

A REPEAT-SALES TRANSACTION-BASED INDEX
OF COMMERCIAL PROPERTY

A study for the Real Estate Research Institute

by
Dean Gatzlaff *
Florida State University

David Geltner **
University of Cincinnati

January 31, 1998

Abstract

This study employs the repeat-sales transaction-based methodology, pioneered in the housing literature, to estimate commercial property price indices. The study is designed to: (i) investigate the feasibility of applying this method to estimate reliable commercial property indices; (ii) compare the transaction-based indices with the widely-used NCREIF (appraisal based) index and its sub-indices; and (iii) examine the differences in the price movements of large "institutional-quality" properties and a broader sample of commercial properties.

The authors thank the Real Estate Research Institute at the University of Indiana and the College of Business at Florida State University for the financial assistance they provided for this study.

* Florida State University; College of Business; Department of Insurance, Real Estate, and Business Law; Tallahassee, Florida 32306-1110; Voice: (850) 644-5710; Fax: (850) 644-4077; e-mail: dgatzla@gamet.acns.fsu.edu

** University of Cincinnati; College of Business Administration; P.O. Box 210195; Cincinnati, Ohio 45221-0195; Voice: (513) 556-7071; Fax: (513) 556-4891; e-mail: davidgeltner@uc.edu

A REPEAT-SALES TRANSACTION-BASED INDEX OF COMMERCIAL PROPERTY

by **Dean Gatzlaff and David Geltner**

Executive Summary

This paper reports the results of the development of the first repeat-sales transaction-based index of commercial property in the United States. The study is based on Florida Department of Revenue data on all properties that sold twice during the period from 1975 through July of 1997. There are three major motivations for this study: (i) to test the repeat-sales regression (RSR) methodology for practical feasibility in the development of commercial property price indices; (ii) to compare a transaction-based index with an appraisal-based index; and (iii) to examine the difference between the price history of large "institutional quality" commercial property and that of a broader sample of commercial property.

Florida Commercial Property Price Indices: RSR v. NCREIF

Z " M 't W 0 t- W 0 § a; N M 'T '0

w OD co co co co co 8 m 0 9
0) 0) 0) 0) (A C) 0) 9? 0 0) 0) 0)

NFI Price Level Δ RSR Price Level

Regarding the statistical methodological issue, we are encouraged that transaction-based commercial property index construction may be more feasible than previously thought. The repeat-sales methodology appears to work well in filtering out transaction noise and producing return indices that should be highly usable by decision-makers and academic analysts alike. In our sample data, the classical time-weighted RSR specification worked well at the aggregate level of all five major commercial property types, with an average of around 200 repeat-sales observations per period. At the more detailed level of specific property type sub-indices, with as little as an average of 20 observations per period, the classical method did not work satisfactorily, but the Goetzmann Bayesian/MOM estimator worked well using an autocorrelation constraint based on the autocorrelation findings of the classical RSR model of the larger database.

Regarding the other issues of concern, comparison of the RSR transaction-based index with the appraisal-based NCREIF Florida index (appropriately adjusted) reveals interesting insights about the differences and similarities between appraisal and transaction returns, and between "institutional" and broader commercial property performance. At the annual frequency examined in the study, there appears to be relatively little difference between the appraisal-based and transaction-based indices in terms of their overall performance and volatility. However, the RSR does register price movements that the NCREEF index does not exhibit, and the RSR may slightly lead the NCREEF index in time. Overall, the institutional quality properties represented by NCREIF performed similarly to the broader population of Florida commercial properties regarding their price level history. Both indices experienced only about a ten percent drop in price level during the early 1990s. In comparing performance within property type sectors, the Florida RSR outperformed the NCREEF Southeast Region indices in the office and apartment sectors, while the reverse held in the retail and industrial sectors over the limited time periods available for comparison.

All Florida Commercial Property Prices: Annual Return* Summary Statistics
 Comparison of RSR versus NCREIF Indices
 (1981-1996)

	NFI	I RSR
GMEAN	2.21%	1.70%
MEAN	2.28%	1.78%
STDEV	3.86%	4.07%
CORRELI	1	50.59%

* Annual returns are **defined here as** annual price changes.