Apartments in a Capital Markets Context

Presented by

Lawrence A. Souza
Director of Research
Professor of Real Estate San Francisco State University

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Apartments in a Capital Markets Context

Introduction

This study:

- Plots financial and real estate portfolios in a capital markets context.
- Calculates risk-adjusted returns for competitive financial and real estate capital market assets (portfolios).
- Ranks them is descending order from highest to lowest.
- Assumes that all capital assets compete in the market for the finite amount of loanable funds.
- Majority of investors are risk-averse and desire the highest return at the lowest risk.
- Financial and real estate capital markets are assumed to be efficient.

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Introduction

- Majority of capital flows from savers/investors to assets that provide the highest risk-adjusted rate of return over time.

- Depending on yield requirements, investors invest in assets with the highest (expected) return or invest in assets that compensate them for taking additional risk.

- Speculators, contrarian or risk-seeking investors invest in assets with very low returns or very high risk in anticipation of the possibility of achieving abnormal returns in the future.

Apartments in a Capital Markets Context

Introduction

- Risk-averse (institutional) investors are better off investing in apartments and apartments in the Western region in the future.
  - Apartments in the West have exhibited some of the highest risk-adjusted returns due to the more stable (demographic) nature of demand.
  - However, rising return volatility, caused by the lingering effects of the California recession, has significantly discounted Pacific apartment portfolios.
    - **Risk-neutral and speculative** investors will continue to invest in **California and Pacific** apartments due to their high long-term expected returns, the perception that these portfolios are undervalued, and the pace at which the Pacific region's economy is recovering.

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Introduction

This analysis is divided into five sections:

- Assumptions
- Methodology
- Discussion of Results
- Conclusions
- Recommendations

Apartments in a Capital Markets Context

Assumptions

Literature Review

Harry Markowitz, Portfolio Selection: Efficient Diversification of Investments, Blackwell Publishers, Oxford UK, 1991.

Haim Levy, Portfolio and Investment Selection, Prentice-Hall, Englewood Cliffs, NJ, 1984.

Jerome B. Cohen and Edward D. Zinbarg and Arthur Zeikel, Investment Analysis and Portfolio Management, Fifth Ed., Irwin, Homewood IL, 1987.

Frank K. Reilly, Investments, Dryden Press, Chicago IL, 1986.

Zvi Bodie, Alex Kane and Alan J. Marcus, Investments, Irwin, New York NY, 1993.

Joseph L. Pagliari, The Handbook of Real Estate Portfolio Management, Irwin, Chicago IL, 1995.

Brian R. Bruce, Real Estate Portfolio Management, Probus Publishing Co., Chicago IL, 1991.

Susan Hudson-Wilson and Charles H. Wurtzebach, Managing Real Estate Portfolios, Irwin, New York NY, 1994.

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Data

- **NCREIF real estate indexes**
  - Appraisal based and are a representative sample of institutional real estate holdings by asset class and region.
  - Total return and standard deviation information was compiled from quarterly return statistics.
  - Total returns include income return and capital appreciation.

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Data

- **Koll/National Real Estate Index**
  - Biannual/quarterly survey based on a sample of properties by metro area.
  - Total returns and standard deviations
    - Biannual/quarterly capitalization rate (Income Return).
    - Adding biannual/quarterly year-over-year percentage change in sales price per square foot (Capital Appreciation).

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Data

- **Dean Witter Reynolds Investment Banking Unit**
  - Total returns and standard deviations
    - Total quarterly dividend yields.
    - Quarterly percent change in stock prices.

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Capital Market Assumptions

- **Capital markets are efficient and capital flows move freely at little or no transaction costs.**
- **Capital markets contain a large number of rational, profit-seeking and risk-averse investors.**
- **Prices reflect all historical fundamental information and move quickly or are discounted by new information or changing expectations.**
- **Returns implicit in the price reflect the risk involved.**
- **Total returns are normally distributed over time.**
- **Capital market assets compete in the market for the finite amount of loanable funds (savings) from surplus spending units (savers-investors) in the economy.**

*** If capital markets are assumed to be efficient, the majority of investment capital will flow from savers and investors to those assets that have historically provided the highest risk-adjusted rates of return.**

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Investor Preference Assumptions

Risk-averse investors are unique in that they penalize expected return on risky assets to account for risk; therefore, they are most concerned with obtaining the best risk-adjusted return in the capital markets.

Risk-neutral investors are solely concerned with obtaining the highest possible return; risk is irrelevant.

Speculators, on the other hand, invest in assets with considerable risk and expect to be compensated for this. Speculators invest in spite of the risk involved because they perceive a favorable risk-return trade-off.

Risk-lovers or seekers are gamblers who are willing to invest in an asset with some degree of chance so that they may obtain an abnormal rate of return and, in some cases, strictly for the fun and excitement of it.

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Methodology

Once the capital markets and investor preference assumptions have been applied, we can now use mean-variance analysis. For this study we use a ***Capital Market or Efficient Frontier Analysis (EFA)*** methodology, consisting of four separate but related phases.

Phase I: Select Portfolios
Phase II: Calculate Expected Returns and Standard Deviations
Phase III: Plot Portfolios by Expected Return and Standard Deviation
Phase IV: Rank and Categorize Portfolios by Risk-Adjusted Returns

Note: For this study, a portfolio is an asset class or a real estate asset class by region; geographic regions are those defined by the National Council of Real Estate Investment Fiduciaries (NCREIF).

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Methodology

- ***Risk-adjusted (proxy) returns*** **are average (mean) returns divided by the standard deviation of total returns for the sample time period, giving the number of units of return for each given unit of risk.**
  - **This allows for comparison across portfolios after controlling for risk.**
- **The *Efficient Frontier plots* are graphical illustrations of where each market is located within a competitive capital market context.**

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Methodology

According to Capital Market Theory:

- Target portfolios for **risk-averse investors (institutional)** exhibit high, stable, long-term returns with low standard deviations. These portfolios are located in the **upper left-hand corner**.
- Portfolios exhibiting high long-term relationships between risk and return are placed in the **upper right-hand corner**.
- Portfolios exhibiting low long-term relationships between risk and return are placed in the **lower left-hand corner**.
  - Some **risk-averse** investors would be willing to accept lower returns for lower risk.
  - Target portfolios for **contrarian or opportunistic** investors are those that have exhibited low total returns and low risks.

Methodology

- These investors are anticipating higher future returns at lower risk levels.

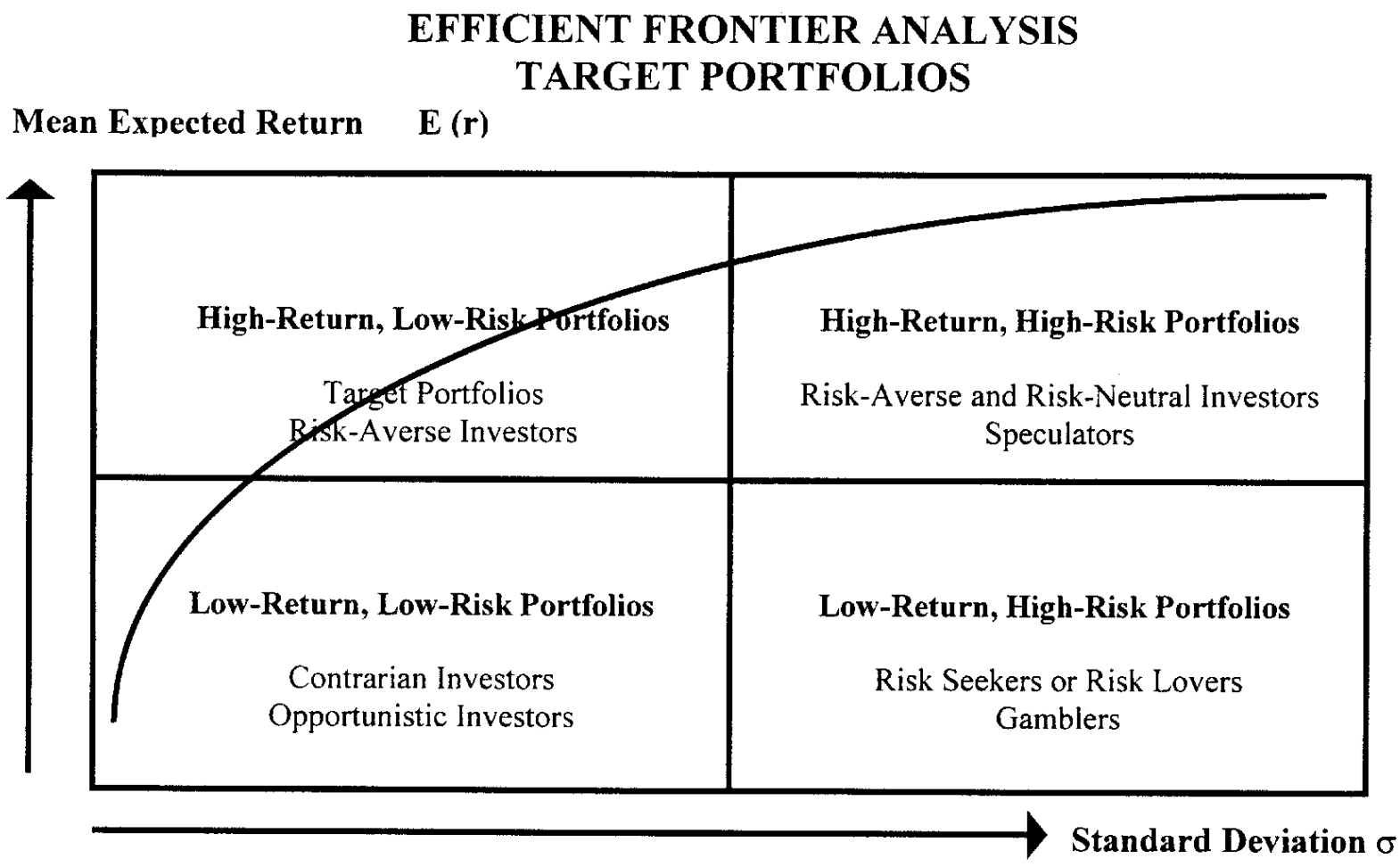
- **Risk-seeking investors or gamblers** are willing to invest in portfolios with high risk and low returns in anticipation of the possibility of achieving high returns in the future to compensate for high risk levels.

  - These portfolios are located in the **lower right-hand corner**.

- Some **opportunistic investors** would be willing to accept lower returns for higher risk if they felt the portfolio was undervalued in the capital markets, leading to arbitrage opportunities.

Apartments in a Capital Markets Context

Methodology



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Methodology

By using the Capital Market or Efficient Frontier Model (EFM):

- Portfolios that appear most attractive to (institutional) investors over the long run, based on high risk-adjusted returns, are shown in the **Risk Averse** sections of the tables that follow.

- Those most attractive to risk-neutral investors appear in the **Risk-Neutral** sections. These portfolios exhibit the highest long-term expected return.

- Portfolios attractive to the opportunistic, contrarian or risk-seeking investors appear in the **Risky** sections.

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Discussion of Results

- **Risky** portfolios are those whose long-term returns have been heavily discounted due to excessive volatility over time.

- **Risky** real estate portfolios could also be seen as those whose returns have been negative or flat for quite some time, reaching their cyclical bottom, and are poised for rapid income and capital appreciation as they move into the recovery phase of their cycle.

    - These portfolios will see rapid income appreciation induced by a healthy national economy and capital appreciation spurred by institutional (REIT and pension fund) capital inflows.

    - These capital flows are attracted to real estate portfolios due to their high income returns and undervalued status in the capital markets compared to other competitive financial market assets (stocks and bonds).

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Discussion of Results

Through the use of capital-market analysis, we can identify which portfolios are likely to continue to attract risk-averse institutional capital and which will attract speculative capital over time.

Apartments in a Capital Markets Context

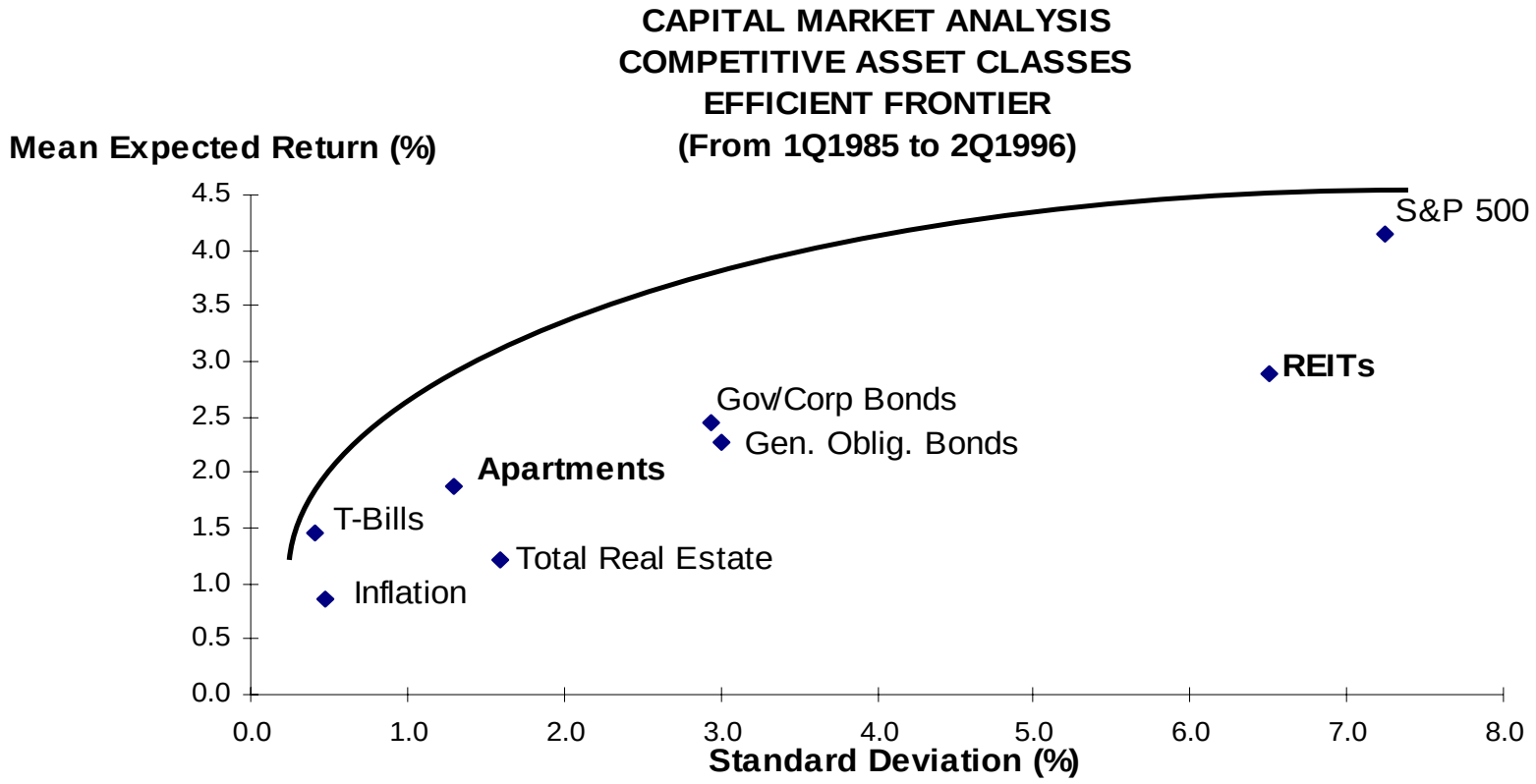
Discussion of Results

Apartments in a Competitive Capital Markets Context

Capital market portfolios exhibiting the highest risk-adjusted rates of return are **T-Bills, Inflation and Apartments**.

Apartments in a Capital Markets Context

Discussion of Results



Sources: NCREIF Property Index Detailed Quarterly Performance Report and BRE Properties Research Dept.

Apartments in a Capital Markets Context

Discussion of Results

COMPETITIVE FINANCIAL ASSET CLASSES			
ASSET CLASS	**STANDARD DEVIATION**	**MEAN EXPECTED RETURN**	**RETURN/RISK RATIO**
Risk Averse			
91 Day T-Bills	0.4	1.4	3.5
Inflation (CPI)	0.5	0.9	1.8
Apartments	**1.3**	**1.9**	**1.5**
Risk Neutral			
S&P 500	7.2	4.1	0.6
REITs	6.5	2.9	0.4
Gov./Corp.Bonds	2.9	2.5	0.8
Risky			
REITs	**6.5**	**2.9**	**0.4**
S&P500	7.2	4.1	0.6
Gov.Oblig. Bonds	3.0	2.3	0.8

Apartments in a Capital Markets Context

Discussion of Results

- Due to their low volatility, or sensitivity to rising or falling inflationary expectations, each of the **risk-averse** asset classes should continue to be viewed as inflationary hedges and attract large flows of capital.

- Apartments provide stable income returns and a high level of risk-adjusted returns.

- Over time, **risk-neutral** investors have benefited from the bull market in stocks (S&P 500), capitalization of the REIT market and appreciating bond prices due to low and declining interest rates.

    - Although these portfolios have provided the highest rates of return over time they have also been the most risky. These portfolios will continue to attract large flows of speculative capital.

Apartments in a Capital Markets Context

Discussion of Results

Apartments not only compete directly with more traditional investment classes for funds in the capital markets, but also with other real estate asset classes.

Apartments in a Capital Markets Context

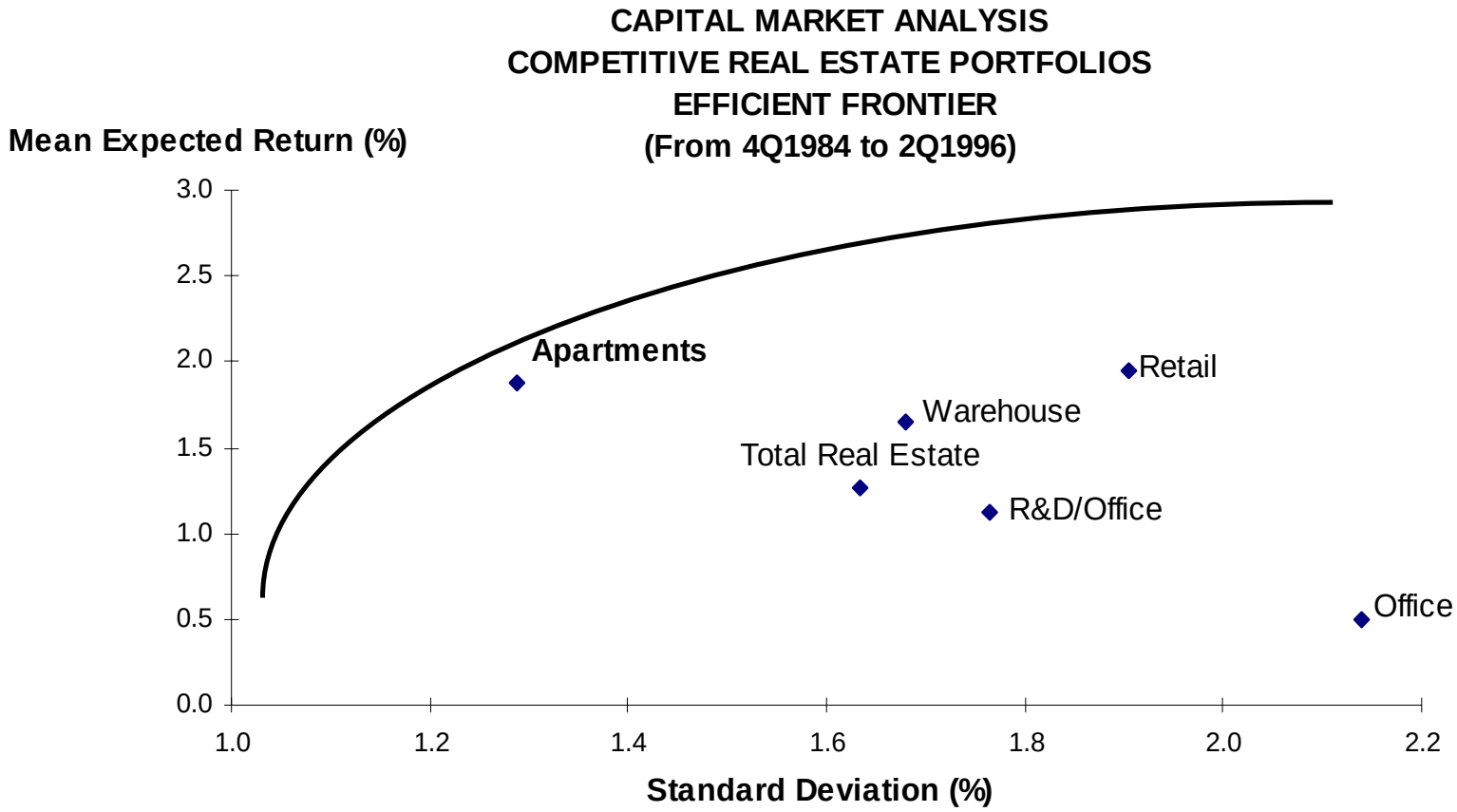
Discussion of Results

Apartments in a Competitive Real Estate Capital Markets Context

Real estate portfolios exhibiting the highest risk-adjusted returns are **apartments, retail and warehouse**.

Apartments in a Capital Markets Context

Discussion of Results



Sources: NCREIF Property Index Detailed Quarterly Performance Report and BRE Properties Research.

Apartments in a Capital Markets Context

Discussion of Results

COMPETITIVE REAL ESTATE PORTFOLIOS			
REAL ESTATE ASSET CLASS	**STANDARD DEVIATION**	**MEAN EXPECTED RETURN**	**RETURN/RISK RATIO**
Risk Averse Apartments	**1.3**	**1.9**	**1.5**
Retail	1.9	1.9	1.0
Warehouse	1.7	1.7	1.0
Risk Neutral Apartments	**1.3**	**1.9**	**1.5**
Retail	1.9	1.9	1.0
Warehouse	1.7	1.7	1.0
Risky			
Office	2.1	0.5	0.2
R&D/Office	1.8	1.1	0.6
Total Real Estate	1.6	1.3	0.8

Apartments in a Capital Markets Context

Discussion of Results

- High **apartment** risk-adjusted returns: increased institutional interest, stable demand and the ability to pass through inflationary increases, making them less volatile.

- High **retail** risk-adjusted returns: growing consumer demand and increasing levels of effective buying income.

- High **warehouse** risk-adjusted returns: more stable nature derived from higher owner occupancy rates and a shorter construction cycle, mitigating the risk of long, oversupplied market conditions.

- **Apartment, retail and warehouse** portfolios have also provided the highest return over time; therefore, they should continue to attract large flows of **risk-neutral** capital.

Apartments in a Capital Markets Context

Discussion of Results

- **Contrarian or risk-seeking** investors will be attracted to the office and office/R&D sectors.
  - Due to the probability of higher expected returns in the future and the belief that these sectors have reached their cyclical bottom and are moving into the recovery stage of their growth cycle.
  - The perception is that these assets are undervalued in comparison to other capital market assets.

Apartments in a Capital Markets Context

Discussion of Results

Apartments not only compete directly with other real estate asset classes for investment funds in the capital markets, but also with each other across geographic regions.

Apartments in a Capital Markets Context

Discussion of Results

Apartments in a Competitive Regional Real Estate Capital Markets Context

Competitive regional apartment portfolios exhibiting the highest risk-adjusted returns are the **Southwest, Northeast and Mountain** regions.

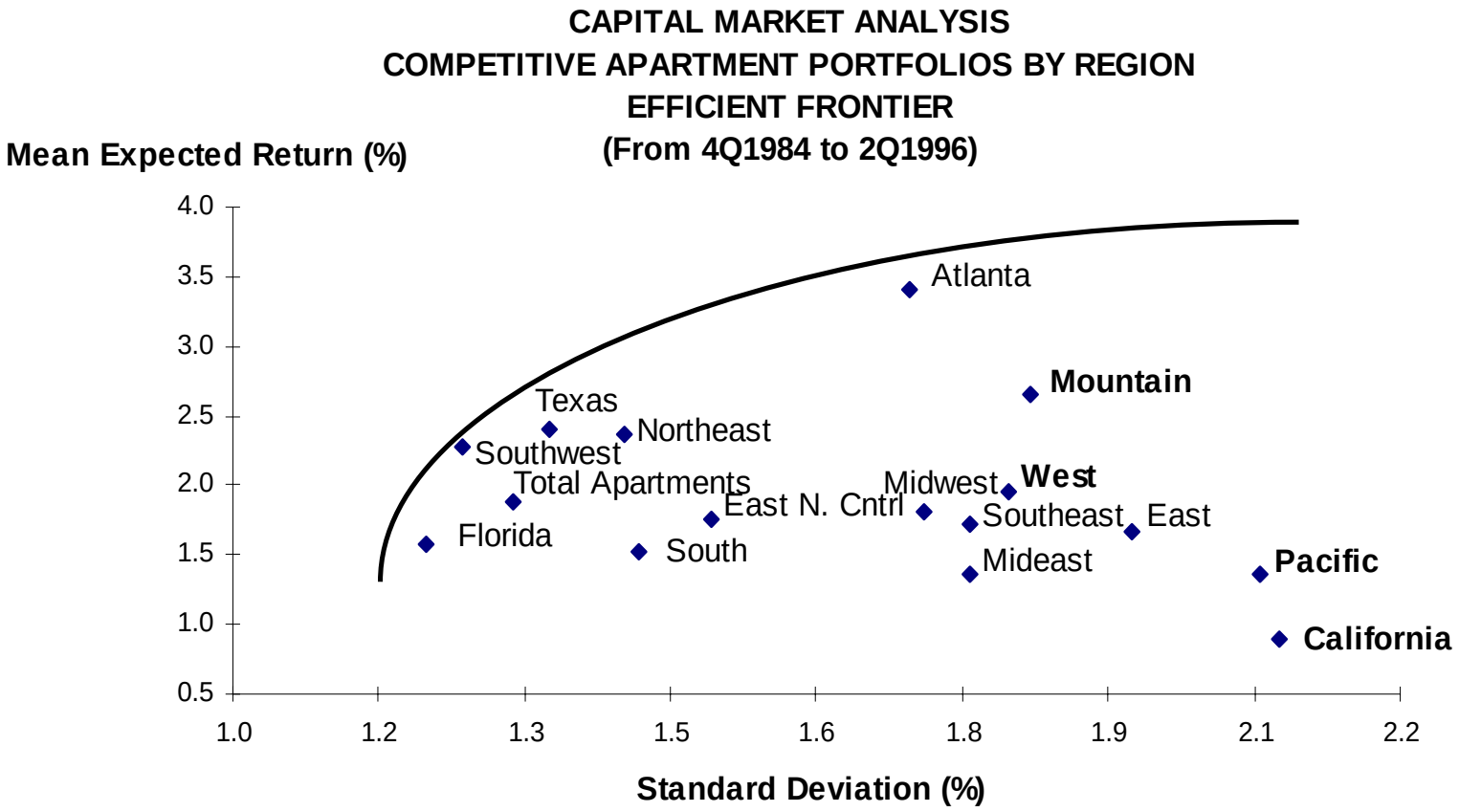
Apartments in a Capital Markets Context

Discussion of Results

East	**Northeast**	**Mideast**
	Maine	Delaware
	New Hampshire	Maryland
	Vermont	Washington D.C.
	Massachusetts	West Virginia
	Rhode Island	Virginia
	Connecticut	North Carolina
	New York	South Carolina
	New Jersey	Kentucky
	Pennsylvania	
South	**Southeast**	**Southwest**
	Tennessee	Oklahoma
	Mississippi	Arkansas
	Alabama	Louisiana
	Georgia	Texas
	Florida	
West	**Mountain**	**Pacific**
	Montana	Washington
	Idaho	Oregon
	Wyoming	California
	Colorado	Alaska
	New Mexico	Hawaii
	Arizona	
	Nevada	

Apartments in a Capital Markets Context

Discussion of Results



Sources: NCREIF Property Index Detailed Quarterly Performance Report and BRE Properties Research.

Apartments in a Capital Markets Context

Discussion of Results

COMPETITIVE APARTMENT PORTFOLIOS BY REGIONAL MARKETS			
MARKETS	**STANDARD DEVIATION**	**MEAN EXPECTED RETURN**	**RETURN/RISK RATIO**
Risk Averse			
Atlanta	1.7	3.4	2.0
Southwest	1.2	2.3	1.8
Texas	1.3	2.4	1.8
Northeast	1.4	2.4	1.7
Mountain	**1.8**	**2.7**	**1.5**
Risk Neutral			
Atlanta	1.7	3.4	2.0
Mountain	**1.8**	**2.7**	**1.5**
Texas	1.3	2.4	1.8
Northeast	1.4	2.4	1.7
Southeast	1.2	2.3	1.8
Risky			
California	**2.1**	**0.9**	**0.4**
Pacific	**2.1**	**1.4**	**0.7**
Mideast	1.8	1.4	0.7
East	1.9	1.7	0.9

Apartments in a Capital Markets Context

Discussion of Results

- **Southwest** apartment portfolio ranks high because of above-average returns and low long- term volatility.
    - A significant portion of this portfolio is located in **Texas**, which has provided one of the highest risk-adjusted returns for apartments over time.
- High risk-adjusted returns for the **Southwest and Mountain** apartment portfolios are due to: continued outmigration of population and businesses (capital flows) from the Northeast and Pacific regions.
    - The migration of people and firms to the **Mountain** states should continue to provide for one of the highest risk-adjusted returns, therefore continuing to attract institutional capital flows.
- High risk-adjusted returns for the **Northeast** are due to high population densities, effective income and lack of developable land.

Apartments in a Capital Markets Context

Discussion of Results

- **Contrarian or risk-seeking** investors will be attracted to the **Pacific (California**) region due to the perception that these apartment portfolios are undervalued and have reached the bottom of their real estate cycle.
  - **California**'s apartment portfolios are assumed to be slightly undervalued because the economy is in a recovery phase, new supply is limited, and returns are not commensurate with the associated risk levels.
  - Attracted to the **Mideast region** because of high housing costs and population densities especially in the **District of Columbia,** and rapid employment, population and supply growth in **North and South Carolina**.

Apartments in a Capital Markets Context

Discussion of Results

Apartment portfolios not only compete directly with each other across geographic regions for investment funds in the capital markets, but also between metro areas within a region.

Note: For this study we have restricted our analysis to large metro areas within the Western region.

Apartments in a Capital Markets Context

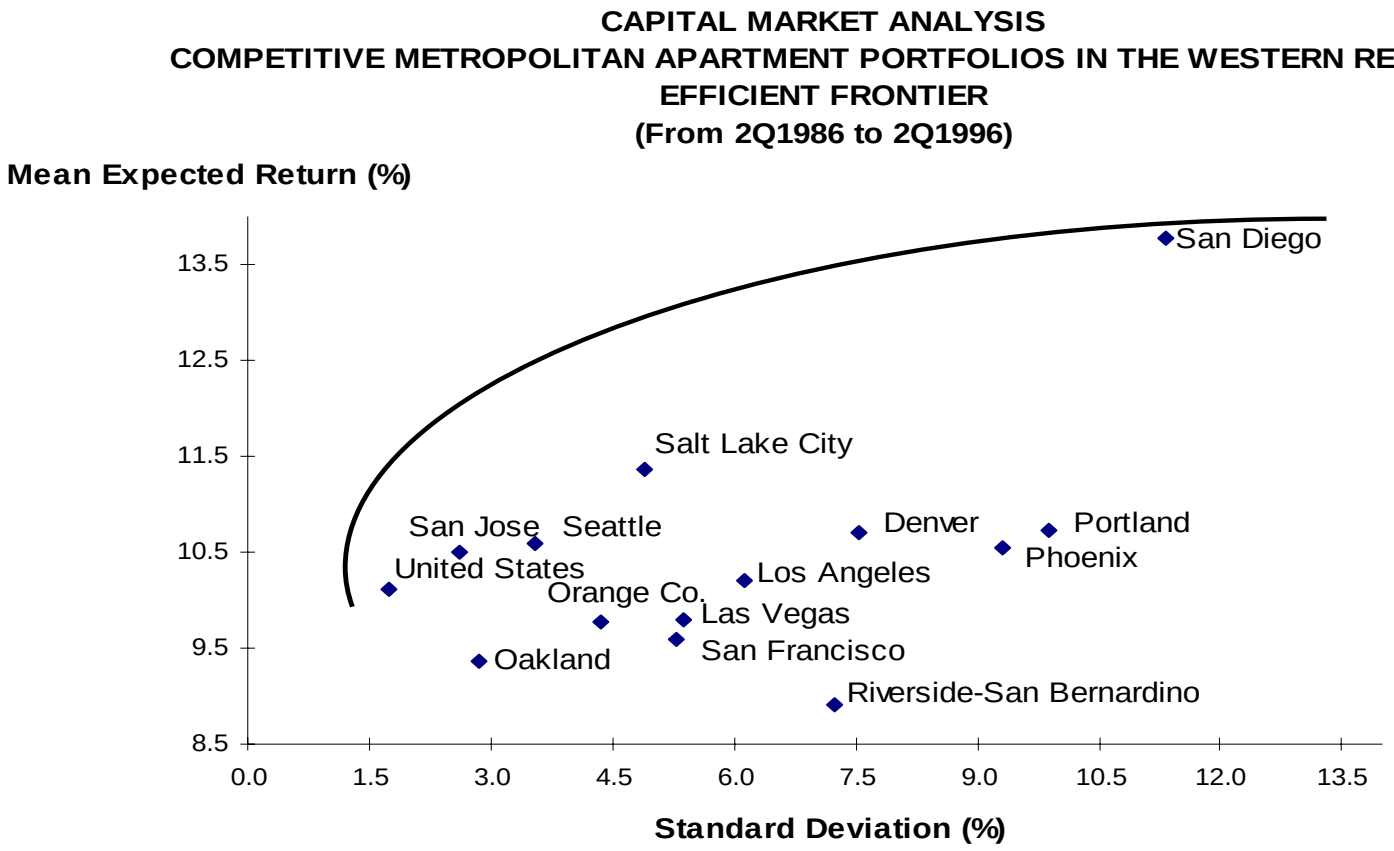
Discussion of Results

Metro Apartment Markets in a Competitive Western Regional Real Estate Capital Markets Context

Metro area apartment portfolios in the Western region with the highest risk-adjusted returns are **San Jose, Oakland and Seattle**.

Apartments in a Capital Markets Context

Discussion of Results



Sources: The National Real Estate Index and BRE Properties Research Department.

Apartments in a Capital Markets Context

Discussion of Results

COMPETITIVE METRO AREA APARTMENT PORTFOLIOS IN THE WESTERN REGION			
MARKETS	**STANDARD DEVIATION**	**MEAN EXPECTED RETURN**	**RETURN/RISK RATIO**
Risk Averse			
San Jose	2.6	10.5	4.0
Oakland	2.8	9.4	3.3
Seattle	3.6	10.6	3.0
Risk Neutral			
San Diego	11.3	13.8	1.2
Seattle	3.6	10.6	3.0
Portland	9.9	10.7	1.1
Risky			
Portland	9.9	10.7	1.1
Phoenix	9.3	10.5	1.1
San Diego	11.3	13.8	1.2

Apartments in a Capital Markets Context

Discussion of Results

Apartment portfolios not only compete directly with each other across regions for investment funds, but also indirectly on a nation basis through apartment REITs.

Note: For this study we have restricted our analysis to the top 16 apartment real estate investment trusts.

Apartments in a Capital Markets Context

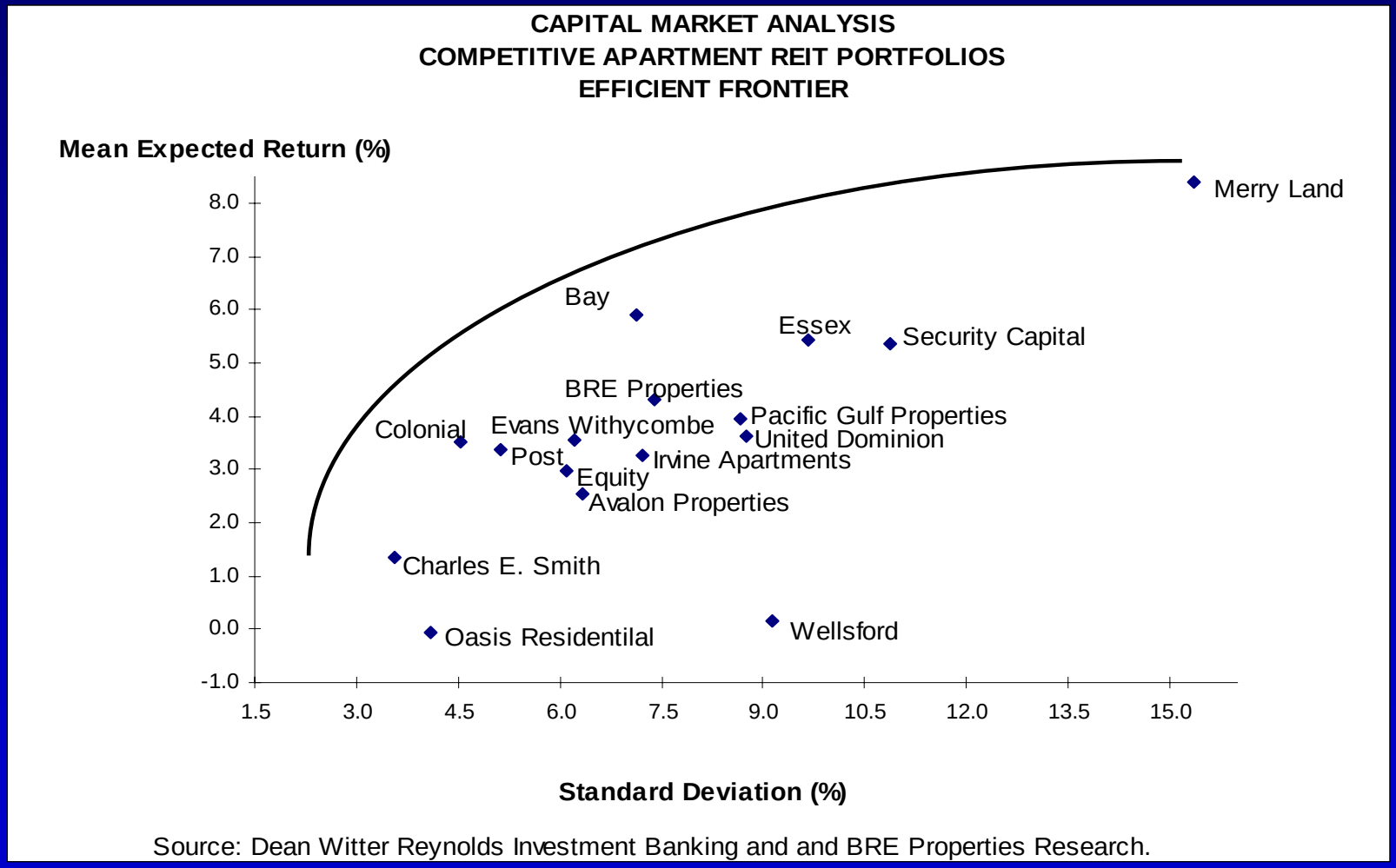
Discussion of Results

Apartment REITs in a Competitive Real Estate and Financial Capital Markets Context

Apartment REITs exhibiting the highest risk-adjusted returns are **Bay Apartments, Colonial Properties Trust, Post Properties and BRE Properties.**

Apartments in a Capital Markets Context

Discussion of Results



Source: Dean Witter Reynolds Investment Banking and and BRE Properties Research.

Apartments in a Capital Markets Context

Discussion of Results

COMPETITIVE APARTMENT REIT PORTFOLIOS			
REITS	**STANDARD DEVIATION**	**MEAN EXPECTED RETURN**	**RETURN/RISK RATIO**
Risk Averse			
Bay Apartments	7.1	5.9	0.8
Colonial Properties Trust	4.5	3.5	0.8
Post Properties	5.1	3.4	0.7
BRE Properties	**7.4**	**4.3**	**0.6**
Risk Neutral			
Merry Land	15.34	8.4	0.6
Bay Apartments	7.1	5.9	0.8
Security Capital	10.9	5.4	0.5
BRE Properties	**7.4**	**4.3**	**0.6**
Risky			
Oasis Properties	4.1	-0.1	-0.1
Wellsford Residential	9.1	0.1	0.0
Charles E. Smith	3.6	1.4	0.4
Avalon Properties	6.3	2.5	0.4

Apartments in a Capital Markets Context

Discussion of Results

- High risk-adjusted returns
  - **Bay Apartments** ranks first due to large capital inflows and high returns from their concentration in Bay Area apartment properties and development capabilities.
  - **Colonial Properties** ranks high due to its management capabilities, Southern focus and recovery in the office sector.
  - **Post Properties** ranks high due to its operational efficiencies, management capabilities, Southern focus and high historical risk-adjusted returns generated from its Atlanta properties.
  - **BRE Properties** ranks high due to its management capabilities, Western regional focus and high returns generated from its Pacific Northwest and Bay Area properties.

Apartments in a Capital Markets Context

Discussion of Results

- High risk-adjusted returns in comparison to other REITs:
  - Property focus.
  - Management capabilities.
  - Increased interest in apartments by institutional investors.
  - Ability to rapidly pass-through inflationary increases.
  - Provide stable returns (low volatility) over time.
  - Underweighted in most institutional portfolios.

Note: These apartment REIT portfolios should continue to attract large flows of institutional capital.

Apartments in a Capital Markets Context

Discussion of Results

- Low risk-adjusted returns
  - **Oasis Properties** due to its over concentration in the highly volatile **Las Vegas** apartment market, high institutional ownership and some controversies concerning top management.
  - **Wellsford Residential** due to slow management integration after the merger, high debt and problems associated with restructuring their balance sheet, and portfolio concentrations in markets such as **Tucson, Phoenix, Dallas, San Antonio and Seattle-Tacoma**.
  - **Charles E. Smith** due to high debt, large institutional and insider ownership, and portfolio concentrations in older infill locations in the **Washington D.C**. metro area.
  - **Avalon** Properties due to portfolio concentration in the **Northeast** and high institutional ownership.

Note: These portfolios will continue to attract more speculative capital flows.

Apartments in a Capital Markets Context

CONCLUSION

- Apartment portfolio construction has been out of favor for some time due to concerns of overbuilding in some markets.
- Long-term apartment fundamentals are solid and investors have overreacted to short-term market conditions.
- Over the long run, apartments have provided investors with the highest risk-adjusted rates of return of any real estate asset class.
- Some apartment markets have been heavily discounted due to excessive volatility and may have been oversold, providing opportunities for contrarian or risk-seeking investors.

Apartments in a Capital Markets Context

CONCLUSION

- Those apartment markets whose returns have been negative or flat for quite some time, reaching their cyclical bottom, could be poised for rapid income and capital appreciation as they move into the recovery phase of their cycle.

- It is expected that these portfolios will see rapid income appreciation induced by a healthy national economy and capital appreciation spurred by large institutional (REIT and pension fund) capital inflows.

- These capital flows are attracted to apartment portfolios because of their high income returns and undervalued status in the capital markets compared to other competitive financial market assets (stocks and bonds).

Apartments in a Capital Markets Context

RECCOMENDATIONS

- Assuming that the majority of investors are **risk-averse** and that capital flows freely across markets, institutional capital flows will continue to be attracted to investments offering the highest risk-adjusted rates of return:
  - T-Bills
  - Commodities
  - Apartments (**Southwest, Northeast and Mountain** regions; Western regional apartment portfolios in metro areas located in the **Bay Area and Seattle; and REITs such as Bay Apartments, Colonial Properties, Post Properties and BRE Properties**.)
  - Retail
  - Warehouse

Apartments in a Capital Markets Context

RECCOMENDATIONS

- **Risk-neutral** investors will continue to invest in portfolios and asset classes that give them the highest long-term expected rates of return:
  - S&P 500
  - REITs
  - Government and corporate bonds
  - Apartments (**Mountain, Northeast and Southeast** regions; Western regional apartment portfolios in metro areas such as **San Diego, Seattle and Portland; and REITs such as Merry Land Bay Apartments, Security Capital and BRE Properties.**)
  - Retail
  - Warehouse

Apartments in a Capital Markets Context

RECCOMENDATIONS

- **Contrarian, speculative or risk-seeking** investors will continue to invest in portfolios and asset classes that give them the opportunity to obtain high abnormal rates of return:
  - REITs
  - S&P 500
  - Government obligation bonds
  - Office and R&D/Office
  - Apartments (**Pacific, Mideast and East** regions; Western regional apartment portfolios in metro areas such as **Portland, Phoenix and San Diego; and REITs such as Oasis Properties, Wellsford Residential, Charles E. Smith and Avalon Properties.**)

Apartments in a Capital Markets Context

RESEARCH CRITICISMS

- Appraisal Based Return Data
  - Returns Base on Appraisals not Action Market
  - Appraisal Smoothing (More Write ups than Write downs)
  - Nonnormality of Data (Skewness/Bias)
  - Short Sample Periods (Large Sampling Error)

- Real Estate Market Efficiency
  - Illiquidity
  - High transaction costs (Market Friction)
  - High information costs
  - Information Lags

Apartments in a Capital Markets Context

Appendix

CAPITAL MARKET ANALYSIS
Competitive Metropolitan Apartment Portfolios
in the Western Region
Risk-Adjusted Return Table
(From 2Q1986 to 1Q1996)
(Sorted by Return/Risk Ratio)

TOTAL APARTMENT RETURN BY METRO AREA	STANDARD DEVIATION (RISK)	(MEAN) EXPECTED RETURN	RETURN/ RISK RATIO
United States	1.7	10.1	5.8
San Jose [1]	2.6	10.5	4.0
Oakland [1]	2.8	9.4	3.3
Seattle	3.6	10.6	3.0
Salt Lake City [1]	4.9	11.4	2.3
Orange County	4.3	9.8	2.2
Las Vegas [1]	5.4	9.8	1.8
San Francisco	5.3	9.6	1.8
Los Angeles	6.1	10.2	1.7
Denver	7.6	10.7	1.4
Riverside-San Bernardino	7.2	8.9	1.2
San Diego	11.3	13.8	1.2
Phoenix	9.3	10.5	1.1
Portland [1]	9.9	10.7	1.1

Note: 1) Standard deviations and expected returns were calculated from 2Q1989 to 1Q1996 and may incorporate a larger sampling error.
Total returns are current income yields plus appreciation measured by change in price per unit.
The risk/return ratio is expected return divided by the standard deviation. This ratio measures the amount of return for a given unit of risk. High ratio values indicate high risk-adjusted returns.
Source: The NCREIF Property Index Detailed Quarterly Performance Report.

Apartments in a Capital Markets Context

Appendix

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(From 2Q1986 to 1Q1996)
(Sorted by Expected Return)

TOTAL APARTMENT RETURN BY METRO AREA	STANDARD DEVIATION (RISK)	(MEAN) EXPECTED RETURN	RETURN/ RISK RATIO
San Diego	11.3	13.8	1.2
Salt Lake City [1]	4.9	11.4	2.3
Portland [1]	9.9	10.7	1.1
Denver	7.6	10.7	1.4
Seattle	3.6	10.6	3.0
Phoenix	9.3	10.5	1.1
San Jose [1]	2.6	10.5	4.0
Los Angeles	6.1	10.2	1.7
United States	1.7	10.1	5.8
Las Vegas [1]	5.4	9.8	1.8
Orange County	4.3	9.8	2.2
San Francisco	5.3	9.6	1.8
Oakland [1]	2.8	9.4	3.3
Riverside-San Bernardino	7.2	8.9	1.2

Note: 1) Standard deviations and expected returns were calculated from 2Q1989 to 1Q1996 and may incorporate a larger sampling error.
Total returns are current income yields plus appreciation measured by change in price per unit.
The risk/return ratio is expected return divided by the standard deviation. This ratio measures the amount of return for a given unit of risk. High ratio values indicate high risk-adjusted returns.
Source: The NCREIF Property Index Detailed Quarterly Performance Report.

Apartments in a Capital Markets Context

Appendix

CAPITAL MARKET ANALYSIS
Competitive Metropolitan Apartment Portfolios
in the Western Region
Risk-Adjusted Return Table
(From 2Q1986 to 1Q1996)
(Sorted by Risk-Standard Deviation)

TOTAL APARTMENT RETURN BY METRO AREA	STANDARD DEVIATION (RISK)	(MEAN) EXPECTED RETURN	RETURN/ RISK RATIO
San Diego	11.3	13.8	1.2
Portland [1]	9.9	10.7	1.1
Phoenix	9.3	10.5	1.1
Denver	7.6	10.7	1.4
Riverside-San Bernardino	7.2	8.9	1.2
Los Angeles	6.1	10.2	1.7
Las Vegas [1]	5.4	9.8	1.8
San Francisco	5.3	9.6	1.8
Salt Lake City [1]	4.9	11.4	2.3
Orange County	4.3	9.8	2.2
Seattle	3.6	10.6	3.0
Oakland [1]	2.8	9.4	3.3
San Jose [1]	2.6	10.5	4.0
United States	1.7	10.1	5.8

Note: 1) Standard deviations and expected returns were calculated from 2Q1989 to 1Q1996 and may incorporate a larger sampling error.
Total returns are current income yields plus appreciation measured by change in price per unit.
The risk/return ratio is expected return divided by the standard deviation. This ratio measures the amount of return for a given unit of risk. High ratio values indicate high risk-adjusted returns.
Source: The NCREIF Property Index Detailed Quarterly Performance Report.

Apartments in a Capital Markets Context

Appendix

CAPITAL MARKET ANALYSIS
Competitive Apartment REIT Portfolios
Risk-Adjusted Return Table
(Sorted by Return/Risk Ratio)

TOTAL APARTMENT RETURN BY METRO AREA	STANDARD DEVIATION (RISK)	(MEAN) EXPECTED RETURN	RETURN/ RISK RATIO
Bay Apartments (3Q96-1Q90)	7.14	5.91	0.83
Colonial Properties Trust (3Q96-1Q94)	4.52	3.53	0.78
Post Properties (3Q96-1Q94)	5.12	3.36	0.66
BRE Properties (3Q96-1Q90)	**7.39**	**4.30**	**0.58**
Evans Withycombe (3Q96-4Q94)	6.22	3.56	0.57
Essex Property Trust (3Q96-4Q94)	9.67	5.42	0.56
Merry Land (3Q96-1Q90)	15.34	8.40	0.55
Security Capital (3Q96-1Q90)	10.87	5.37	0.49
Equity Residential Properties (3Q96-4Q93)	6.11	2.99	0.49
Pacific Gulf Properties (3Q96-3Q94)	8.66	3.97	0.46
Irvine Apartments (3Q96-2Q94)	7.22	3.25	0.45
United Dominion (3Q96-1Q90)	8.75	3.64	0.42
Avalon Properties (3Q96-2Q94)	6.34	2.54	0.40
Charles E. Smith (3Q96-4Q94)	3.55	1.36	0.38
Wellsford Residential (3Q96-2Q93)	9.14	0.14	0.02
Oasis Residential (3Q96-2Q94)	4.08	(0.07)	-0.02

Note: Standard deviations and expected returns for some REITs were calculated for relatively short time periods, thus attributing to larger sampling errors for those REITs.
Total returns are current income yields plus stock price appreciation.
The risk/return ratio is expected return divided by the standard deviation. This ratio measures the amount of return for a given unit of risk. High ratio values indicate high risk-adjusted returns.
Source: Dean Whitter Reynolds Investment Banking and BRE Properties Research Department.

Apartments in a Capital Markets Context

Appendix

NATIONAL COUNCIL OF REAL ESTATE INVESTMENT FIDUCIARIES (NCREIF) GEOGRAPHIC REGIONS

East	**Northeast**	**Mideast**
	Maine	Delaware
	New Hampshire	Maryland
	Vermont	Washington D.C.
	Massachusetts	West Virginia
	Rhode Island	Virginia
	Connecticut	North Carolina
	New York	South Carolina
	New Jersey	Kentucky
	Pennsylvania	
Midwest	**East North Central**	**West North Central**
	Wisconsin	Minnesota
	Michigan	Iowa
	Ohio	Missouri
	Indiana	Kansas
	Illinois	Nebraska
		North Dakota
		South Dakota
South	**Southeast**	**Southwest**
	Tennessee	Oklahoma
	Mississippi	Arkansas
	Alabama	Louisiana
	Georgia	Texas
	Florida	
West	**Mountain**	**Pacific**
	Montana	Washington
	Idaho	Oregon
	Wyoming	California
	Colorado	Alaska
	New Mexico	Hawaii
	Arizona	
	Nevada	