Two Decades of Commercial Property Returns: A NCREIF Index Using Independent Appraisals

Executive Summary

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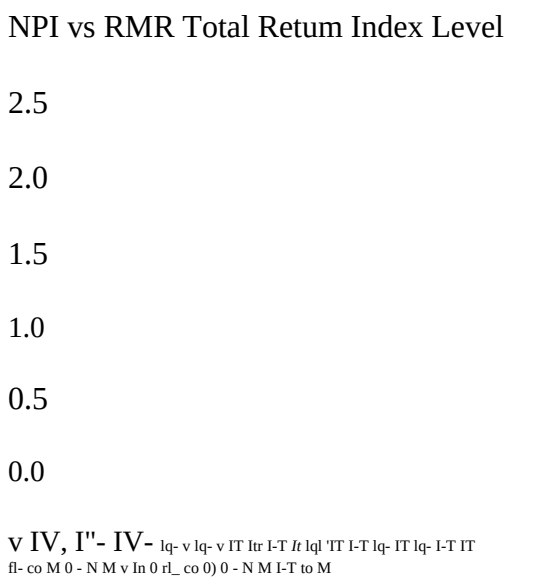
Executive Summary

This paper documents twenty years of performance of commercial real estate in the U.S. using a portfolio of properties that comprise the widely followed NCREIF Property Index (NPI). We develop an extension of the repeated-measures regression to examine the magnitude and duration of the crash in property values in the early 1990's.

The paper also makes a methodological contribution. We show that the repeated-measures regression (RMR) index, adjusting for intermediate cash flows, is theoretically superior to the simple averaging across all property values used in the official NPI, because most of the NCREIF properties are not reappraised every quarter. As a result, the majority of the valuations on which the NPI is based are "stale" each quarter. In contrast, the RMR is based purely on valuations that are current each quarter. Thus, the RMR is a "true quarterly index" while the NPI is only partially updated each quarter.



As seen in the above exhibit, the RMR index appears broadly similar to the official NPI (quarterly average total returns are 2.24% for the RMR and **2.13-06** for the NPI over the 1977-97 period). However, a Granger causality test shows that the RMR is a leading indicator of the NPI four quarters later, and the RMR displays slightly greater quarterly volatility than the NPI even though it eliminates the seasonal spikes. During the early years, when there were few properties in the NCREIF database, the RMR displays some evidence of excessive noise, which the NPI does not suffer. Even then, however, the RMR reflects real events that should have affected real estate, such as the 1981 recession, while the NPI is completely smooth throughout the early period. Considering the superior statistical qualities of the RMR, it would seem interesting for NCREIF to consider regularly publishing the RMR index each quarter, in addition to the traditional NPI.

Because of its greater accuracy, the RMR is probably a better indicator than the NPI of the true magnitude of the 1990s crash and recovery in the commercial property markets in the US. The RMR indicates a slightly deeper cumulative total loss than the NPI during the 1990-93 period (15% versus 11%, including income as well as capital), but also a stronger recovery during 1994-97 (45% versus 34%).

An interesting side-benefit of the RMR procedure is that it allows the direct estimation of the average magnitude of the random component of individual property appraisal error in the NCREIF population of properties. Based on the RMR, we estimate this individual property appraisal standard error at between 6.5 and 14.5 of the property value, most likely around 10 percent.

NPI & RMR Quarterly Total Return Statistics:

1978-97:	**NPI**		**RMR**
Geometric mean	2.13%		2.24%
Arithmetic mean	2.15%		2.34%
Std Deviation	1.84%		4.73%
Cross-correlation		32.41%	
1984-97:	**NPI**		**RMR**
Geometric mean	1.45%		1.40%
Arithmetic mean	1.46%		1.43%
Std Deviation	1.60%		2.15%
Cross-correlation		75.42%	
1990-97:	**NPI**		**RMR**
Geometric mean	0.72%		0.78%
Arithmetic mean	0.74%		0.81%
Std Deviation	1.75%		2.51%
Cross-correlation		75.11%	