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REAL ESTATE INVESTING THE REIT WAY

A guide to REIT BENCHMARKS *and* INVESTING

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REAL ESTATE INVESTING THE REIT WAY

A guide to REIT BENCHMARKS *and* INVESTING

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EXECUTIVE SUMMARY

This issue of *Investment Insights*—the latest in our series of guides to indexes covering a variety of asset classes—explores many aspects of investing in the real estate asset class through real estate investment trusts (REITs). We start with an in-depth discussion of portfolio construction and the diversification benefits available through this asset class. We also rate the various major REIT indexes to help investors distinguish between them.

Real estate has long been a critical element of the institutional investor's portfolio. Real estate can offer diversification benefits due to its low correlation with other asset classes. It can achieve a risk premium above the risk-free rate—indeed, 10-year annual returns have been in excess of 12%. Real estate is also a hedge against unexpected inflation, since rental increases provide protection from the insidious effects of an inflationary environment and can deliver strong cash flows through rental income.

However, despite these benefits, investing in real estate can present significant challenges. Investing in direct real estate—whether office buildings, industrial properties, retail centers or apartment buildings—requires a broad set of specialized skills in contrast to traditional equity investments, which can often be a daunting challenge, especially for smaller pension plans.

The creation of REITs—publicly traded companies that own and operate commercial real estate as their primary business—in 1960 opened the door for easier real estate ownership. Essentially real estate stocks, REITs are traded on the major US stock exchanges. The REIT market grew dramatically in the 1990s, and today there are approximately 160 equity REITs in existence with a market capitalization in excess of $300 billion.

This paper is divided in two parts. The first part is a general overview of REIT investing. We discuss portfolio construction utilizing REITs, examining the diversification advantages and liquidity available, how REITs can push out an investor's efficient frontier, and how they can work in combination with direct real estate investing. We also examine their role in defined contribution plans and the emergence of global REITs.

The second part of this paper then examines the major REIT indexes, rating them according to a number of criteria such as transparency and liquidity. Real estate has long been viewed as an asset class that is difficult to benchmark, and this continues to be the case with directly owned, private equity real estate. REIT investors, on the other hand, can turn to nine recognized REIT indexes to measure performance, providing strong evidence of the popularity of real estate as an asset class. These indexes vary in size, scope, and purpose. What are the advantages and disadvantages of each index for the investor? The benchmark decision is one of the most important for any asset class, and one of the goals of this paper is to help investors understand the key REIT indexes so they will have the tools to make the right benchmark decision.

PART ONE:
Real estate investing the REIT way

Institutional investors have long valued real estate as a critical element in their portfolios. The benefits of a real estate allocation include the ability to:

- Diversify overall portfolio risk due to the low correlation of real estate with other asset classes.
- Achieve a risk premium above the risk-free rate. In the past, 10-year annual returns have been in excess of 12%, which is attractive for many investors.[1]
- Hedge against unexpected inflation as rental increases provide protection from the insidious effects of an inflationary environment.
- Deliver strong cash flows.[2]

Despite these benefits, for many years investing in real estate presented significant challenges. Investing in direct real estate—whether office buildings, industrial properties, retail centers, or apartment buildings—requires a broad set of specialized skills in contrast to traditional equity investments.

For many smaller pension plans, the relatively small allocation to real estate does not merit the expense involved in developing an in-house team of investment professionals. In addition to internal specialists, there are significant costs in managing teams of external specialists, from appraisers to environmental engineers. Thus, while some larger corporate and public plans have established their own property teams, smaller plans have had few viable alternatives for investing in real estate.

The creation of real estate investment trusts (REITs) in 1960 opened the door for easier real estate ownership. REITs are publicly traded companies that own and operate commercial real estate as their primary business. They offer a convenient way for investors to gain exposure to a diverse set of real estate holdings, across property types and geographic markets. REITs can be thought of as

1 Ten years through June 30, 2004. See www.nareit.com.

2 See Hudson-Wilson, Fabozzi, and Gordon (2003) for more information on these benefits of real estate allocation.

real estate stocks, and they are traded on the major stock exchanges. The REIT market grew dramatically in the 1990s and now represents an attractive alternative for small and large plans alike.

REITs can be divided into three categories: equity REITs that own and operate commercial properties, mortgage REITs that provide financing for commercial and residential properties, and hybrid REITs (a combination of the first two types). Equity REITs, comprising more than 90% of the REIT market, generate earnings from the rental income received on their holdings and capital gains from the sale of properties.

Today in the US there are approximately 160 equity REITs in existence. The market capitalization of equity REITs stands in excess of $300 billion. The average allocation to real estate—both direct investing and REITs—in a pension plan is now approximately 3.7% (*Pensions & Investments* 2005).[3] Our research indicates that major pension plans are recognizing the merits of holding REITs.

Real estate has long been viewed as an asset class that is difficult to benchmark, and this continues to be the case with directly owned, private equity real estate. REIT investors, on the other hand, can turn to nine recognized REIT indexes to measure performance, providing strong evidence of the popularity of real estate as an asset class. These indexes vary slightly in size, scope, and purpose. What are the advantages and disadvantages of each index for the investor? What are the tradeoffs involved in picking one over the other as the benchmark for the asset class? Whether one is a passive investor or an active investor judging the success (or failure) of a manager by their performance compared with the benchmark, the index decision is crucial for any investor. One of the goals of this paper is to help investors understand the key REIT indexes so they will have the tools to make the right benchmark decision.

The average allocation to real estate—both direct investing and REITs—in a pension plan is now approximately 3.7%.

Of course, prior to making the benchmark decision, the investor must first decide to invest in the asset class. Before turning to the discussion of the various REIT indexes in the second part of this paper, in Part One we provide a general overview of REIT investing. We explore the growth of REITs and the advantages of real estate in general and REITs specifically. We discuss portfolio construction utilizing REITs, examining the diversification advantages and liquidity available, and how REITs can push out an investor's efficient frontier. We then turn to a brief discussion of implementing REITs in a portfolio, taking a look at how they can work in combination with direct real estate investing and their merits for inclusion in defined contribution plans. Finally, we examine what the future may hold for the REIT marketplace and the emergence of global REITs.

Part Two examines the major REIT indexes, rating them according to a number of criteria such as transparency and liquidity to help plan sponsors make the very important benchmark selection decision.

The growth of REITs

The advent of REITs did not at first herald a dramatic shift in real estate investing. Only after a number of subsequent legislative changes to the basic REIT structure were REITs able to become an attractive vehicle for investors. One of the most important of these changes allowed REITs to man-

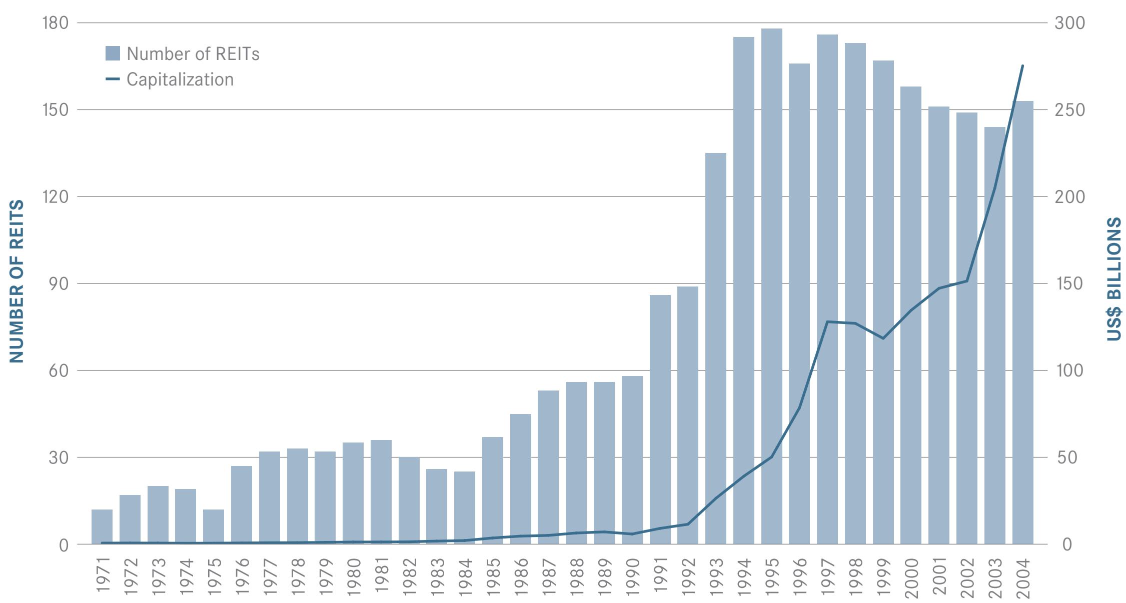
3 The data does not differentiate between direct real estate investing and REITs.

age their own properties, effectively aligning the interests of property managers with REIT shareholders. Until that time, REITs were forbidden to act as property managers. Improved corporate governance and the discipline exerted by shareholders enabled REITs to experience rapid growth as they achieved returns in excess of their private counterparts. This "new REIT era" was epitomized by the $135 million KIMCO IPO in 1991, which was the largest REIT IPO at that time.

Family-owned property empires wishing to avoid adverse estate tax consequences also fueled the expansion of REITs. The umbrella partnership REIT (UPREIT) is the method by which family real estate businesses transformed into public entities. An UPREIT is a partnership controlled by a real estate investment trust, in which partnership units are shares of common stock in the REIT. An UPREIT transaction, therefore, enables commercial real estate owners to transfer ownership of their real estate assets to a more liquid and diversified form, without incurring capital gains tax liability. The UPREIT structure was first utilized by Taubman Centers, Inc., which brought a successful IPO to the equity market in 1992.[4]

The dramatic growth of the REIT market (see Figure 1) has had a significant impact for investors. The REIT market now offers real-time quoted liquid vehicles to investors. Smaller plans can use them as a cost-efficient strategy for investing in real estate. Larger institutional investors can use REITs as a tactical tool to maintain exposure to real estate while seeking actual properties in which to invest. The 2005 IREI Institutional Real Estate Survey suggests that $51 billion will flow into real estate in 2005, an increase of 16% from 2004 (Institutional Real Estate, Inc. 2005). REITs clearly have a role to play in the efficient allocation of capital to the asset class.

Figure 1
GROWTH OF EQUITY REITS, 1971–2004



Source: NAREIT.

4 UPREITs are relatively common and include Vornado Realty, Capital Automotive, and First Industrial.

Thus, greater availability of REITs—and increased acceptance of them—has been the major factor in their growth. But supporting that growth has been very strong performance. Figure 2 illustrates the performance of REITs alongside that of large-and small-cap US equities.

The growth in flows to REITs at a time of strong performance has caused speculation that REIT performance has been driven by capital flows and that investors have engaged in return-chasing behavior. Indeed, REITs have seen significant flows from mutual funds (see Figure 3) as the asset class has matured and more products have launched.

However, Ling and Naranjo (2003) found no evidence of a relationship between REIT mutual fund flows and returns in following months. This indicates that capital flows by themselves are not driving REIT returns. Interestingly, though perhaps not surprising, the authors find evidence that investors do engage in return-chasing behavior. (See Figure 4.)

Figure 2

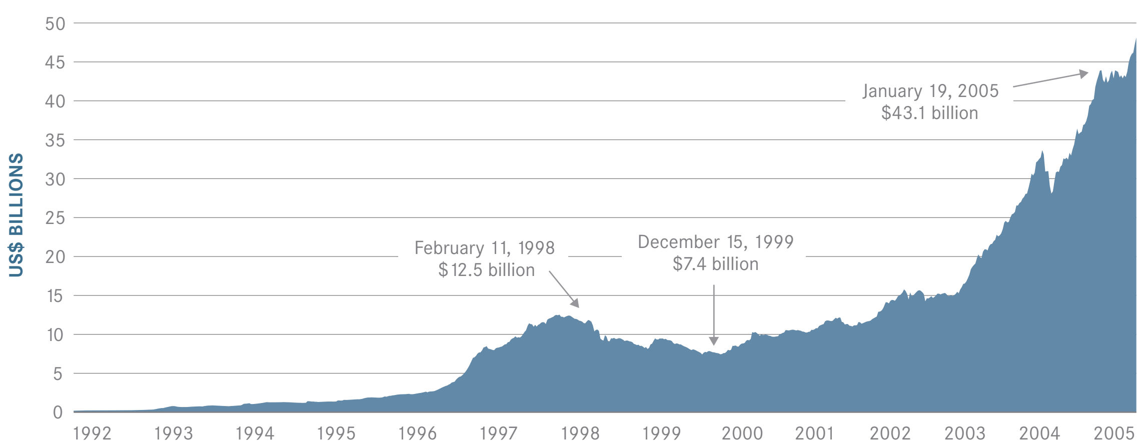
PERFORMANCE OF REIT INDEXES AND US EQUITIES, 1999–2004 (%)

	Wilshire Real Estate Securities	Dow Jones Real Estate Securities	Cohen & Steers	S&P REIT Composite	NAREIT All REIT	Morgan Stanley	S&P 500	Russell 2000
1999	–3.2	–5.3	–1.3	–5.5	–6.5	–4.6	21.0	21.3
2000	30.7	27.5	31.0	28.9	25.9	26.8	–9.1	–3.0
2001	10.5	11.8	10.3	14.2	15.5	12.8	–11.9	2.5
2002	2.7	3.6	3.3	4.2	5.2	3.6	–22.1	–20.5
2003	37.1	36.9	37.5	36.1	38.5	36.7	28.7	47.3
2004	35.6	31.2	36.0	25.0	30.4	31.5	10.9	18.3
Cumulative	**48.14**	**43.68**	**50.59**	**42.23**	**45.72**	**44.60**	**2.24**	**19.34**

Source: BGI.

Figure 3

TOTAL ASSETS IN DEDICATED OPEN-END REAL ESTATE MUTUAL FUNDS



Sources: Goldman Sachs, AMG Data.

Index returns are for illustrative purposes only and do not represent actual Fund performance. Index performance returns do not reflect any management fees, transaction costs or expenses. Indexes are unmanaged and one cannot invest directly in an index. Past performance does not guarantee future results.

The role of REITs in a diversified portfolio

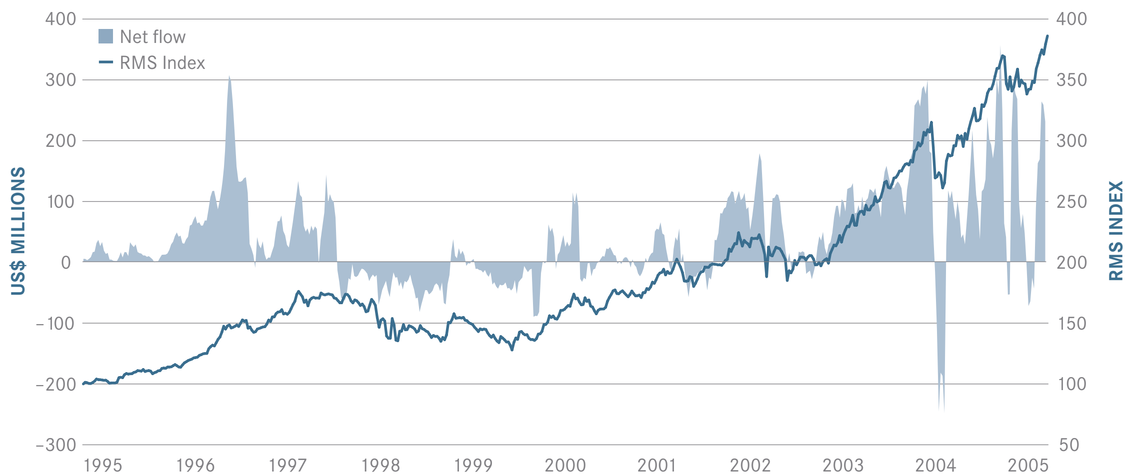
REITs offer two major advantages to the institutional investor constructing a portfolio: the diversification that real estate offers as an asset class, along with sufficient liquidity to gain access to that asset class easily.

Although anecdotally real estate has long been seen as an effective diversification instrument—and the performance figures shown above seem to support that assertion—there has been comparatively little rigorous analysis to test this proposition.

The long-term relative performance of REITs versus the S&P 500 can be seen in Figure 5. Note that annual return differences of greater than 20% are not uncommon. Certainly, this graph should provide some comfort that REITs will act as a diversifying influence upon an overall portfolio of assets. While REITs are publicly traded, it is clear that they behave differently than stocks.

Figure 4

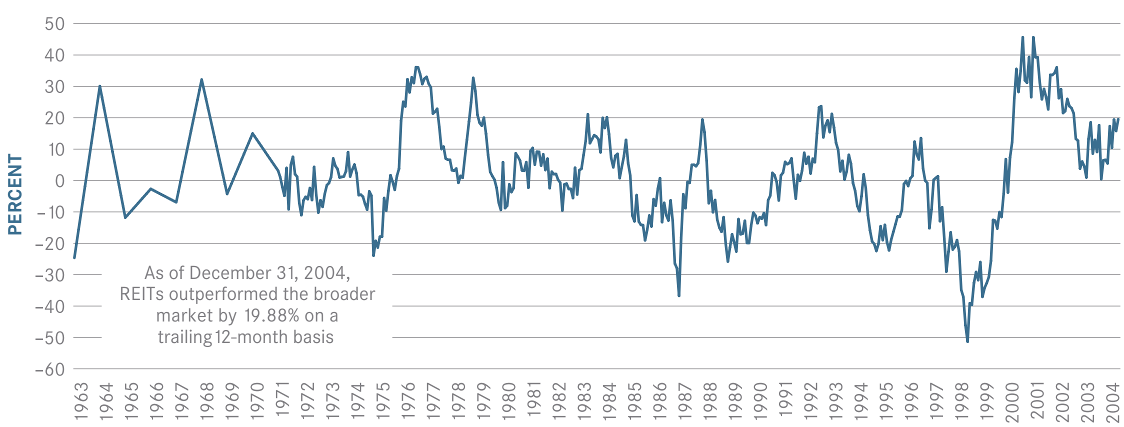
FOUR-WEEK MOVING AVERAGE OF FUND FLOWS VS. MORGAN STANLEY REIT INDEX, 1995–2005



Sources: Goldman Sachs, AMG Data.

Figure 5

TRAILING 12-MONTH TOTAL RETURN DIFFERENCE,
NAREIT EQUITY REIT INDEX LESS THE S&P 500, 1963–2004



Source: Goldman Sachs.

As Figure 6 illustrates, a drop in correlation between REITs and equities occurred throughout the nineties. This coincided with the increase in the number, breadth, and size of the REIT sector. During this same period, REITs were becoming more diversified across property types and geographic markets. A low-interest-rate environment where relatively high-yielding assets have been in short supply has also helped REIT performance over the past several years.

Despite strong cumulative performance and low correlations with other asset classes, some argue against adding REITs to pension plans. Some investors prefer direct real estate ownership and a few contend that investors already have exposure to real estate through broad market indexes. Indeed, investors should be aware that REITs have not been entirely ignored by the major US index vendors. S&P, Russell, Dow Jones Wilshire and others have added certain REITs to their broad market benchmarks in recent years. (See Figure 7.) However, the reality is that such overlap falls far short of either the market weight or that recommended by mean-variance analysis. Investors who rely on broad-cap equity benchmarks for real estate exposure are not achieving meaningful allocations to the asset class.

The highest profile index vendor to add REITs—Standard & Poor's—first introduced equity office properties to the S&P 500 in October 2001. There is little evidence that the diversification benefit of REITs has declined as a result of being added to the S&P 500. Today, the S&P 500 provides exposure to only seven REITs.[5]

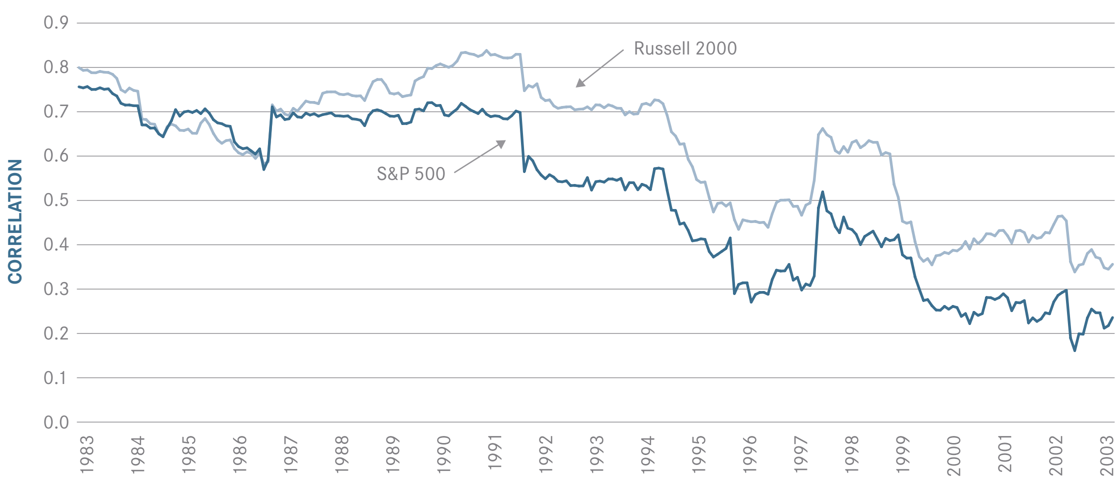
Perhaps more importantly, results of work by Ibbotson Associates suggest that REITs do, in fact, effectively push out the efficient frontier (Ibbotson Associates 2003). The study looked at returns and risk levels for a variety of the basic asset classes from 1972 to 2003, and then constructed hypothetical asset allocations for that period with a range of weightings of REITs.

Ibbotson's work demonstrated that:

- REITs have delivered an attractive risk/reward tradeoff.

Figure 6

CORRELATION OF REITS WITH US EQUITIES, 1983–2003



Source: BGI.

5 The seven REITs included in the S&P 500 are Archstone Smith (ARCH), Equity Office (EOP), Plum Creek Timber (PCL), Equity Residential (EQR), Apartment Investment (AIV), Simon Property (SPG), and Prologis (PLD).

Figure 7

REAL ESTATE EXPOSURE IN MAJOR US INDEXES (%)

Sector	S&P 500	Russell 3000	Dow Jones Wilshire 5000	Morningstar US Mkt Index	Dow Jones US Total Mkt Index
Consumer discretionary	11.56	12.57	12.95	12.98	12.76
Consumer staples	10.81	8.94	8.79	8.15	9.06
Energy	8.00	7.40	8.02	9.81	7.97
Financials	20.71	21.58	21.82	21.45	21.19
Banks	7.71	8.24	8.11	8.31	7.82
Diversified financials	7.98	7.15	6.85	6.73	7.08
Insurance	4.48	4.07	4.67	3.88	4.41
Real estate	**0.54**	**2.11**	**2.19**	**2.53**	**1.89**
Healthcare	12.59	13.08	12.77	12.69	12.72
Industrials	11.67	11.13	10.89	6.41	11.19
Information technology	15.40	15.43	15.15	16.86	15.41
Materials	3.10	3.51	3.45	4.13	3.36
Telecommunication services	3.07	2.89	2.79	3.10	2.90
Utilities	3.10	3.48	3.37	4.42	3.45
Total	100.00	100.00	100.00	100.00	100.00

Source: BGI, as of 12/31/04.

- The correlation of REIT returns with other asset classes had declined over 30 years ending in 2003.
- REITs may boost return or reduce risk when added to a diversified portfolio. (See Figure 8.)

Although this is a retrospective study, albeit over a significant period of time, it still implies that REITs have delivered an attractive risk/reward tradeoff and, therefore, can act either to increase return or reduce risk when added to a diversified portfolio.

Another helpful metric for examining the diversification opportunities afforded by REITs would be to consider the geographic dispersion of the underlying properties. Figure 9 on the following page shows the percentage distribution of the major property stocks across the US divided into metropolitan statistical areas (MSAs).

Figure 8

IMPACT OF REITS ON EFFICIENT FRONTIER, 1972–2003

	Weight (%)		
S&P 500	50	45	40
Bonds	40	35	30
T-Bills	10	10	10
REITs	0	10	20
Return (%)	**10.9%**	**11.2%**	**11.5%**
Risk (%)	**10.8%**	**10.4%**	**10.1%**

Source: Ibbotson Associates.

Figure 9

INSTITUTIONAL-QUALITY PROPERTY DISPERSION BY METROPOLITAN STATISTICAL AREA (MSA)

	Market	Apartments (%)	Industrial (%)	Office (%)	Retail (%)
1	Los Angeles	9.6	9.9	6.1	4.2
2	Chicago	5.9	9.7	6.9	6.8
3	Houston	5.4	3.5	4.6	5.0
4	Atlanta	4.3	4.0	4.1	5.0
5	District of Columbia	4.7	–	8.2	4.4
6	Dallas	4.7	3.9	4.5	3.2
7	Philadelphia	2.5	3.6	3.1	4.1
8	New York	1.8	–	10.7	–
9	Phoenix	3.2	2.2	1.9	4.3
10	Orange County	2.5	2.6	2.4	2.8
11	Detroit	2.4	3.7	2.2	1.9
12	Denver	2.0	1.9	2.5	3.1
13	San Diego	2.4	1.9	1.5	2.7
14	Seattle	2.3	2.2	2.2	1.7
15	Minneapolis	1.9	2.6	2.1	1.7
16	Boston	2.3	–	3.7	2.1
17	Oakland	1.9	2.1	1.6	–
18	Tampa	2.0	–	1.2	2.4
19	St. Louis	–	2.4	1.4	1.7
20	Baltimore	1.7	–	1.5	2.2
21	Miami	1.8	1.9	1.3	–
22	San Bernadino	–	2.0	–	2.8
23	San Francisco	1.8	–	2.8	–
24	San Jose	–	2.5	1.6	–
25	Pittsburgh	–	2.6	1.4	–
26	Cleveland	–	3.9	–	–
27	Orlando	1.7	–	–	2.1
28	Columbus	–	1.8	–	1.8
29	Kansas City	–	2.2	1.3	–
30	San Antonio	1.6	–	–	1.7
31	Cincinnati	–	2.8	–	–
32	Indianapolis	–	2.4	–	–
33	Fort Lauderdale	–	–	–	2.2
34	Fort Worth	1.8	–	–	–
35	Portland	–	1.8	–	–
36	Austin	1.7	–	–	–
37	Norfolk	–	–	–	1.7
38	Raleigh-Durham	–	–	–	1.7
	Total	**73.9**	**80.1**	**80.8**	**73.3**

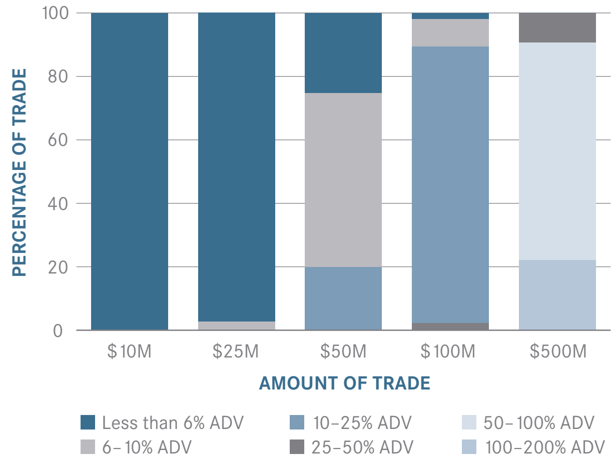
Source: Goldman Sachs, as of 9/30/03. Note: The sharp eyed will notice the relatively low percentage ascribed to apartments in New York. Rent-controlled apartments were excluded from the analysis.

The data in Figure 9 shows that 70–80% of the major institutional-quality property holdings in the US are concentrated in 38 markets. In order for a real estate investor to construct a diversified property portfolio, he or she would need more than 150 individual properties to simply have a presence in every MSA. Such a portfolio would be challenging to assemble and costly to manage. Contrast this with an investment in REITs. We examined, via a non-scientific website search, the location of properties managed by REITs to determine whether it is possible to gain some degree of exposure to the MSAs above. We discovered that every property type in every market was represented,[6] affording investors the opportunity to diversify their property exposure. Investors may also employ a targeted sector or geographic regional strategy. REITs are well suited as a completion strategy because they can plug holes in an existing concentrated physical portfolio, which is particularly useful when seeking to minimize uncompensated misfit risk relative to a real estate benchmark.

While these diversification advantages bring the institutional investor to the asset class, the liquidity of REITs make them a viable investment and attractive alternative to direct real estate investing. Indeed, institutional investors tend to be underweight real estate versus their long-run strategic real estate allocation due to the inherent time lag from first identifying direct property opportunities to ultimately funding that opportunity. One of the reasons that real estate investors are drawn to REITs is the immediacy of market exposure that can be achieved via public markets. The maturity and depth of the REIT market is such that significant investment is possible without incurring undue price impact on the underlying securities (see Figure 10). For example, a $100 million investment in REITs may be accomplished in a few days via the stock market versus a similar investment in a specific building project, which may take three to nine months or more to complete.

Figure 10

AVERAGE DAILY VOLUME CHARACTERISTICS FOR REPRESENTATIVE REIT BASKETS



Source: BGI.

REIT liquidity may not yet approach that of large-cap S&P 500 baskets, but the development of the REIT securities market has certainly improved liquidity over the last five years. The addition of REITs to the S&P index family, as well as the plethora of mutual funds and exchange-traded funds (ETFs), has further stimulated interest in the asset class and improved liquidity for all investors.

Implementing REITs in a portfolio

DIRECT PROPERTY INVESTMENT VERSUS INDIRECT (REIT) INVESTMENT

Now that REITs have grown in usage and become more commonly accepted, the question many plan sponsors face is to what extent their real estate allocation should be held via direct property vehicles versus REITs.

There are tradeoffs between direct property ownership and the ownership of a REIT.

- Control: Owning physical property gives more control (and more responsibility) to the investor, whereas an ownership of shares in a REIT

6 We used the Dow Jones Wilshire REIT Index as our universe of REITs. Note we are not claiming perfectly representative exposure to the MSA data; rather, that REITs offer well-diversified geographic exposure.

only provides indirect ownership of multiple properties. However, REIT shareholders can vote to replace property managers (which, while technically feasible, is impractical), or they can vote with their feet and sell their shares, which partially addresses this principal-agent problem.[7]

- Liquidity: REITs trade as equity on US stock exchanges. Physical property "trades" infrequently and is therefore considerably less liquid.
- Valuation: REITs are valued on a real-time market basis, whereas actual property is appraisal-based with long lags between revaluations. The seasonality and infrequency in revaluation dampens the perceived volatility of private real estate.

as the desire to invest locally or to own trophy assets. Many REITs, however, offer specialized strategies that may meet these objectives.

The key question for investors is whether the above differences between private ownership and REITs translate into superior returns.

A recent study has attempted to answer that question. Pagliari, Scherer, and Monopoli (2004) examined returns for both REITs and direct real estate over the period 1980–2001.[8] There are numerous difficulties in comparing returns of REITs and direct real estate investing. But Pagliari, Scherer, and Monopoli overcame many of those difficulties by correcting for biases in the available data set as follows:

In short, REITs can be viewed as an effective proxy for direct real estate investing. This simple yet important conclusion has profound implications for investors.

- Alignment of interests: Investing in a REIT requires an investor to have confidence in the ability of the REIT management to deliver high-quality returns. The reward structure of senior REIT managers is typically heavily influenced by equity ownership. This compensation regime encourages the management of the REIT to act in the best interests of the shareholder.
- Oversight requirements: A portfolio of REITs requires no special oversight, whereas the establishment of an in-house real estate team and/or retaining real estate advisors and consultants adds a considerable cost for the direct property investor.
- Other considerations: Direct ownership of property by institutional investors may help realize goals other than pure profit maximization, such
- Asset mix: The National Council of Real Estate Investment Fiduciaries (NCREIF) private index only considers the core property types—retail, industrial, office, and apartment properties. The NAREIT returns were recalculated excluding all REITs that did not conform to these property types (such as golf course REITs). Once the comparable constituents were identified, the relative weightings were adjusted to be the same as NCREIF. This allowed more of an apples-to-apples comparison of the returns.
- Appraisal smoothing: One of the biggest problems in comparing the returns from private real estate is that the data is based on appraisals that dampen price volatility and also smooth the return series. A de-smoothing process was applied to remove this bias. REIT indexes are market based and do not require any adjustment.

7 This is true of all equity investments.

8 Using NAREIT and NCREIF data.

- Leverage: REITs typically employ a moderate degree of leverage in their investment style, whereas the private data is simply the value of the property itself and ignores the financing decision of the investor. The effect of leverage amplifies the returns to REIT investors in both good and bad market environments, and should not be confused with the merits of the underlying properties themselves. A deleveraging transformation of REIT asset returns was made to eliminate the distorting effects of leverage.

Once the data was cleansed for these biases, the study shows that, statistically, the risk and return attributes of REITs are not dissimilar to those of direct real estate. In short, REITs can be viewed as an effective proxy for direct real estate investing.

This simple yet important conclusion has profound implications for investors. Namely, it suggests that REITS may be used as both a substitute as well as a complement for direct real estate investing. For example, the immediacy of market exposure afforded by REITs can be employed as a temporary vehicle while an investor seeks out the next shopping mall or office building. The use of REITs as a tactical asset allocation vehicle is a sensible solution that plugs any potential misweight to a strategic real estate exposure. Meanwhile, smaller pension plans may adopt REITs as the sole instrument for gaining exposure to property.

REITS AND DEFINED CONTRIBUTION PLANS

With institutional investors accepting the merits of REITs as a viable alternative—or complement—to direct real estate investment, it is likely that we will see greater inclusion of REITs in 401(k) plans, a cornerstone of US retirement saving.

Real estate options within 401(k) plans have lagged the acceptance of real estate within defined benefit plans, with only 15.6% of 401(k) plans offering a real estate option (Profit Sharing/401(k) Council of America 2004). It is not unusual for 401(k) plans to lag the defined benefit market in terms of plan structure, which is one reason DC plans have underperformed DB plans. Increasingly however, we are seeing 401(k) committees considering REITs for their menu of available options.

One of the objections to adding real estate to defined contribution plans is that participants are perceived to already have significant exposure to real estate through homeownership. However, Goodman (2003) finds that the correlation between owner-occupied housing and REITs is low (see Figure 11), reinforcing the case for a REIT allocation. This finding holds for all levels of homeownership in a personal portfolio.

The sector weightings for REITs are markedly different from homeownership. Office and industrial properties exhibit very different cyclical behavior

Figure 11

CORRELATIONS AMONG OWNER-OCCUPIED HOUSING AND REITS AND MAJOR ASSET CLASS

	Housing	REITs	Large-cap equity	Small-cap equity	Bonds
Housing	1.00				
REITs	–0.06	1.00			
Large-cap equity	–0.26	0.24	1.00		
Small-cap equity	–0.05	0.36	0.67	1.00	
Bonds	0.13	0.17	–0.10	–0.22	1.00

Source: Goodman (2003) .

than house prices, and we should not be surprised at the lack of correlation because of the different fundamental forces driving these sectors.

More recent work by Waggle and Johnson (2004) builds upon the analysis by considering mortgage loans and the implicit dividend of rent avoidance in owning a home. They found that REIT returns are virtually uncorrelated with housing prices and that diversification benefits exist to holding REITs even when explicitly allowing for homeownership and mortgage liability in the asset allocation decision.

In addition, it is important not to confuse retirement assets and personal assets. Retirement assets provide positive income for retirement. A home may not provide income but it does provide an implicit dividend. Individual investors should generally think about their retirement assets separately from the roof over their heads. This research indicates that the level of homeownership does not diminish the attractiveness of REITs in an efficiently allocated portfolio.

The future of REITs

The success of REITs in the US has led other countries to create similar real estate vehicles. The UK government is currently in a consultation phase with the real estate industry to introduce REITs in late 2005. The remaining G7 countries all have some form of REIT structure in place. A report by Ernst & Young shows that 19 countries have either enacted or proposed legislation to allow tax-exempt REIT structures (Ernst & Young 2004).

Just as equity and fixed income investors have embraced the idea of international equities and bonds as separate asset classes, it will likely not be long before investors consider international real estate in the same manner. For example, the closed-end ING Clarion Real Estate Income Fund listed in February this year after raising $1.35 billion from investors.[9] It is clear that globally, real estate investors are increasingly looking overseas to enhance returns and increase diversification. For example, Australian funds acquired approximately US$1.6 billion of US retail properties in 2003, up from just $145 million in 2002.

REITs themselves are embracing overseas expansion with Prologis, AMB, Chelsea, Westfield and others, all making significant overseas investments in recent years. Furthermore, recent tax treaty ratifications between the US and Japan, Germany and the UK have all increased the attractiveness of dividend-paying assets to investors from those countries.

We believe that similar arguments for investing in overseas property exist for domestic property. From the perspective of a US investor, there are several international equity property benchmarks, such as the Dow Jones Global Real Estate, EPRA/NAREIT Global Real Estate, S&P/Citigroup World Property Index, and the GPR 250 Property Index that can be utilized to develop a policy framework.[10]

The benchmark decision

Understanding the nuances of a given benchmark is vital if informed decision making is to occur. We highlight the major REIT indexes in Part Two of this paper to aid investors with such deliberations.

Public property indexes based on equity REITs offer real-time estimates of property values that are desirable from an asset allocation perspective. A recent study suggests that of the 119 dedicated real estate funds in the US, responsible for approximately $86 billion or REIT shares, 40% are benchmarked to the Wilshire Real Estate Securities

9 See www.amex.com, ticker IGR.

10 See www.propertyshares.com.

Index, with approximately 30% benchmarked to the NAREIT index, and 30% benchmarked to the Morgan Stanley REIT Index (Taylor 2005).

Private property indexes, such as the NCREIF property index, suffer from appraisal smoothing and other issues—construction flaws that make it inappropriate for typical efficient frontier analysis (since volatility is artificially depressed by the appraisal smoothing). The private indexes are, by construction, uninvestable. They are interesting for peer comparison purposes, but only within the real estate asset class. Combining returns that have been smoothed with other asset classes that do not imbed such smoothing techniques produces somewhat spurious results.

We compare the US and global REIT indexes in Part Two of this publication to help investors select a sensible benchmark for publicly traded real estate.

Conclusion

Real estate has long played an important role in the portfolios of institutional investors, and is widely accepted as a means for providing diversification benefits. While the debate about the merits of direct versus indirect investing will continue, recent analysis indicates that REITs are an effective proxy for traditional physical real estate. Furthermore, evidence suggests that individual investors, via their DC plans, should also consider an allocation to real estate, something that REITs can facilitate with ease.

The growth of REITs is testament to the ability of their management to deliver equivalent or superior returns to their private competitors.[11] This fact, when combined with the liquidity and pricing transparency of REITs, provides a powerful argument for the use of REITs within any investor's portfolio.

11 If REIT returns were persistently below their private counterparts, then we may have expected the REIT concept to wither under the weight of competition.

PART TWO:
A guide to REIT indexes

This section presents a brief introduction to the various families of REIT indexes along with annotated tables of characteristics for the leading series of each family. For additional clarity, qualitative ratings have been added to select tables to reflect our perceived effectiveness of an index relative to the attribution being evaluated. For example, in the completeness of coverage section, an index receiving a rating of five denotes the index has exceptional coverage and is close to representing a true market portfolio as described by the capital asset pricing model. Conversely, a rating of one would denote the index is very limited in scope and may not be representative of the broad market.

US indexes

NAREIT

Members of NAREIT—the National Trade Association for REITs and publicly traded real estate companies—are real estate investment trusts and other businesses that own, operate, and finance income-producing real estate, as well as those firms and individuals who advise, study, and service these businesses.[12] Given NAREIT's strong connections to the REIT industry, it is no surprise their indexes are among the more comprehensive in terms of depth and extent of history available. NAREIT offers indexes for: All REITs, Equity REITs, Mortgage REITs, and Hybrid REITs currently trading on a major US exchange. See also EPRA/NAREIT Global Index on the following page for their global exposure.

MORGAN STANLEY

The Morgan Stanley REIT Index is a market-float-adjusted total-return index of REITs that meet certain liquidity requirements. The index was designed to track the total return performance of a broad group of equity REITs, and is maintained in accordance with prescribed criteria that govern index additions and deletions. While Morgan Stanley is one of the largest global real estate investment managers, distribution and maintenance is handled by the index division, which is also responsible for the more widely known international benchmarks, the MSCI EAFE Index and MSCI ACWI.

12 See www.nareit.com for more information.

S&P

The S&P REIT Composite is differentiated from other REIT indexes primarily by its committee-based construction methodology. While there are loose criteria for index membership, additions and deletions are at the discretion of the Standard & Poor's Index Committee, which meets on an as-needed basis. The S&P REIT Composite is comprised of approximately 80% of the US REIT market capitalization. While mortgage and hybrid REITs are currently among index constituents, S&P plans to phase out these REIT classes as opportunity permits.

COHEN & STEERS

The Cohen & Steers Realty Majors Index is a modified capitalization-weighted index of select equity REITs. The index seeks investment results that correspond strictly to large, actively traded US REITs. As such, the index is among the more narrow of REIT indexes, consisting of only 30 constituents.

DOW JONES

Dow Jones offers two distinct real estate–related indexes: Dow Jones REIT Composite Index and the Dow Jones Real Estate Index, an industry subset of their Total Market Index. While there is much overlap between the two indexes, the Dow Jones Real Estate Index is the broader of the two, because it encompasses both REITs and companies involved in the real estate business.

WILSHIRE

Wilshire offers two very similar indexes: the Wilshire Real Estate Securities Index and the Wilshire REIT Index. Each index is a broad measure of publicly traded real estate securities, and each dates back to 1978. The chief difference between these two indexes is the handling of real estate operating companies (REOCs). The three REOCs tracked by Wilshire are included in the Real Estate Securities Index and contribute less than 10% of the overall index's weight. The day-to-day maintenance and distribution of this index is handled by Dow Jones & Company.

Global indexes

GLOBAL PROPERTY RESEARCH

Global Property Research is part of Kempen & Co. The purpose of the GPR General Index is to reflect the performance of the full global universe of property companies. The GPR 250 index is designed to reflect the 250 most liquid property companies worldwide. The narrowest index, the GPR 15, reflects the most liquid property companies in Europe.

FTSE EPRA/NAREIT GLOBAL

Constructed through a partnership between FTSE, EPRA and NAREIT, this global index is designed to reflect the stock performance of companies engaged in specific aspects of the North American, European, and Asian real estate markets.

S&P CITIGROUP WORLD PROPERTY

Constructed through a partnership between Standard & Poor's and Citigroup, this index takes a top-down approach to constructing a broad benchmark representing companies involved in a wide array of real estate–related activities. The flexibility of the S&P/Citigroup index series makes it possible to segment the index by region, subindustry, market cap, or any other conceivable investor need.

Other noteworthy indexes

NCREIF

The NCREIF Index is an index of real estate properties held for tax-exempt institutional investors by the members of NCREIF. This index aims to reflect the population of properties held by NCREIF members. While exceptionally comprehensive, the NCREIF Index is not a suitable benchmark for the index investor, since many of the index constituents are not easily traded.

13 See www.propertyshares.com for more information.

INDEXES BY FAMILY

The following table is provided as a supplement to the previously mentioned index families. The major indexes of each family are shown along with the number of constituents in each subset and the relative weight versus the family.

It should be noted the indexes shown here are not the sole subsets of their respective family. Many of these families can be grouped into a number of various subindexes. The ability to divide an index into subgroups is very important from an indexing perspective and thus is discussed in further detail in the Accuracy and Completeness of Data section on page 29.

Family	Indexes	Constituents	Weight in family
NAREIT	All REITs	173	100%
	Equity REITs	146	91%
	Mortgage REITs	20	6%
	Hybrid REITs	7	2%
Morgan Stanley	RMS index	115	100%
S&P	S&P REIT	100	100%
Cohen & Steers	Realty Majors	30	100%
Dow Jones	Total Market Index Real Estate Securities	77	100%
	Dow Jones REIT	104	100%
	Equity REITs	91	91%
	Mortgage REITs	12	8%
	Hybrid REITs	1	1%
Wilshire	Real Estate Securities	93	100%
	REIT	115	100%
Global Property Research	GPR 250	250	100%
FTSE EPRA/NAREIT Global	Global	229	100%
	North America	114	55%
	Asia	45	24%
	Europe	70	21%
S&P Citigroup World Property	Global	350	100%
	North America	157	49%
	Asia	110	32%
	Europe	83	19%

Source: NAREIT, as of 12/31/04.

Subindexes

In addition to constituent size, index diversification can come in the form of industry exposure weights and concentrations in REIT types. Following is a description of the various types of REITs, along with a table showing the relative index exposure to each.

- Equity REITs derive income directly from the ownership of various real estate properties. They are by far the most common type of REIT and hence comprise most of the weight in the indexes under review. Cohen & Steers as well as Morgan Stanley indexes invest only in equity REITs.
- Mortgage REIT revenues come from directly lending to borrowers or by acquiring mortgage loans on the secondary market. Of the indexes that have exposure to mortgage REITs, only the NAREIT and Dow Jones Real Estate indexes have index criteria that allow this REIT type to be added in the future.
- Hybrid REITs are a cross between equity and mortgage REITs. Hybrids are only allowed in the NAREIT and Dow Jones indexes.
- Real estate operating companies engage in the development, management, or financing of real estate. This REIT type is unique in that it trades more like traditional securities.

Below, indexes are shown with respect to their industry exposure. For ease of comparison, and because it is the broadest in scope, industry classification is determined according to NAREIT standards, based on available information pertaining to a company's gross invested book assets.

	Wilshire Real Estate Securities	Dow Jones Real Estate	Cohen & Steers	S&P REIT Composite	NAREIT All REIT	Morgan Stanley REIT
Type						
Equity	92%	89%	100%	97%	81%	100%
Hybrid	0%	2%	0%	2%	2%	0%
Mortgage	0%	6%	0%	1%	9%	0%
REOC	8%	3%	0%	0%	8%	0%
Concentration						
Apartments	17%	15%	16%	17%	13%	17%
Commercial financing	0%	1%	0%	0%	2%	0%
Diversified	7%	11%	7%	9%	9%	7%
Freestanding	0%	0%	0%	1%	1%	1%
Healthcare	0%	4%	2%	5%	4%	5%
Home financing	0%	5%	0%	1%	6%	0%
Hotel	11%	4%	4%	3%	9%	5%
Industrial	8%	7%	10%	8%	6%	8%
Manufactured homes	1%	0%	0%	1%	1%	1%
Mixed	4%	3%	5%	4%	3%	4%
Office	22%	18%	18%	18%	17%	20%
Regional malls	14%	13%	19%	14%	11%	14%
Shopping centers	13%	10%	13%	12%	9%	13%
Specialty	0%	4%	0%	5%	4%	1%
Storage	4%	4%	5%	4%	3%	4%

Source: NAREIT, as of 12/31/04.

Return and correlation

The following correlation matrix shows how various REIT indexes perform relative to one another. The principle theory behind allocating investments across various indexes is to diversify risk.

Unfortunately, if the correlation between invested indexes is very high, the overall portfolio diversification is most likely not as beneficial as would have been desired.

	Wilshire Real Estate Securities	Dow Jones Real Estate	Cohen & Steers	S&P REIT Composite	NAREIT All REIT	Morgan Stanley REIT	S&P 500	Russell 2000
Correlation: 1999–2004 Monthly returns								
Wilshire Real Estate Securities	1.00							
Dow Jones Real Estate	0.99	1.00						
Cohen & Steers	0.98	0.98	1.00					
S&P REIT Composite	0.99	0.98	0.99	1.00				
NAREIT All REIT	0.99	0.99	0.98	0.99	1.00			
Morgan Stanley REIT	0.99	0.98	0.99	0.99	0.99	1.00		
S&P 500	0.27	0.30	0.21	0.22	0.24	0.22	1.00	
Russell 2000	0.37	0.39	0.30	0.34	0.38	0.35	0.69	1.00
Annual returns 1999–2004								
1999	–3.2%	–5.3%	–1.3%	–5.5%	–6.5%	–4.6%	21.0%	21.3%
2000	30.7%	27.5%	31.0%	28.9%	25.9%	26.8%	–9.1%	–3.0%
2001	10.5%	11.8%	10.3%	14.2%	15.5%	12.8%	–11.9%	2.5%
2002	2.7%	3.6%	3.3%	4.2%	5.2%	3.6%	–22.1%	-20.5%
2003	37.1%	36.9%	37.5%	36.1%	38.5%	36.7%	28.7%	47.3%
2004	34.8%	31.2%	36.0%	31.8%	30.4%	31.5%	10.9%	18.3%
Cumulative	17.65%	16.60%	18.39%	17.24%	17.14%	16.85%	1.25%	8.92%

Sources: Wilshire, Dow Jones, Cohen & Steers, Standard and Poor's, NAREIT, MSCI, Russell, Bloomberg.

Index returns are for illustrative purposes only and do not represent actual Fund performance. Index performance returns do not reflect any management fees, transaction costs, or expenses. Indexes are unmanaged and one cannot invest directly in an index. Past performance does not guarantee future results.

Characteristics of indexes

Fundamental ratios provide a simple and useful means of comparing investment choices. Of particular interest to REIT investors is the index's dividend yield—the anticipated return from cash payments made by underlying securities. All indexes under evaluation compare similarly on this basis, although Wilshire Real Estate Securities has a slightly lower yield due its to REOCs holdings, which are not required to pay out operating income.

The following table is a matrix of index predicted tracking error (PTE). All PTEs are derived via Barra Aegis Portfolio Manager, a system that compiles security characteristics such as those shown above.

	Wilshire Real Estate Securities	Dow Jones Real Estate	Cohen & Steers	S&P REIT Composite	NAREIT All REIT	Morgan Stanley REIT
Market capitalization ($000s)						
Weighted average	5536.2	5104.6	6676.1	4893.5	3713.6	4726.7
Median	1526.5	2240.9	3484.5	1515.7	778.0	1288.8
Dividend yield (%)	4.65	5.05	4.59	5.10	5.12	5.02
Price/earnings	31.83	24.84	29.45	28.91	14.58	30.31
P/E using FY1 estimate	14.42	13.90	14.31	14.14	13.76	14.00
P/E using FY2 estimate	13.39	13.03	13.41	13.27	12.59	13.03
Price/cash flow	12.68	12.48	12.63	12.37	11.11	12.37
Price/book	2.70	2.98	2.84	2.66	5.39	2.77
Price/sales	4.15	4.32	5.05	4.68	2.75	4.60
Hist 3-year sales growth (%)	7.80	10.30	8.33	8.55	11.48	8.40
Hist 3-year EPS growth (%)	–5.69	–4.13	–3.98	–7.01	–0.30	–6.92
Est 3–5 year EPS growth (%)	6.81	6.62	6.67	6.13	7.34	6.24
Return on assets (%)	2.65	3.11	3.12	3.19	2.79	2.90
Return on equity (%)	7.35	9.15	8.53	8.43	9.23	7.43
Operating margin (%)	30.85	40.81	42.73	41.38	35.31	39.87
Net margin (%)	16.87	19.98	21.57	20.30	17.42	19.15
Long-term debt/capital	58.27	57.88	57.35	56.79	57.47	57.42

Source: FactSet, as of 12/31/04.

	Wilshire Real Estate Securities	Dow Jones Real Estate	Cohen & Steers	S&P REIT Composite	NAREIT All REIT	Morgan Stanley REIT	S&P 500	Russell 2000
Predicted tracking error (%)								
Wilshire Real Estate Securities	0.00							
Dow Jones Real Estate	1.84	0.00						
Cohen & Steers	2.52	2.19	0.00					
S&P REIT Composite	1.86	1.19	2.39	0.00				
NAREIT All REIT	2.00	1.33	2.96	1.15	0.00			
Morgan Stanley REIT	1.68	1.32	2.42	0.90	0.98	0.00		
S&P 500	10.90	11.04	11.38	11.46	11.41	11.47	0.00	
Russell 2000	12.75	12.89	13.82	13.21	12.60	12.98	9.63	0.00

Source: Barra Aegis Portfolio Manager, as of 12/31/04.

Global indexes: allocation by country

The following table illustrates index concentration for the global indexes. Again, country of exposure is determined in accordance with NAREIT methodology. In aggregate, the GPR 250 has greater exposure to Asia. Given the index methodology for selecting constituents that exhibit higher monthly trade volumes, we can extrapolate that this region has a developed REIT market.

Country	GPR 250 (%)	FTSE EPRA/NAREIT Global (%)	S&P/Citigroup World Property (%)
Australia	7.31	8.33	12.68
Austria	0.51	0.42	0.84
Belgium	0.47	0.41	0.61
Canada	1.70	1.78	1.53
Chile	0.00	0.00	0.00
Denmark	0.00	0.01	0.00
Finland	0.14	0.10	0.13
France	3.73	2.42	2.43
Germany	0.45	0.55	0.55
Greece	0.00	0.00	0.05
Hong Kong	13.32	7.28	9.18
Italy	0.25	0.45	0.55
Japan	8.22	7.61	9.12
Malaysia	0.00	0.00	0.00
Netherlands	2.80	2.96	2.38
New Zealand	0.10	0.00	0.18
Philippines	0.51	0.00	0.00
Singapore	1.37	0.80	2.70
South Africa	0.34	0.00	0.00
Spain	0.79	0.61	1.02
Sweden	1.22	1.35	1.19
Switzerland	0.66	0.50	0.44
United Kingdom	8.85	10.84	9.67
United States	47.26	53.57	44.75

Sources: Global Property Research, FTSE EPRA/NAREIT, S&P/Citigroup, as of 12/31/04.

Completeness of index coverage

Much of the theoretical basis for indexing as an investment strategy relies on the index fund representing the "market portfolio." Under the conditions of the capital asset pricing model, the market portfolio is mean-variance efficient (meaning that no other portfolio can achieve a higher expected return without taking on more risk). However, these stringent conditions do not need to hold for the market portfolio to provide vitally useful information. Specifically, the market portfolio is the opportunity set for all investors, so that the return on this portfolio is a valid benchmark for strategies that invest in companies of all sizes. Moreover, the aggregate return on all managed funds—before subtracting transaction costs and management fees—must necessarily sum to the return on the market portfolio because active management is a zero-sum game.

While real estate is a narrowly defined market segment, there can still be significant variation among constituent companies. The handful of REITs with market capitalizations greater than $5 billion tend to perform quite differently from smaller REITs, which may be excluded from more narrowly defined indexes. Therefore, it is important to understand the depth of the index being considered as an investment vehicle.

Family	Rating	Comments
NAREIT	5	98% of US REITs market; excludes real estate operating companies (REOCs)
Morgan Stanley REIT	3	75% of US REIT market capitalization
S&P REIT Composite	3	75% of US REIT market capitalization
Cohen & Steers Realty Majors	1	45% of US REIT market capitalization
Dow Jones Real Estate	4	77% of US REIT market capitalization and 95% (by design) of float-adjusted US market capitalization
Wilshire Real Estate Securities	4	75% of US REIT market capitalization; includes REOCs
GPR 250	3	Coverage varies, constituency based on traded volume
FTSE EPRA/NAREIT Global	5	Marketed as representing 100% of the Global REIT market
S&P/Citigroup World Property	4	97% of US REIT market capitalization; based on coverage of the S&P Broad Market Index

(Rating 5 = best)

Index exclusions

Often what an index excludes can be instrumental to understanding its depth and characteristics. The following table shows there is little variation in screens designed to exclude companies with smaller market capitalization. Rather, the most differentiating index exclusion rule is the REIT type: equity, hybrid, mortgage, or REOC.

Family	Rating	Exclusions	Maximum number of constituents
NAREIT	5	Real estate operating companies (REOCs); companies that trade on the NASDAQ SmallCap list or that trade over the counter	None
Morgan Stanley REIT	3	Companies with security prices in excess of $5,000; stocks not belonging to the MSCI US Investable Market 2500 Index	None
S&P REIT Composite	3	REOCs, Mortgage, and Hybrid REITs; any REIT not trading on a major exchange; companies with market capitalization of under $100 million; companies not meeting S&P's liquidity and financial viability criteria	100
Cohen & Steers Realty Majors	1	REOCs, Mortgage, and Hybrid REITs; companies with market capitalization of under $500 million and those with an average trading volume under 600 thousand shares per month	30
Dow Jones Real Estate	4	Companies not in the top 95% of the float-adjusted investable universe	None
Wilshire Real Estate Securities	4	Mortgage and Hybrid REITs; companies with market capitalization under $100 million	None
GPR 250	2	All REITs that rank higher than 250 in terms of monthly trading volume	250
FTSE EPRA/NAREIT Global	4	Any open-ended company that is not listed on an official exchange	None
S&P/Citigroup World Property	4	Any company with a float-adjusted market capitalization under $100 million	None

(Rating 5 = best)

Investability of stocks in the index

The ideal index contains only stocks that are fully "investable." That is, it should be possible for fund managers to construct a full-replication index fund containing all of the stocks in the index at their market-capitalization weights. There is, however, a tradeoff between breadth of market coverage and the investability of the stocks in an index. Very broad indexes such as the NAREIT include many small stocks that are difficult to trade. Thus an index that is slightly narrower in scope could potentially have advantages over broader indexes. Conversely, indexes that are concentrated in only a few names implicitly force fund managers to direct a larger portion of a portfolio's demand to fewer names.

The implications of these conflicting views can be best illustrated by reviewing the rank of the Cohen & Steers Realty Majors Index in the following tables. Cohen & Steers ranks high from a qualitative perspective because the index is comprised of the 30 largest, most liquid stocks. However, when equal amounts of money are invested in each of the indexes, the buying pressure on those 30 names causes far higher implementation cost in the Cohen & Steers Index.

Family	Rating	Comments
NAREIT	3	Methodology stipulates liquidity screen that removes extremely illiquid names; hence, index contains names that are moderately difficult to buy and sell
Morgan Stanley REIT	3	Methodology stipulates liquidity screens that remove extremely illiquid names; hence, index contains names that are moderately difficult to buy and sell
S&P REIT Composite	3	Methodology stipulates liquidity screens that remove extremely illiquid names; hence, index contains names that are moderately difficult to buy and sell
Cohen & Steers Realty Majors	5	Contains primarily larger companies that can be readily traded
Dow Jones Real Estate	3	Methodology stipulates liquidity screens that remove extremely illiquid names; hence, index contains names that are moderately difficult to buy and sell
Wilshire Real Estate Securities	3	Methodology stipulates liquidity screens that remove extremely illiquid names; hence, index contains names that are moderately difficult to buy and sell; REOCs, making up 10% of index, tend to be more tradable than other REIT classes
GPR 250	5	Index is designed to consist of the 250 most liquid property companies worldwide; therefore, names are relatively easy to buy and sell
FTSE EPRA/NAREIT Global	3	Contains many smaller, less liquid issues that can be difficult to buy and sell
S&P/Citigroup World Property	2	Contains many smaller, less liquid issues that can be difficult to buy and sell; median market cap is roughly half that of the FTSE EPRA/NAREIT index

(Rating 5 = best)

Liquidity

The following table looks at the basis point impact of implementing a US$50, $100, and $500 million strategy for each of the respected indexes. Impact is calculated by taking the average of total value at risk and projected impact cost as reported by StockFacts Pro.

Family	Rating	$50 million strategy (bps)	$100 million strategy (bps)	$500 million strategy (bps)
NAREIT	5	25.0	38.5	84.0
Morgan Stanley REIT	2	25.5	40.5	89.0
S&P REIT Composite	4	24.5	39.0	85.5
Cohen & Steers Realty Majors	1	34.0	52.0	114.0
Dow Jones Real Estate	5	22.5	35.5	80.0
Wilshire Real Estate Securities	3	23.5	37.5	83.0

(Rating 5 = best)

Source: Citigroup—StockFacts PRO.

Float adjustment of market-capitalization weights

All other things being equal, a "float-adjusted" index is more investable.

Many companies have shares outstanding that are illiquid (and do not "float" freely) because they are held in large blocks by private individuals (typically founders, their family members, corporate officers, directors, and government entities); corporations other than investment management organizations; and other groups that trade infrequently. These shares are not available to the general public through the open market. If a large number of managers try to hold the full, rather than the float-adjusted, weight in such a company, the shares may be in short supply.

Generally, it is better that such shares be removed for the purpose of calculating the weights of companies in an index. An index that is float adjusted in this way better represents the assets available for investment and improves the ability of both index funds and active managers to track the index. However, the total capitalization of a company (before removing closely held shares) more accurately represents the market's assessment of the value of the company's assets available for generating earnings, and consequently of the company's importance in the economy. Therefore, some investors prefer indexes based on total capitalization.

Family	Rating	Comments
NAREIT	5	Float adjusted to restrict cross holdings, as well as strategic, government, employee, and family holdings
Morgan Stanley REIT	3	Float adjusted to restrict corporate holdings, as well as government, employee, and family holdings
S&P REIT Composite	3	No float adjustment
Cohen & Steers Realty Majors	1	Modified capitalization weighted to limit a single holding to no more than 8% of total index weight
Dow Jones Real Estate	5	Float adjusted to restrict blocks of 5% or more held by other companies (including banks, life insurance companies, pension funds), governments, individuals or families, or restricted shares
Wilshire Real Estate Securities	3	Float adjusted to restrict corporate holdings, as well as government, employee, and family holdings
GPR 250	5	Float adjusted to restrict cross holdings, as well as strategic and government holdings in excess of 10% of total shares outstanding
FTSE EPRA/NAREIT Global	5	Float adjusted to restrict cross holdings, as well as strategic, government, employee, and family holdings
S&P/Citigroup World Property	5	Float adjusted to restrict government and cross holdings, as well as private blocks in excess of 10% of total capital, and other legally restricted shares

(Rating 5 = best)

Objective, published rules

Index construction rules should be objective, transparent, clearly communicated, and publicly available. When these criteria are met, investors and investment managers are able to forecast upcoming changes in an index (especially important for large rebalances and reconstitutions), making indexed and active portfolio management much easier. Establishing publicly available rules governing the creation and maintenance of indexes reduces the risk of interested parties influencing constituents.

Family	Rating	Comments
NAREIT	4	Minimal rules that are straightforward and objective; publicly available at www.nareit.com
Morgan Stanley REIT	3	Index methodology is available at www.msci.com
S&P REIT Composite	1	Index construction is somewhat subjective, leaving room for the Index Committee to apply its judgment; methodology is available at www2.standardandpoors.com
Cohen & Steers Realty Majors	3	Index construction rules are straightforward and objective; methodology is available upon request only
Dow Jones Real Estate	5	Index construction rules are straightforward and objective; publicly available at www.djindexes.com
Wilshire Real Estate Securities	3	Index construction rules are straightforward and objective; publicly available at www.wilshire.com
GPR 250	4	Methodology and construction rules available at www.propertyshares.com
FTSE EPRA/NAREIT Global	5	Index construction rules are straightforward and objective; publicly available at www.epra.com, www.nareit.com, and www.ftse.com
S&P/Citigroup World Property	4	Index methodology is based on clearly defined rules; publicly available at www.globalindices.standardandpoors.com

(Rating 5 = best)

Accuracy and completeness of data

Daily, electronic data feeds containing index data are vital to the investment manager's portfolio management process, and are also valuable to investors, researchers and others. The data need to be very high quality with very low error and recalculation rates. Relevant data that are needed on a daily basis include:

- Total return
- Price return
- Constituent list (a list of the stocks in the index)
- Weight of each stock in the index
- Price of each stock in the index

It is also very useful for an index to be divided into subgroups by size (capitalization), classification (equity, mortgage, hybrid, REOC), and region. Finally, historical data is valuable in proportion to the length and quality of the data history as well as ease of access.

Total return indexes are particularly important to the REIT investor. This is because a large portion of real estate investment's return comes in the form of a cash dividend as opposed to capital appreciation. An index's total return should be constructed with dividends reinvested into the entire index on the ex-dividend date.

Family	Rating	Comments
NAREIT	3	Index history is available from 1972; returns can be found at www.nareit.com/nareitindexes/web1.htm
Morgan Stanley REIT	1	Index history is available from 1994; monthly, quarterly, yearly returns available in conjunction with monthly email containing index constituents
S&P REIT Composite	4	Index history is available from 1994; returns can be found at www2.standardandpoors.com
Cohen & Steers Realty Majors	3	Index history is available from 1998
Dow Jones Real Estate	4	Index history is available from 1991; returns can be found at www.djindexes.com/jsp/globalIndexes.jsp
Wilshire Real Estate Securities	4	Index history is available from 1978; returns are publicly available on a daily basis using Wilshire's "Index Return Calculator" at www.wilshire.com/Indexes/calculator
GPR 250	3	Index history is available from 1989; returns can be found at www.propertyshares.com/member/indices/index250Index.jsp
FTSE EPRA/NAREIT Global	4	Index history is available from 1989; returns can be found at www.nareit.com/nareitindexes/index-g.cfm
S&P/Citigroup World Property	4	Daily file information available; files use sedols for security identification; this is superior because sedols are not recycled across world exchanges; daily returns available at www.globalindices.standardandpoors.com/sandp/index

(Rating 5 = best)

Acceptance by investors

Investors generally prefer a benchmark that is well known in their community. This gives them comfort in the ongoing integrity of the index and in the ability to make peer group comparisons. Name recognition of the index provider and quantity of products available to investors (index funds, exchange-traded funds [ETFs], and derivatives such as futures and options) aid in increasing an index's acceptance.

Family	Rating	Comments
NAREIT	1	Due to lack of liquidity, few funds have elected to use this index as a benchmark of fund performance; that said, NAREIT is the dominant group in terms of global real estate research and is highly respected in this regard
Morgan Stanley REIT	4	Several major money managers offer products benchmarked to this index
S&P REIT Composite	4	S&P is an exceptionally respected name in the indexing arena
Cohen & Steers Realty Majors	4	Several major money managers offer index, allocated and ETF products benchmarked to this index
Dow Jones Real Estate	3	This is a well-known name in the indexing community; ETF product is available to track this index
Wilshire Real Estate Securities	4	Both ETF products and index funds are available to track this benchmark

(Rating 5 = best)

Summary of ratings

Family	Completeness of coverage	Investability of index	Float adjustment	Published rules	Accuracy and completeness	Acceptance by investors
NAREIT	5	1	5	4	3	1
Morgan Stanley REIT	3	3	3	3	1	4
S&P REIT Composite	3	3	3	1	4	4
Cohen & Steers Realty Majors	1	5	1	3	3	4
Dow Jones Real Estate	4	3	5	5	4	3
Wilshire Real Estate Securities	4	3	3	3	4	4
GPR 250	3	5	5	4	3	2
FTSE EPRA/ NAREIT Global	5	3	5	4	4	3
S&P/Citigroup World Property	4	2	5	4	4	2

(Rating 5 = best)

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