

**REIT FUNDS FROM OPERATIONS (FFO)
MULTIPLE ANALYSIS**

**Multiple Regression Analysis of
Endogenous Industry Variables**

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REIT FUNDS FROM OPERATIONS (FFO) MULTIPLE ANALYSIS

Discussion Topics

- The objective of this analysis is to identify what predictive variables determine REIT Funds from Operations (FFO) multiples.
- The FFO Multiple Approach to valuing REIT shares is one of the most popular methods use by Wall Street Analysts.
- Using cross-sectional Multiple Linear Regression (MLS) techniques, and data on the top 50 equity REITs by total market capitalization during 1996/1997, variables showing high statistical significance with FFO multiples were:

REIT FUNDS FROM OPERATIONS (FFO) MULTIPLE ANALYSIS

Data

Data for the analysis was provided by two sources:

- 1) Dean Witter Reynolds Investment Banking Group,
- 2) SNL Securities, Inc.

- Dean Witter Reynolds provided financial data for the top 50 equity REITs as of 1997 by implied market capitalization, and
- SNL Securities provided financial data on the top 100 equity REITs by implied market capitalization. Healthcare REITs were excluded.

REIT FUNDS FROM OPERATIONS (FFO) MULTIPLE ANALYSIS

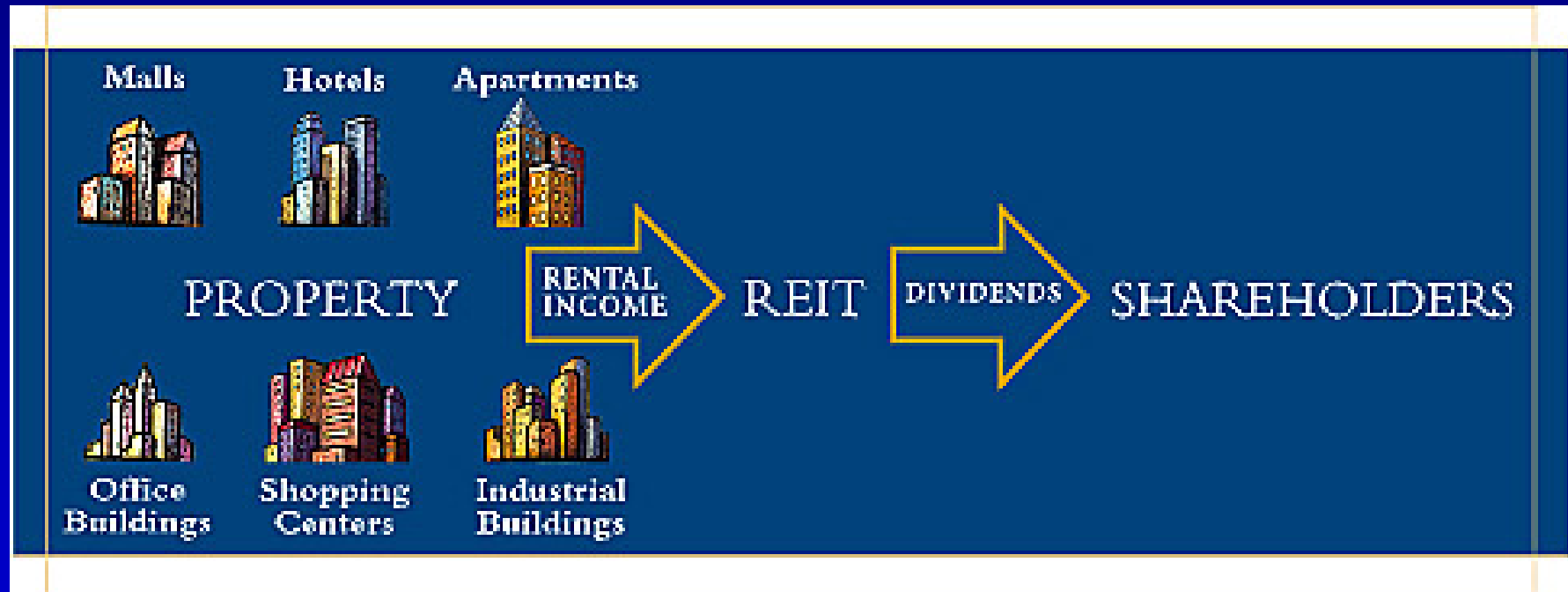
Significant Variables

37 variables were identified, 20 with potential, 11 showed significance,

- Total debt to market cap
- Development Capabilities
- Trading volume to shares outstanding
- Beta
- Implied Market Cap
- Current Period Projected FFO
- Interest Coverage Ratio
- Payout Ratio
- Institutional Ownership
- Cash Available for Distribution
- Number of Time/Amount of Money Raised Since IPO

REIT FUNDS FROM OPERATIONS (FFO) MULTIPLE ANALYSIS

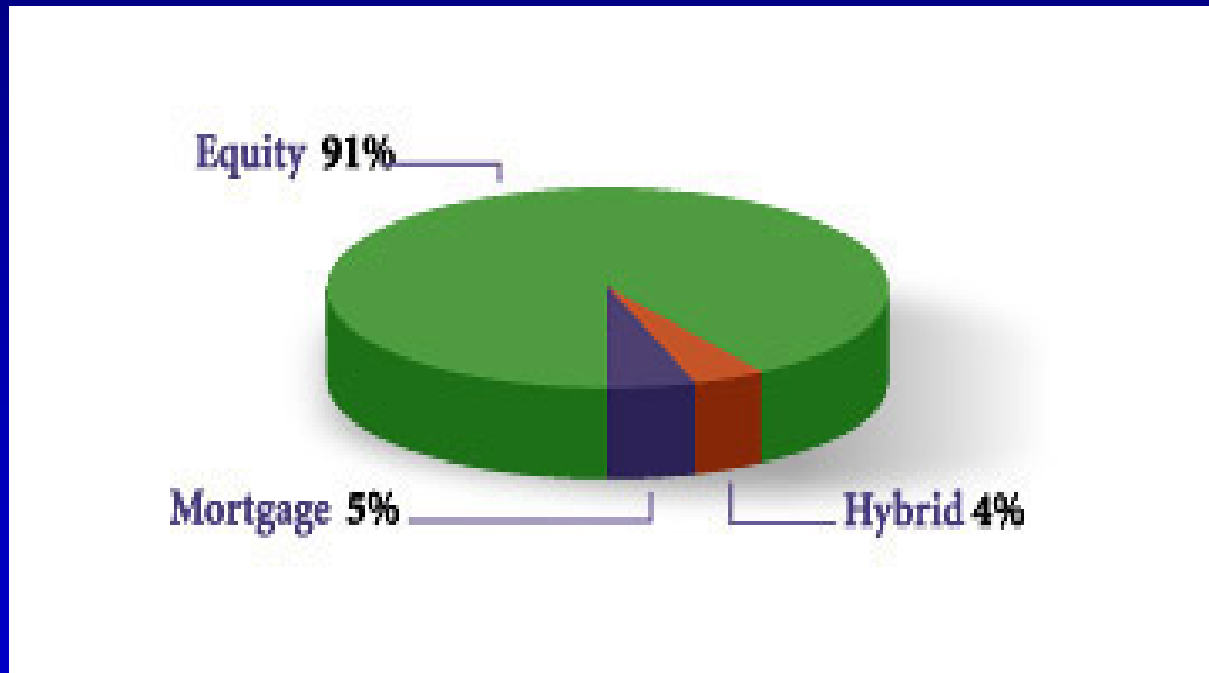
Introduction to REITs



REIT FUNDS FROM OPERATIONS (FFO) MULTIPLE ANALYSIS

Introduction to REITs

Industry Profile by Type of REIT

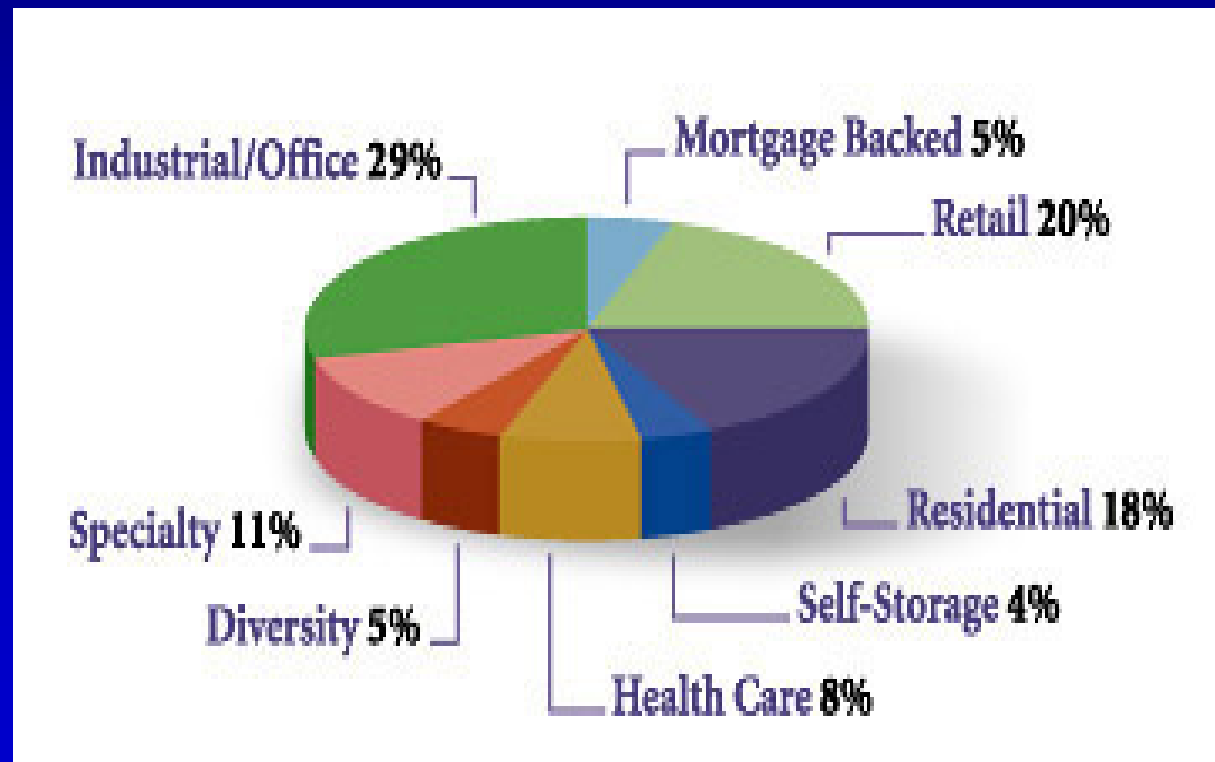


REIT Type by Market Capitalization, December 31, 1998

REIT FUNDS FROM OPERATIONS (FFO) MULTIPLE ANALYSIS

Introduction to REITs

\$138.3 Billion REIT Industry Profile
by Property Investment Strategy
December 31, 1998



REIT FUNDS FROM OPERATIONS (FFO) MULTIPLE ANALYSIS

Introduction to REITs

REIT Qualifications

- Be a corporation, business trust or similar association;
- Be managed by a board of directors or trustees;
- Have shares that are fully transferable;
- Have a minimum of 100 shareholders;
- Have no more than 50 percent of the shares held by five or fewer individuals during the last half of each taxable year;
- Invest at least 75 percent of the total assets in real estate assets;
- Derive at least 75 percent of gross income from rents from real property, or interest on mortgages on real property;
- Pay dividends of at least 95 percent of REIT taxable income.

Source: National Association of Real Estate Investment Trusts.

REIT FUNDS FROM OPERATIONS (FFO) MULTIPLE ANALYSIS

REIT Stock Valuation

REIT Valuation Factors

- Management quality;
- Anticipated total return from the stock, income return and capital appreciation.
- Current prevailing dividend yield relative to other investments (e.g., bonds, utility stocks);
- Dividend coverage from funds from operations;
- Anticipated growth (or lack thereof) in funds from operations per share;
- Underlying asset value of the real estate and/or mortgages, and other assets.

REIT FUNDS FROM OPERATIONS (FFO) MULTIPLE ANALYSIS

REIT Stock Valuation – Intrinsic Value

FFO Multiple Approach

REIT Stock Value = FFO Multiple x FFO Per Share

Net Asset Value Approach

REIT Market Value = NAV = $\frac{\text{Sum Net Operating Income}}{\text{Blended Cap Rate}} = \frac{\text{NOI}}{r}$

Dividend Discount Model Approach

REIT Stock Value = PV Per Share = $\frac{\text{Present Value NOI (FFO)}}{\text{Number of Shares Outstanding}}$

REIT Stock Value = $\frac{D + g}{i - g}$

REIT FUNDS FROM OPERATIONS (FFO) MULTIPLE ANALYSIS

REIT Stock Valuation – Intrinsic Value

FFO Multiples for REIT stock valuations are determined by:

- 1) The company's historical multiple
- 2) Future earnings prospects
- 3) Peer group and industry multiples.

Multiple expansions in an industry sector or for a given firm will drive up REIT stock valuations.

REIT FUNDS FROM OPERATIONS (FFO) MULTIPLE ANALYSIS

Research Questions

- What factors have an effect on determining FFO multiples for REIT stocks?
- Does total implied market capitalization have an effect on FFO multiples?
- Does total debt to market capitalization have an effect on FFO multiples?
- Does interest coverage have an effect on FFO multiples?
- Does trading volumes have an effect on FFO multiples?
- Does future FFO growth projections have an effect on FFO multiples?
- Does degree of insider or institutional ownership have an effect on FFO multiples?
- Do payout ratios have an effect on FFO multiples?
- Do number of post IPOs have an effect on FFO multiples?

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Hypotheses

H1: Implied market capitalization has a positive effect on FFO multiples.

H2: Total debt to market capitalization has a negative effect on FFO multiples.

H3: Interest coverage has a negative effect on FFO multiples.

H4: Trading volumes have a positive effect on FFO multiples.

H5: Future FFO growth projections have a positive effect on FFO multiples.

H6: Insider or institutional ownership has a positive effect on FFO multiples.

H7: Payout ratios have a positive effect on FFO multiples.

H8: Post IPOs have a negative effect on FFO multiples.

H9: Regionally focused investment strategies have a positive effect on FFO multiples.

REIT FUNDS FROM OPERATIONS (FFO) MULTIPLE ANALYSIS

Correlation Analysis

Significant Correlation

- • Total Debt to Total Market Cap (D/TMC) (-): Negative due to adverse affects on shareholder value from high leverage, debt payments, bankruptcy risk (-31%).
- • Cash Available for Distribution (CAD9697) (-): Negative due to perception that management is holding cash that should be paid out to shareholders. Penalizing management for opportunity costs associated with holding cash distributions (-21%).
- • Amount of Funds Raised Since IPO (MRSIPO/MC) (-): Negative due to perception that management will continue to go to market for funds, increasing the risk of equity dilution. Inability to invest funds at a positive spread (-21%).

REIT FUNDS FROM OPERATIONS (FFO) MULTIPLE ANALYSIS

Correlation Analysis

- • Trading Volume to Total Share Outstanding (TV/SO) (-): Negative due to trading volume asymmetries. The largest REITs were UPREIT structures with large institutional and insider ownership. Insiders and large institutional owners are limited by illiquidity in REIT shares, and are buy-and-hold by nature. Limiting the number shares outstanding, and growing FFO should create multiple expansion. Only the top REITs by market cap have liquidity, even though they have fractions of shares outstanding (-20%).
- • Projected Funds From Operations Growth (FFOG9697) (+): Positive due to the direct influence growth in funds form operations has on multiples (20%).
- • Total Implied Market Cap (IMC) (+): Positive due to larger firms having the economies of scale and scope in access to capital, real estate development/acquisition capabilities, complement firm mergers and acquisitions, operating efficiencies, ancillary revenue streams, etc. (16%).

REIT FUNDS FROM OPERATIONS (FFO) MULTIPLE ANALYSIS

Correlation Analysis

Moderate Correlation

- Development Capabilities (+): Positive due to investor perception that REITs are limited in internal growth capabilities, and will reach a limit in general and administrative cost reduction, leaving new development the primary driver for future FFO growth.
- Dividend Growth (+): Positive due to consistent, and consistently growing dividends. Retail and institutional investor value REITs on their ability to pay current income yields, and a normal rate of return on capital. Consistency in dividend growth is highly valued.
-
- Regional Focus (-): Negative due to the perception that REITs regionally focused are limited in FFO growth potential, are not diversifying their risk across markets, and are potentially becoming overly concentrated by industrial classification (Houston, Oil; Seattle, Aerospace; Bay Area, Technology; Las Vegas, Gambling).

REIT FUNDS FROM OPERATIONS (FFO) MULTIPLE ANALYSIS

Correlation Analysis

- Beta (-): Negative due to the perception that as REIT betas approximate the market, they are assuming higher levels of systematic risk. To compensate for higher levels of risk, REITs will have to pay higher expected rates of return on equity. To achieve higher rates of return, REITs will have to take on more debt, or invest in higher yielding, higher risk investments.
- UPREIT structure (+): Positive due to the fact that most UPREITs are professionally-internally managed public corporations. Having internal-professional management allows the firm to be actively managed, taking advantage of real estate and capital market opportunities. Flexibility and innovative investment and operating strategies are not consistent with REITs that are managed by trustees or advisors (principle agency problem, no alignment of interest).

REIT FUNDS FROM OPERATIONS (FFO) MULTIPLE ANALYSIS

Stepwise Regression Analysis – Reduced Form

Stepwise regression results, Dean Witter data, top 46 REITs by market cap, after screening twenty-three variables.

Debt to total market cap (D/TMC), development capability (DC), trading volume to shares outstanding (TV/SO) and the firms bets (BETA).

$$\text{FFO MULTIPLE} = 16.11 - 0.007 (\text{D/TMC}) + 1.69 (\text{DC})$$

[-3.84] [3.42]

$$-3.009 (\text{TV/SO}) - 0.00343 (\text{BETA})$$

[-2.91] [-2.20]

Multiple R = 62%

R Square = 38%

Adj. R Square = 32%

F Stat = 6.2

REIT FUNDS FROM OPERATIONS (FFO) MULTIPLE ANALYSIS

Multiple Linear Regression – Reduced Form

After eliminating redundant variables, variables with low single-linear regression statistics, cases with missing data, outliers, and REITs with market caps over \$4 billion, the results using the SNL Securities data for 99 REITs.

Implied market cap (IMC), Earnings Before Income Taxes Depreciation and Amortization to interest expense (EBITDA/IE), Funds From Operations Growth for the current period (FFOG96/97), debt to total market cap (D/TMC), FFO payout (FFOPAYOUT), and Institutional Ownership (InstO).

$$\begin{aligned} \text{FFO MULTIPLE} = & 10.62 - 0.0013 (\text{IMC}) - 0.8838 (\text{EBITDA/IE}) - 0.1039 (\text{FFOG96/97}) \\ & \qquad \qquad \qquad [5.14] \qquad \qquad \qquad [-2.22] \qquad \qquad \qquad [-5.46] \\ & -0.1654 (\text{D/TMC}) + 0.0594 (\text{FFOPAYOUT}) + 0.0298 (\text{InstO}) \\ & \qquad \qquad \qquad [-1.94] \qquad \qquad \qquad [3.88] \qquad \qquad \qquad [3.44] \end{aligned}$$

Multiple R = 75%

R Square = 56%

Adj. R Square = 53%

F Stat = 19.13

REIT FUNDS FROM OPERATIONS (FFO) MULTIPLE ANALYSIS

Multiple Linear Regression – Forecast Model

After eliminating redundant variables, variables with low single linear regression statistics, but reconsidering variables with inferential significance, a forecast model was built using the Dean Witter dataset from the top 46 REITs. The forecast model includes ten variables.

Implied market cap (IMC), Earnings Before Income Taxes Depreciation and Amortization to interest expense (EBITDA/IE), average trading volume to total shared outstanding (TV/SO), Funds From Operations Growth for the current period (FFOG96/97), debt to total market cap (D/TMC), Payout ratio (Payout), Cash Available for Distribution Growth (CADG9697), Amount of Funds Raised since IPO to Total Market Cap (MRSIPO/MC), Percent of Institutional Ownership (InstO), and Number of Post IPO public offerings (NPIPOPO).

REIT FUNDS FROM OPERATIONS (FFO) MULTIPLE ANALYSIS

Multiple Linear Regression – Forecast Model

$$\text{FFO MULTIPLE} = 13.659 + 0.0000 (\text{IMC}) - 0.2308 (\text{EBITDA/IE}) - 313.26 (\text{TV/SO})$$

[0.11] [-2.22] [-3.12]

$$+ 22.660 (\text{FFOG9697}) - 9.239 (\text{D/TMC}) + 3.2608 (\text{Payout})$$

[3.16] [-4.05] [1.21]

$$- 17.0486 (\text{CADG9697}) - 6457.66 (\text{MRSIPO/MC}) + 3.787 (\text{InstO})$$

[-2.47] [-4.78] [2.68]

$$+ 0.3006 (\text{NPIPOP})$$

[3.60]

Multiple R = 79%

R Square = 62%

Adj. R Square = 51%

F Stat = 5.74

REIT FUNDS FROM OPERATIONS (FFO) MULTIPLE ANALYSIS

Multiple Linear Regression – Forecast Model

Forecast Model Results – Application to BRE Properties, Inc. (Apartment REIT)

Inputting proforma financial assumptions for BRE Properties, Inc. into the FFO Multiple forecast model results in a FFO multiple of 13.9x. Between February 1997 and February 1998, BREs FFO multiple averaged 14.1x.

EXHIBIT 1

PROJECTED FFO MULTIPLE USING BRE PROPERTIES INPUTS

	<i>t Stat</i>	<i>Coefficients</i>	<i>BRE Inputs</i>	<i>Outputs</i>
Intercept	4.8338	13.6586		13.66
IMC	0.1122	0.0000	\$ 812,253	0.03
EBITDA/IE	-2.1864	-0.2308	4.24	-0.98
TV/SO	-3.1931	-313.2603	0.14%	-0.44
FFOG9697	3.1565	22.6599	8.48%	1.92
D/TMC	-4.0485	-9.2388	25.11%	-2.32
Payout (6)	1.2131	3.2608	73.74%	2.40
CADG9697	-2.4664	-17.0486	8.70%	-1.48
MRSIPO/MC	-4.7805	-6457.6587	0.007%	-0.47
InstO	2.6818	3.7870	33.17%	1.26
NPIPOPO	3.5980	0.3006	1	0.30
Projected FFO Multiple				13.88

REIT FUNDS FROM OPERATIONS (FFO) MULTIPLE ANALYSIS

Actual FFO Multiples

Actual BRE FFO Multiples:

- 11.5x 1Q96 to 14.5x by 4Q96
- Averaged 14.5x 4Q96 to 1Q98
- Averaged 13.7x from 1Q96 to 1Q98

REIT FUNDS FROM OPERATIONS (FFO) MULTIPLE ANALYSIS

Conclusions

The objective of this analysis was to identify predictive variables that determine REIT Funds from Operations (FFO) multiples.

Due to the weight put on the FFO Multiple Approach to valuing REIT shares by Wall Street Analysts and senior REIT management, a diagnostic and forecast model should be helpful to the industry as a whole.

Using cross-sectional Multiple Linear Regression (MLS) and correlation techniques, and data on the top equity REITs by total market capitalization during 1996/1997, variables showing high statistical significance with FFO multiples were:

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Conclusions

- Current and future FFO growth
- Amount of funds raised since IPO to total market cap
- Number of post IPO public offerings
- Current year Cash Available After Distribution (CAD) growth
- Total debt to market cap
- Development capabilities
- Institutional ownership
- Trading volume to shares outstanding
- Earnings Before Interest Depreciation and Amortization (EBIDA) to interest expense
- Payout ratio.