment indicates a long mean lag of approximately 8.1 years, although it ranges from as little as approximately 2 years to over 20 years. Higher cost and more mature MSAs (notably those in midwest states, northeastern states, and California) with less developable land possess the longer mean lags. Longer mean lags may be advantageous for developers who are able to expedite the approval and construction process more quickly than competitors, as these developers will be able to enjoy higher rents emanating from a market of strong demand and deficient supply.

As expected, the supply elasticities with respect to changes in sales are inelastic in the short-run for all metropolitan markets. The highly inelastic nature of some MSAs, such as Boston MA, Chicago IL, and St. Louis MO, could be attributable to the age of these cities and the shortage of available developable land. Also, in these cities and others, local and state regulatory restrictions could explain the inelastic supply.

In the long-run, however, supply elasticities are much more elastic. Only 13 MSAs of the 34 MSAs with elasticities we were able to calculate have retail space supply elasticities less than one, leaving approximately 62 percent categorized as having an elastic supply. The elastic-supply MSAs by definition are those markets which are quite responsive to changes in retail sales. Therefore, elastic-supply MSAs are more inclined to be over-built. Developers affected most in the elastic-supply MSAs will be newcomers late in the expansion phase of the business cycle. When faced with a long mean lag in construction, such developers will be likely to encounter large vacancies and the prospect of reduced rents. Examples of metropolitan markets indicating an elastic supply include Las Vegas NV, Greenville SC, and Richmond VA. These MSAs appear relatively free from topographical factors that restrict the supply of urban land,

and in fact, one might expect elastic-supply MSAs to be more often associated with metropolitan markets with an ample land supply. Using the metropolitan land supply index developed by Rose (1989b), we confirm a positive relation between the land supply index and long-run metropolitan supply elasticities.

While our findings lend some insight into the supply of retail space in metropolitan markets, more research is needed. Specifically, we did not examine the influence of state and local regulatory restrictions on the supply of retail space. This area should provide a fertile expanse for future research as more regulatory indexes are developed and refined.