Discussion of:

“Exploiting Property Characteristics in Commercial Real Estate Portfolio Allocations”

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Real Estate Research Institute
An Outline of My Thoughts

**OVERVIEW:**

- **METHODODOLOGY:** My focus will not be on technique

- **APPLICATIONS:** My focus will be on implementation:
  - property-level/idiosyncratic returns (risk),
  - conditioning variables,
  - rebalancing costs, and
  - modified vs. as-is data.

- **OTHER AVENUES:** Less a criticism, more an emphasis on future research avenues
Potential of Disaggregated NCREIF Data

**SUBJECT PAPER:**

- **DATA:** Authors use quarterly, property-level data
  - rather than using the various NPI sub-indices,
  - allows us to consider idiosyncratic returns & risk

- **MANIPULATION:** However, the authors use TBI-like approach to restate the data
  - this injects additional (price and, therefore, return) volatility into the time series

- **REQUEST:** Would like to compare the characteristics of the raw NPI data to the TBI-like data

- **NEVERTHELESS:** Exhibit 1 provides plenty of insight and avenues of follow-up research
As an industry, we need to better understand cross-sectional risk. We're unsure about the curvature or decay function as portfolio size increases. We're unsure about the dispersion of a single property's risk. We're unsure about the average risk of a single property. We observe aggregated portfolio risk via NPI and sub-indices.
Consider Exhibit 1 – Panel A | Risk Measures

**Time-Series v. Cross-Sectional Risk:**
- Practitioners tend to focus on the reported time-series volatility of various NPI sub-indices
- Subject paper provides some insights on cross-sectional volatility
- How do these numbers compare to raw NPI returns?

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**Ratio of Csd:Std**
- .97:1
- 1.36:1
- .94:1
- 1.99:1
- 1.54:1

Are these ratios driven by neglecting major subsets (e.g., CBD v. suburban or malls v. shops) or by the nature of the real estate?

In general, Csd more similar across property types, while Std less similar.
Time-Series Volatility: Plausibility?

- Is it plausible that the index $\sigma$ is higher than all the sectors’ $\sigma$?
  - More plausibly, some higher while some lower
- What’s the explanation?

We’d normally expect that the index $\sigma$ is lower than the average property-sector $\sigma$
Consider Exhibit 1 – Panel A | Some AR(1) Concerns

**TBI-Induced “Noise”?:**

- In some instances, negative serial correlation ($\phi < 0$) in the return series
- Efficient-markets/random-walk argument suggest $\phi = 0$
- Instead, manipulated NPI series produces “over-active” returns

What explains this result? (Now have the opposite of “smoothing”)

We need to better understand TBI-like approaches

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It is surprising that the property sectors’ $\phi$ are all higher than index’s $\phi$
Consider Exhibit 1 – Panel A | Some Data Concerns

- Can a one-quarter cap rate really be a signal?
- If so, a lot of acquisition folks soon out-of-work!
- Is the average vacancy rate really > 25%?
- What about the \( \ln(\text{size}) \)?

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What if this measure was a (trailing) 4-quarter cap rate rather than a 1-quarter cap rate?

How can this be right?

Many an academic study uses the log of size (market cap)
Consider Exhibit 1 – Panel B | Returns = \( f(\text{Cap Rate, Size}) \)

- Cap rates (or cash-flow yields) are positively correlated with returns
  - Longstanding story in mainstream finance
  - Higgledy-piggledy growth (Little, 1962)
  - Value vs. growth (Lakonishok, Shleifer & Vishny, 1994)
- Size appears negatively correlated with returns
  - Contradicts earlier academic work (Pai & Geltner, 2007)
  - Contradicts \( \Theta \) factor loading \([\theta]\) in Exhibits 2-4 (but not 5)

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\text{all} & 1 & & & & & & & \\
\text{apt} & 0.288 & 1 & & & & & & \\
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\text{cap} & 0.296 & 0.314 & 0.111 & 0.196 & 0.052 & 1 & & \\
\text{vac} & -0.002 & 0.115 & -0.029 & -0.109 & 0.041 & -0.107 & 1 & \\
\text{size} & -0.167 & -0.537 & -0.148 & -0.387 & -0.121 & -0.395 & -0.761 & 1 & \\
\text{CFNAI} & 0.205 & 0.487 & 0.218 & 0.406 & 0.174 & 0.251 & 0.246 & -0.545 & 1 \\
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\]
Potentially Something Interesting Going On with Size

- In order for both $\rho_{\text{rtns, size}} < 0 \& \theta_{\text{size}} > 0$ to be true,
  - must be something like large properties display $\Theta \alpha$

Illustration of Risk & Return as $f(\text{Size})$

- It’s true that size is negatively related to return: large properties have lower returns
- However, it’s also true that large properties have higher risk-adjusted returns
- Said another way, Sharpe ratios decline with property size

There are other potential explanations; but, seems worth investigating!
Portfolio Rebalancing Costs Are Huge in Private RE

Consider a simple model: \[ \delta \approx \frac{RTC}{T} \]

where: \( \delta \) = drag on annual returns, \( RTC \) = round-trip transaction costs (%) and \( T \) = holding period.

When \( RTC = 3.5\% \), then:

- At \( T = 0.25 \), \( \delta \approx 14\% \)
- At \( T = 1 \), \( \delta \approx 3.5\% \)
- At \( T = 5 \), \( \delta \approx 0.70\% \)
- At \( T = 10 \), \( \delta \approx 0.35\% \)

As a result, frequent portfolio rebalancing is generally unprofitable.
Relative Volatilities Change with Holding Period

- Long-term volatility ($\sigma_T$) changes $= f(\sigma, \varphi, T)$:

\[
\sigma_T = \sqrt{T} \sigma \left[ 1 + 2 \left( \frac{\varphi}{1 - \varphi} - \frac{\varphi(1 - \varphi^{T-1})}{T(1 - \varphi)^2} \right) \right]
\]

Illustration of Long-Term Volatility

What looks like nearly equivalent volatilities in the short run looks much less so in the long run.
Improvement in Portfolio Returns – Exhibit 5

– Given the preceding concerns about rebalancing costs ($\delta$) and long-run volatility ($\sigma_T$), the last column of Exhibit 5 provides the most plausible setting to analyze portfolio pick-up:

Some Thoughts:
– As noted, standard errors are large

– Nevertheless, the coefficients seem intuitively appealing
  ▪ $\theta_{size}$ ought to be viewed in conjunction with $\theta_{Top6*size}$
  ▪ large properties often found in Top 6 markets

– Improvement in portfolio returns:
  ▪ $\sim 170$ bps in annual return - gross
  ▪ slight increase in risk

– Portfolio pick-up ($\sim 170$ bps) ought to be viewed:
  ▪ in comparison to a buy-&-hold portfolio
  ▪ no investor can rebalance entire portfolio each and every year
  ▪ need to reference an investable benchmark
  ▪ need to explicitly consider transaction costs