GRAFF INVESTMENT THEORY CONCEPTUAL RESEARCH

BY

RICHARD A. GRAFF

ELECTRUM PARTNERS
400 NORTH MICHIGAN AVENUE
SUITE 1616
CHICAGO, ILLINOIS 60611
RGRAFF@ELECTRUM.US

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SERIALLY PERSISTENT EXTREME RETURNS AND FAT-TAILED DISTRIBUTIONS ARE CONSISTENT WITH LARGE-SCALE AGENCY COSTS

- Study #3 Introduces Model for Persistence and Fat-Tailedness Discovered Empirically by Graff & Young
- Transaction Prices Benefit Management Objectives More Than Investor Returns
  - Difference Between Economically-Based Value and Transaction Price is Agency Cost Plus White Noise
- Appraiser Methodology Must Rationalize Difference Between Transaction Price and Comparable Values
  - Appraisers Compromise by Splitting the Difference
  - It Follows That Successive Appraisals Amortize the Agency Cost Over Several Years
  - Agency Cost Amortization Adds Persistent Nonrandom Bias Component to Appraisal Return Series
- Institutional Management Restrictions on Pricing Information Permit Large Agency Cost Distortions
  - Example of Asymmetric Information Market Distortions of 2001 Nobelists Akerlof, Spence and Stiglitz
  - Analogous to Agency Costs Induced by Accounting Shenanigans Uncovered in 2001-2002
    - Off-Balance-Sheet Debt, Telecommunications Industry Capacity Swaps
- Better Disclosure of Investment Information is Primary Solution to These Problems
  - This Study Uncovered the Problem in the Case of Real Estate and Proposed the Solution in 1997

REIT SHARE PRICES AND RETURNS REFLECT LARGE AGENCY COSTS

- **Study #2 Extends Economic Effects of Restricted Real Estate Investment Information to the REIT Market**
  - **Graff & Young REIT Study Previously Showed That REITs Reflect Real Estate Serial Persistence**
  - **Study #3 Previously Showed That Real Estate Serial Persistence Reflects Agency Costs**
  - **Thus it was Evident Even Before Study #2 That REITs Reflect Real Estate Agency Costs**
- **REITs Overpay Routinely for Real Estate**
- **Agency Costs Imply Share Prices Below Net Asset Value and Underperformance in Investment Returns**
  - **REIT Data From Previous Decades is Consistent with This Analysis**
- **Successive Waves of REIT Reform Legislation Have Not Reformed Agency Cost Opportunities or Incentives**
  - **Future Share Prices Should Normally be Below Asset Value and Returns Continue to Underperform**
- **Excessive Agency Costs Have Been a Fixture of REITs for Decades**
  - **Excessive Agency Costs Are Relatively New to the Telecommunications and Energy Industries**
  - **Stock Market Oversight Authorities are Forcing Reform on the Larger Industries and Ignoring REITs**
  - **Study #2 Received "Out-of-the-Box Thinking" Award for Concepts That Became Mainstream in 2002**

QUARTERLY DATA IS WORSE THAN ANNUAL DATA IN MODERN PORTFOLIO THEORY APPLICATIONS TO REAL ESTATE

- **Portfolio Managers Prefer to Estimate Variances, Covariances and Correlations with Quarterly Data**
  - **More Sample Values Suggests More Accurate Estimates**
  - **Quarterly-Based Estimates are Noticeably Different from Corresponding Estimates from Annual Data**

- **Quarterly Property and Index Return Series Exhibit Seasonality in the form of Annual Bumps**
  - **Bumps Occur from Appraisal Capital Gains Computed At Most Annually, Usually at Year-End**

- **Study #1 Investigates Effect of Annual Bumps in Quarterly Data on Parameter Estimates**
  - **Annual Bumps Induce Upward Bias in Sample Variances**
  - **Annual Bumps Induce Bias in Sample Covariances and Correlations**
    - **Bias is Upward for Two Return Series with Annual Bumps in the Same Quarters**
    - **Bias is Downward for Two Return Series with Annual Bumps in Different Quarters**

- **Study #1 Uncovers Statistical Inaccuracies in Popular Real Estate Economic Geographical Studies**
  - **Invalidates Popular Conclusions about Economic Geographical Portfolio Diversification**
  - **Supports Conclusions of Award-Winning Graff & Young Correlations Study**

TWO-COMPONENT REAL ESTATE INVESTMENT MODEL

- **Study #4 Introduces an Investment Model Based on Occupancy Rights as the Source of Real Estate Value**
- **Occupancy Rights-Based Model Implies That Real Estate Has Two Investment Components**
  - **One Component Consists of Benefits Associated with Leased Occupancy Rights**
    - **Occupancy Rights Belong to Lessees**
    - **Source of Component Value is Expected Rent from Leases**
    - **Component is a Fixed-Income Asset**
  - **The Other Component Consists of Benefits Associated with Unleased Occupancy Rights**
    - **Occupancy Rights Belong To Property Owners**
    - **Component Encompasses All Property-Related Equity Investment Characteristics**
- **The Components Have Different Investment Risks and Expected Returns**
  - **The Equity Component Usually has Higher Expected Return Than the Fixed-Income Component**
  - **Equity Component Risk Exceeds Real Estate and Fixed-Income Risks but is Lower Than Stock Risk**
- **Often Possible to Separate Future Component Investment Returns and Assign Them to Separate Investors**
- **Stock-and-Bond Portfolio Risk Reduction with Equity Components is Better Than with Whole Real Estate**
  - **Investors Obtain More Portfolio Diversification for Less Cost**

GRAFF CONCEPTUAL INVESTMENT THEORY SCHOLARLY PUBLICATIONS

1. **The Impact of Seasonality on Investment Statistics Derived from Quarterly Returns, *Journal of Real Estate Portfolio Management,* 1998, 4:1, 1-16.**

2. **Economic Analysis Suggests that REIT Investment Characteristics are Not as Advertised, *Journal of Real Estate Portfolio Management,* 2001, 7:2, 99-124.**

(2000 Homer Hoyt Advanced Studies Institute Award, Best Innovative Thinking "Thinking Out of the Box" Research Paper Presented at the ARES Annual Meeting)

(with James R. Webb)

3. **Agency Costs and Inefficiency in Commercial Real Estate, *Journal of Real Estate Portfolio Management,* 1997, 3:1, 19-36.**

(with D. Cashdan)

4. **Some New Ideas in Real Estate Finance, *Journal of Applied Corporate Finance,* 1990, 3:1, 77-89.**