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NATIONAL ASSOCIATION OF
REAL ESTATE INVESTMENT TRUSTS®

January 30, 2007

Office of Regulations & Interpretations
Employee Benefits Security Administration
Room N-5669
Department of Labor
200 Constitution Avenue, N.W.
Washington, D.C. 20210

Attention: 401(k) Plan Investment Advice RFI

Dear Ladies & Gentlemen:

I. INTRODUCTION & SUMMARY

A. NAREIT & The REIT Industry

The National Association of Real Estate Investment Trusts, or NAREIT, is the worldwide representative voice for U.S. real estate investment trusts (REITs) and other publicly traded real estate companies. Members include REITs and other businesses that own, operate, and finance income-producing real estate,[1] as well as those firms and individuals who advise, study, and service those businesses.

Congress created REITs in 1960 so that average investors could invest in the asset class of income-producing real estate through the purchase of equity. A REIT is a company that owns and usually operates income-producing real estate, or finances income-producing real estate, and that meets certain requirements under the Internal Revenue Code. REITs invest in virtually all forms of real estate including office buildings, shopping centers and malls, warehouses, and residential apartments. REIT shares are often publicly traded (currently, about 190 REITs trade on one of the major stock exchanges), and these REITs have the same corporate governance structures as other publicly traded companies. REIT investment returns are comprised of dividend income and moderate, long-term capital price appreciation. Those returns are influenced by typical real estate fundamentals such as tenant occupancy rates and level and growth of rents, as well as the equity market's assessment of asset class, industry and

[1] For purposes of this paper, "real estate" means all real estate with the potential to generate outside income and/or revenue, including many property types such as office buildings, retail properties, apartment units and industrial facilities.

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property-specific risks and earnings and operational cash flow expectations.

Tens of thousands of individual investors, in the U.S. and abroad, own real estate shares. Pension funds, endowments, insurance companies (through both general accounts and separate account structures), bank collective investment trusts, and mutual funds also invest in real estate, both directly and through REITs. Because investing in REITs provides real estate portfolio diversification with more liquidity than direct real estate investments, it is a particularly convenient form of real estate investing for individual account, participant-directed pension plans, such as 401(k) plans. Indeed, individual-account pension plans often invest in publicly-traded REITs either directly or through REIT mutual funds. As of September 30, 2006, Morningstar tracked 341 public mutual funds devoted to or significantly invested in REITs, and at least four mutual fund sponsors offer REIT index or exchange-traded funds.

B. New ERISA Sections 408(b)(14) and 408(g)(3)

ERISA's prohibited transaction rules generally prevent an investment advisor from providing advice to participant-directed, individual account plan participants respecting investment funds that are sponsored or managed by that same advisor or its affiliates. The recently enacted Pension Protection Act of 2006 (the PPA), however, creates a new statutory exemption, ERISA section 408(b)(14), that allows investment advisors to participant-directed plans to receive otherwise prohibited compensation under certain circumstances.

Under new ERISA section 408(g), a fiduciary investment advisor may give investment advice to plan participants in a manner that is exempt under ERISA section 408(b)(14) if the advice is provided through utilization of a "certified" computer model. New ERISA section 408(g)(3)(B) sets forth five requirements respecting the structure and operation of such computer model, and new ERISA section 408(g)(3)(C) requires the Secretary to prescribe regulations governing utilization of such computer models. NAREIT requests that the regulations provide guidance regarding these five requirements for a certifiable computer model.

C. NAREIT's Request Respecting the Investment Advice Exemption Regulations

NAREIT believes that the Secretary's investment advice exemption regulations should include specific guidelines respecting the performance standards that a computer model will need to meet in order for such computer model to be eligible to be "certified" by an investment expert, as provided for in ERISA section 408(g)(3)(C). NAREIT further believes that in order for a computer model to be "certifiable," it must treat real estate as an asset class and be able to provide portfolio recommendations that include real estate. More particularly, NAREIT makes the following three requests:

1 NAREIT requests that the Secretary's regulations recognize that real estate is a separate asset class under generally accepted investment theories, and provide that a computer model must be able to offer portfolio recommendations that include real estate in order to

be certifiable. (The decision whether actually to include real estate as an investment option available under a plan will continue to reside with the plan's named fiduciary or trustee. But a "certifiable" computer model should necessarily have the capability to consider real estate when preparing individual portfolio allocation recommendations.)

2 NAREIT requests that the Secretary's regulations further recognize that a "certifiable" computer model can satisfy the requirement that it be capable of providing real estate investment recommendations by offering such recommendations in the form of publicly-traded real estate securities; *i.e.*, through recommendations respecting REIT shares. Publicly-traded real estate securities are a liquid form of real estate investment that is priced on a real-time basis pursuant to capital market pricing. Real estate securities should be recognized as an appropriate form of real estate investment for participant-directed plans, and therefore it is most sensible to allow certifiable computer models to satisfy a requirement that they have the performance capability to make real estate asset class investment recommendations by analysis and use of real estate securities.

3 NAREIT requests that the Secretary's regulations require that the mandated disclosures to plan participants respecting a "certified" computer model include the disclosure that real estate is a separate asset class, and that the computer model will be able to consider participant preferences for and make portfolio recommendations within the real estate asset class.

II. DISCUSSION

A. The Investment Advice Regulations Should Require That "Certifiable" Computer Models Take Account Of All Generally-Accepted Asset Classes

New ERISA section 408(g)(3)(B) permits a computer model to be used in connection with the provision of investment advice under the ERISA section 408(b)(14) exemption if it contains a variety of design and operational features. Among these requirements is the need for such computer model to include, *inter alia*, the following feature:

> Applies generally accepted investment theories that **take into account** the historic returns of different asset classes over defined periods of time." See ERISA section 408(c)(3)(B)(i).[Emphasis added]

The fundamental precept of generally accepted investment theory is that investors should ***diversify*** among distinct asset classes in order to maximize risk-adjusted return—that is, to maximize investment returns consistent with the level of portfolio risk that each investor is comfortable assuming. See Markowitz, "Portfolio Selection: Efficient Diversification of Investments" (John Wiley & Sons, 1959). As noted investment expert Robert D. Arnott has emphasized, "(T)he power of *true* diversification should not be underestimated as a means to sustain long-term real spending power at modest risk. The classic 60/40 balanced portfolio is not

true diversification. … True diversification involves seeking out uncorrelated or lightly correlated *risky* markets, not low-risk markets."[2]

During hearings on the PPA, the Senate Committee on Finance recognized that "diversification of assets is a basic principle of sound investment policy,"[3] and in the Senate Report on S. 1953, which was a Senate version of what eventually became the PPA, the Finance Committee recognized a clear link between investment advice and the need for individual account plan participants to efficiently diversify their portfolios. The Committee noted that "awareness of investment principles, including the need for diversification, is fundamental to making investment decisions consistent with long-term retirement income security."[4]

This statutory requirement that "certifiable" computer models be able to "appl[y] generally accepted investment theories that take into account . . . different asset classes" is, in essence, a requirement that the computer models encourage, and allow participants to achieve, efficient diversification in their investment portfolios. It reflects a congressional purpose to exempt investment advisors from otherwise applicable conflict of interest rules under ERISA only if their advice is delivered through protocols that encourage and increase the prospect of efficient portfolio diversification.

Accordingly, NAREIT believes that the Secretary's investment advice exemption regulations should make clear that for a computer model to be "certifiable" the model must be able to recognize all generally-accepted asset classes and must have the ability to recommend individualized portfolios that allocate assets to all such classes. Requiring that a certifiable computer model be able to provide for portfolio recommendations throughout all generally-accepted asset classes will further the congressional objective of portfolio diversification and ensure that the model can address all of the likely investment options actually offered by an employer under its individual account plan. By virtue of that capability, the application of the computer model may steer employers into recognizing the virtue of constructing their plan's investment option set to include all generally-accepted asset classes to the extent existing options are too limited. Such a mandate also would be consistent with other language in the statutory exemption, and the sound policy objective of encouraging greater plan participation levels through potentially higher risk-adjusted returns in individual account plans. See ERISA section 408(g)(3)(B)(ii).

B. Real Estate is a Separate Asset Class Under "Generally Accepted Investment Theories"

By any reasonable measure of generally-accepted investment theory, a separate asset class is determined by its expected return pattern. A form of investment is considered a separate asset class if its expected return is high enough on average, *and* has a low enough covariance with the

[2] Robert D. Arnott, "Editor's Corner," *Financial Analysts Journal*, 2006.
[3] S. Rep. No. 174, 109th Cong., 1st Sess. 9 (2005).
[4] *Id*. at 30.

other asset classes in the portfolio, to yield overall portfolio gains from diversification.[5] A portfolio with appropriate allocations to each of the generally accepted investment asset classes is *efficient* in the sense that risk-averse investors can be expected to realize higher returns with the low level of portfolio risk that they prefer, while risk-tolerant investors can be expected to realize lower volatility in their investment portfolio with the high level of returns that they seek.

The four asset classes that are generally accepted as the fundamental building blocks of a well-diversified investment portfolio are 1) *cash*; 2) *bonds*; 3) *equities*; and, 4) *real estate*. The importance of real estate as one of the four fundamental asset classes stems from its correlation with other asset classes as well as its average return and volatility:[6]

- Over the last 30 years the coefficient of correlation between real estate and the other asset classes has been just 0.49 with equities, 0.17 with bonds, and -0.06 with cash.
- The average annual return on real estate investments over the same 30-year period has been 16.5 percent compared to 13.6 percent for equities, 9.7 percent for bonds, and 6.1 percent for cash.
- The standard deviation of annual returns on real estate investments over those 30 years has been 14.6 percent compared to 15.6 percent for stocks, 12.3 percent for bonds, and 3.1 percent for cash.

The strong returns on real estate investments and the low correlations between real estate and other asset classes mean that portfolios with appropriate allocations to real estate can be expected to produce higher returns with no increase in portfolio risk compared to portfolios with no real estate component. According to an attached study conducted by Ibbotson Associates and Morningstar, for example, adding real estate to portfolios of stocks, bonds, and cash improved returns by an average of almost 20 percent (11.77 percent per year with real estate compared to 9.86 percent per year without real estate) without increasing portfolio risk at all.[7]

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[5] As one author explains, "Modern portfolio theory…shifted the focus of attention away from individual securities and toward a consideration of the portfolio as a whole. The notion of diversification had to be simultaneously reconsidered. Optimal diversification goes beyond the idea of simply using a number of baskets in which to carry one's eggs. *Major emphasis must also be placed on finding baskets that are distinctly different from one another*. That is important because each basket's unique pattern of returns partially offsets the others, with the effect of smoothing overall portfolio volatility. … (M)odern portfolio theory stresses that it is wise to invest in a broad array of diverse instruments. These concepts were later given legislative endorsement in the Employee Retirement Income Security Act of 1974, which stressed the importance of diversification within a broad portfolio context." Roger C. Gibson, *Asset Allocation: Balancing Financial Risk*, New York: McGraw-Hill, 2000 (emphasis added). *See also* preamble to the Default Investment Alternatives under Participant Directed Individual Account Plans, 71 Fed. Reg. 56806 (proposed September 27, 2006) (to be codified at 29 C.F.R. pt. 2550).

[6] These figures reflect the following indexes: 1) Real estate returns are represented by the FTSE NAREIT Equity REIT Index; 2) Equity returns are represented by the Standard & Poor's 500® index; 3) Bond returns are represented by the Ibbotson 20-year U.S. Government Bond index; and, 4) Cash returns are represented by 30-day U.S. Treasury bills.

[7] "Commercial Real Estate: The Role of Global Listed Real Estate Equities in a Strategic Asset Allocation," prepared by Thomas Idzorek (Ibbotson Associates) and Michael Barad and Steve Meier (Morningstar Financial

Perhaps even more importantly, the average annual return on real estate investments and the low correlations between real estate and other asset classes mean that *retirement* portfolios with appropriate allocations to real estate are more likely to ensure adequate *sustainable withdrawal rates* for retirees. That is, real estate helps to reduce the "probability of asset exhaustion" (sometimes called the "risk of consumption shortfall" or "ruin risk"), which is the risk that the retiree will outlive his or her retirement portfolio and be left with no income other than Social Security payments and, perhaps, a defined-benefit pension. A second study conducted by Ibbotson Associates, for example, concludes that sample portfolios invested 20 percent in real estate (in the form of REIT stock) extend by between two and seven years the number of years that a retiree would be reasonably confident of maintaining a desired withdrawal rate.[8]

Although academic research on sustainable withdrawal rates, risk of consumption shortfall, and ruin risk remains in its early stages, a few recent studies provide independent support for the importance of real estate in helping retirees avoid the risk of asset shortfall:

- "We find that addition of REITs in a withdrawal portfolio increases the probability a portfolio will be able to successfully fund the withdrawals. … One of the most surprising results from adding REITs to the portfolio is the improved success rate of the withdrawals as more REITs are added to the portfolio. … (F)or every withdrawal rate and withdrawal period, we find that as we increase the weight of REITs in the portfolio, the success rate never decreases, and usually increases. … (T)he largest jump occurs when the portfolio weight of REITs increases from 10 to 20 percent. This increase in the portfolio weight of REITs increases the success rate of the withdrawal portfolio by 1 to 3 percent depending on the withdrawal rate and withdrawal period. … For most withdrawal rates and withdrawal periods, a portfolio consisting of 64 percent equity, 16 percent long-term corporate bonds, and 20 percent REITs appears to provide the highest success rate."[9]

- A study using German data reached a similar conclusion finding that the "probability of consumption shortfall" declined from 14.18 percent to 0.15 percent when a 60-year-old increased his/her real estate allocation from 20 percent to 90 percent; from 17.50 percent to 2.16 percent when a 65-year-old increased real estate from zero percent to 65 percent; and from 21.39 percent to 7.14 percent when a 70-year-old increased real estate from zero percent to 15 percent.[10]

Communications), September 28, 2006. Figures are from Table 5, based on historical returns during the period 1990-2005.

[8] "Real Estate Investment Trusts," prepared by Ibbotson Associates, September 2006. Figures are from page 3 of the attached extract.

[9] Danny M. Ervin and Joseph C. Smolira, "REITs and Diversification in a Retirement Withdrawal Portfolio," working paper (2006) available at http://www.fma.org/SLC/Papers/REITandRetirementWithdrawals.pdf.

[10] Peter Albrecht and Raimond Maurer, "Self-Annuitization, Consumption Shortfall in Retirement and Asset Allocation: The Annuity Benchmark," working paper (2002) available at http://insurance.bwl.uni-mannheim.de/download/extern/mm/mm138.pdf.

- One study illustrated "a method for finding an optimal investment and distribution strategy for an individual retiring with a pool of assets and both fixed and indexed annuities." The results suggested that 24 percent of the portfolio should be invested in REITs.[11]

Princeton University Professor Burton G. Malkiel sums up the importance of real estate as one of the four fundamental asset classes and as a critical part of any well-diversified investment portfolio: "I believe in broad diversification, not only *in* a stock portfolio, but I also think that investors need to diversify *among asset categories*. I suggest that you not only buy stocks, but you want bonds, you want *real estate* and you want cash."[12] This position is supported by countless other academic economists and investment industry professionals:

- Nobel Prize-winning economists such as Robert F. Engle III, Robert C. Merton, Harry M. Markowitz, and William F. Sharpe, as well as pathbreaking finance economists such as Eugene Fama and Kenneth French, have all recognized real estate as a separate asset class.[13]

- According to the attached sponsored report conducted by *Institutional Investor*, "(f)or years, many large institutional investors have been skeptical about real estate's role as a distinct asset class. Today, that skepticism has been replaced by recognition of the positive impact that real estate can have on their portfolios."[14]

- According to the Pension Real Estate Association, pension funds on average have increased their investments in real estate in every year since 2000 and more than 40

[11] K. David Jamison, Watson Wyatt & Company, with Weldon A. Lodwick and Guerin Olsen, "A Method for Finding an Optimal Investment and Distribution Strategy for an Individual Retiree," unpublished manuscript, October 12, 2003 available at http://www-math.cudenver.edu/ccm/reports/rep204.pdf.
[12] Interview with *Registered Rep—The Source for Investment Professionals*, May 1, 2003 (emphasis added). *See also* Burton G. Malkiel, *The Random Walk Guide to Investing*: "Basically, there are only four types of investment categories that you need to consider: Cash, Bonds, Common stocks, and Real estate." W.W. Norton & Company (2005) at 11
[13] Engle excluded real estate investment trusts from a study of equity prices, "Impacts of Trades in an Error-Correction Model of Quote Prices" (Robert F. Engle and Andrew J. Patton), *Journal of Financial Markets* 7:1-25 (2004). Fama and French do the same in numerous papers including "Common Risk Factors in the Returns on Stocks and Bonds," *Journal of Financial Economics* 33:3-56 (1993). Merton distinguished real estate from stock and bond investments in "On Estimating the Expected Return on the Market," *Journal of Financial Economics* 8:323-361 (1980). Markowitz characterized "stocks, bonds, cash items and real estate [other than the familys' home(s)]" as a "sufficient" list of assets in "Individual versus Institutional Investing," *Financial Services Review* 1:1-8 (1991). Sharpe distinguished real estate from equities, fixed income instruments (bonds), and cash equivalents in "Budgeting and Monitoring Pension Fund Risk," *Financial Analysts Journal* 58:74-86 (2002).
[14] Marilen Cawad, "Real Estate: The Fourth Asset Class," sponsored report prepared by *Institutional Investor* Special Project Department (November 2006).

percent intend to increase their investment allocation to real estate over the next few years.[15]

- The web site of Vista Capital Partners Inc. includes the following advice on Portfolio Construction: "Asset classes typically include equities (stocks), fixed income (bonds), real estate (REITs) and cash. Each of these core asset classes possesses valuable characteristics, such as growth potential, income generation, inflation protection and capital preservation. The low correlation among these asset classes makes them primary building blocks for a diversified portfolio. The work of Nobel Prize-winning financial economists demonstrates that combining such asset classes in a diversified portfolio results in higher returns with less risk as compared to non-diversified portfolios."[16]

- Investment web site SmartMoney.com agrees that "Real estate returns tend not to be highly correlated with stock and bond performance."[17]

Many other academic economists also have emphasized the role of real estate as a distinct asset class deserving a significant share in an optimal investment portfolio:

- "First, … real estate constantly had positive allocations over time periods ranging from 5 to 25 years, and for most levels of portfolio return, irrespective of whether real estate is used to enhance returns or reduce risk. Secondly, *the benefits from including real estate in the mixed-asset portfolio tend to increase as the investment horizon is extended*."[18]

- "Real estate's role extends from the lowest-risk end of the efficient frontier to just past the midpoint of the mixed-asset efficient frontier. This makes sense, as *real estate is both a low-risk asset itself and an excellent risk reducer (when added to) a stock and bond portfolio*."[19]

- "If the characteristics of real estate…are expected to continue in the future, this study shows they can make *a major risk adjusted return contribution to a mixed-asset portfolio*."[20]

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[15] "An International Comparative Study of the Pension Plan Community and Real Estate Investments" (October 2006) and "Institutional Perspectives on Real Estate Investing: The Role of Risk and Uncertainty" (May 2005).
[16] Vista Capital Partners Inc, "Portfolio Construction," available at http://www.vistacp.com/investment/portfolio-construction
[17] Elizabeth Harris, "A Solid Foundation," January 16, 2004.
[18] Stephen Lee and Simon Stevenson, "Real Estate in the Mixed-Asset Portfolio: The Question of Consistency," *Journal of Property Investment and Finance* 24:123-135 (2006) (emphasis added).
[19] Susan Hudson-Wilson, Frank J. Fabozzi, and Jacques N. Gordon, "Why Real Estate?" *Journal of Portfolio Management* special real estate issue:12-27 (2003) (emphasis added).
[20] Andrew G. Mueller and Glenn R. Mueller, "Public and Private Real Estate in a Mixed-Asset Portfolio," *Journal of Real Estate Portfolio Management* 9:193-203 (2003) (emphasis added).

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- "We find that the correlations between property share returns and common stock returns show a similar declining trend in both (the U.S. and the United Kingdom), indicating *increased mixed-asset diversification potential for property shares*."[21]

- "Overall, *including real estate in the mixed-asset portfolio appears to offer an improvement in terminal wealth* and a reduction in terminal wealth standard deviation (*i.e.*, risk) compared with the base portfolio [without real estate]."[22]

- "In general, *real estate securities seem to represent an asset class distinct from bonds and stocks* in most countries. In the long run they seem to reflect the performance of direct real estate investments *and provide a potential for further diversification of asset portfolios*. Additionally, real estate stocks provide a (weak) hedge against consumer price inflation in almost every country," including the United States.[23]

- "Of the various assets tested, commodities and precious metals, and equity REITs (a proxy for real estate) are the two asset classes that possess desirable properties in terms of the timing of their respective economic benefits. … The results suggest that these two assets provide insurance against deterioration in consumption opportunities.[24]

Finally, Attachment A quotes from some of the established investment literature presenting advice on retirement investing and asset allocation for general readership, and emphasizing the role of real estate as one of the core asset classes.

Three of the four fundamental asset classes—bonds, equities, and real estate—are often divided into narrower asset groupings: for example, bonds may be divided into corporate and government bonds; equities may be divided into large-capitalization and small-capitalization stocks, value or growth stocks; real estate may be divided into direct and indirect holdings; and each class may also be divided into domestic and international instruments.

It is important to recognize, however, that these narrower asset groupings do not necessarily constitute separate asset classes, in the sense that they do not necessarily have clearly distinct expected return patterns. As an illustration, the division between corporate and government bonds is not based primarily on differences in return patterns: the correlation between the

[21] Dirk Brounen and Piet Eichholtz, "Property, Common Stock, and Property Shares," *Journal of Portfolio Management* special real estate issue:129-137 (2003) (emphasis added).
[22] Peter Byrne and Stephen Lee, "The Impact of Real Estate on the Terminal Wealth of the UK Mixed-Asset Portfolio," *Journal of Real Estate Portfolio Management* 11:133-146 (2005) (emphasis added).
[23] Peter Westerheide, "Cointegration of Real Estate Stocks and REITs with Common Stocks, Bonds and Consumer Price Inflation—An International Comparison," working paper (2006) available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=927712. (emphasis added)
[24] Jarjisu Sa-Aadu, James D. Shilling, and Ashish Tiwari, "Portfolio Performance and Strategic Asset Allocation Across Different Economic Conditions," working paper (2006) available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=890816.

Citigroup Long-Term High-Grade Corporate Bond Index and the 20-year U.S. Treasury bond, for examples, was an almost-perfect 95 percent over the period 1988-2005. Similarly, returns to large-capitalization U.S. equities, small-capitalization U.S. equities, and international equities are all quite similar: the correlation between large-cap stocks and small-cap stocks, for example, was 78 percent over the same time period, and the correlations of both these equity groupings with international stocks were about 63 percent over the same period.[25]

These narrower asset groupings merely provide a convenient way of limiting the full set of investment options in an asset class to a subset for focused attention. For example, equity analysts do not attempt to evaluate stocks of all companies in the U.S. Instead, an equity analyst may focus on companies in a given sector of the economy (*e.g.*, retailing), or may specialize in analyzing companies with other characteristics (*e.g.*, mid-cap growth companies).

Asset groupings, then—whether they are in the form of "characteristic boxes," "style boxes," indexes or funds—represent not asset classes but a convenient way of grouping assets for the purposes of analysis and selection. As C. Thomas Howard (Professor of Finance, University of Denver) and Craig T. Callahan (President of ICON Advisers) caution, "Size and value/growth characteristic boxes, while representing well recognized equity characteristics, *satisfy none of the criteria for being considered an asset class*."[26] Howard and Callahan analyze indices of returns for equities grouped by size and find that "in all cases, the index returns are highly correlated, both among sizes and with the market as a whole. The average correlation is an astonishing 0.922." They also analyze indices defined by value/growth characteristics and find, "Once again, correlations are consistently high with an average correlation of 0.8, indicating that value and growth stocks move largely in tandem."

Howard and Callahan conclude, "We have demonstrated that size and value/growth characteristic boxes do *not* represent unique asset classes, and that an investor is not well served by using them for constructing and managing an equity portfolio. … We estimate CBs' (characteristic boxes') risk reduction potential to be roughly one seventh that of traditional asset classes. The lack of a CB diversification benefit is evident across decades, countries, and information services. … The fact that it's inherently difficult to categorize stocks as cleanly as one can stocks and bonds is a strong argument against CB's being thought of as a set of asset classes. Combining this with the fact that CB's provide little diversification benefit to the investor and we come to the conclusion that US equities should be thought of as a single asset class."[27]

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[25] For purposes of these measurements, returns to large-cap stocks are represented by the Standard & Poor's 500® index, returns to small-cap stocks are represented by the Russell 2500 index, and returns to international stocks are represented by the Morgan Stanley Capital International (MSCI) Europe, Australasia, and Far East (EAFE®) index.
[26] C. Thomas Howard and Craig T. Callahan, "Characteristic Boxes Are Not Asset Classes," Athena Investment Services (2005). Emphases in this and subsequent quotes are original.
[27] *See also* C. Thomas Howard and Craig T. Callahan, "The Characteristic Grid is Not Part of Modern Portfolio Theory," Athena Investment Services (2005).

Contrasting the results of these analyses with the findings of investment industry professionals and academic economists respecting the investment characteristics of real estate emphasizes the importance of real estate as a distinct asset class, one whose inclusion in the investment portfolio may dramatically improve risk-adjusted returns. In short, the weight of the accumulated evidence makes it impossible to consider as "generally accepted" any set of investment options that does not include all four of the fundamental asset classes: cash, bonds, equities, and real estate.

C. The Investment Advice Regulations Should Require that "Certifiable" Computer Models Recognize Real Estate As a Separate Asset Class, And Possess the Capability to Analyze Real Estate And Make Portfolio Recommendations That Include Real Estate

Because real estate is deemed a separate asset class under any reasonable determination of "generally accepted investment theories," NAREIT requests that the investment advice regulations clarify that in order for a computer model to be certifiable by an "eligible investment expert," the model must recognize real estate as an asset class, and have the capability to analyze real estate investment options, and recommend individual pension account portfolio investments, that include allocations to a plan's real estate investment options.
Given that real estate is one of the four main asset classes and an important building block for an efficiently diversified portfolio, it is eminently sensible for the Department to construct guidelines for a "certifiable" computer model that require such models to have the ability to analyze and construct portfolio recommendations that include real estate. In light of Congressional intent respecting diversification, it would be inappropriate for the Department to leave a key diversification building block out of the mix of mandated capabilities of a certifiable computer program.

A regulatory requirement that "certifiable" computer models include real estate as an asset class, and possess the capability to process a plan's real estate investment option and make real estate investment recommendations, is consistent with the statutory exemption requirement that plan fiduciaries maintain sole discretion in deciding which asset classes, and investment options within those classes, to include in their individual account plans. See ERISA section 408(g)(3)(B)(iii), (v). NAREIT's requested requirement still would leave to the appropriate plan fiduciary the decision whether to offer a real estate investment option, and such requirement would not require computer models to provide real estate investment recommendations in the absence of a real estate investment option actually contained in the plan.

Requiring a computer model to account for real estate as an asset class merely will ensure that for those fiduciaries that do include a real estate option, the computer model is able to handle it. In the absence of requiring a "certifiable" computer model to include and have the capability to construct an individual portfolio that includes real estate, plan fiduciaries who already have real estate as an option or would be inclined to include real estate as an option, and plan participants who wish to have a real estate investment option, may be dissuaded from retaining or providing

such option because a computer model that is otherwise attractive fails to include this "generally accepted" asset class.

Congress certainly did not intend in crafting the exemption to have performance limitations in the computer model drive the asset class offerings of plan fiduciaries. Rather, if a plan fiduciary were interested in having real estate as an investment option and chose to retain an advisor to provide advice through use of an exempted computer model, following NAREIT's recommendation will assure that the model chosen by that fiduciary sponsor would be able to accommodate that preference.

Moreover, requiring a "certifiable" computer model to possess the capability to consider and make recommendations respecting real estate also is consistent with the additional exemption requirement that the computer model "utilize *relevant information about the participant*, which may include the participant's age, life expectancy, retirement age, risk tolerance, *other assets* or sources of income and *preferences as to certain types of investments." See* ERISA Section 408(g)(3)(B)(ii)(emphasis added). Without the capability to consider and make portfolio recommendations that include real estate, the computer model will be unable to provide advice that truly takes account of a participant's investment strategy and preferences.
It is reasonable to assume that many individual account plan participants will prefer investment in real estate for a portion of their retirement portfolio (assuming real estate is offered), and the computer model needs to have the ability to factor in real estate in order to account for a participant's risk tolerances and investment preferences, and to determine the best asset allocation for a specific individual consistent with those preferences.

D. **<u>The Benefits of Requiring "Certifiable" Computer Models to Take Account Of All Generally-Accepted Asset Classes, And Possess the Capability to Analyze Real Estate As a Separate Asset Class, Will Far Outweigh Any Short-Term Costs</u>**

NAREIT believes that the benefits to participants in individual account plans from a requirement that "certifiable" computer models recognize all generally-accepted asset classes, including real estate, and have the ability to recommend individualized portfolios that allocate assets to such classes far outweighs the short-term costs to embed computer models with such capability, if indeed there were any material costs at all.

The benefits are straightforward: a computer model that recognizes all generally-accepted asset classes, including real estate, will enable each plan participant to identify the best possible allocation of his or her investment portfolio among all of the asset classes and investment options that are available under the plan. While straightforward, this benefit is not likely to be small: over an investment horizon that may stretch five decades for many participants, a retirement portfolio that can be invested in all four core asset classes—stocks, bonds, cash instruments, and real estate—is likely to provide much greater sustainable retirement income than one owned by a retirement investor who is prevented from investing in real estate, and as noted in Section II.B

above, inclusion of real estate is likely to substantially increase the sustainable retirement income withdrawal rate for individual account plan portfolios.

A presentation by Ibbotson Associates based on the Ibbotson-Morningstar study, for example, includes an illustration comparing the risk and return of two hypothetical portfolios, one that is restricted to stocks and bonds and another that includes real estate.[28] The comparison shows that the investment of one-fifth of the portfolio into real estate over the period 1990-2005 would have had no effect on the overall volatility (a factor usually cited as a key indicia of risk) of the hypothetical portfolio, but would have increased its average returns by more than 11 percent, to 10.7% per year with real estate compared to just 9.6% per year without real estate. Over the typical investment horizon (employment plus retirement) of most workers, a difference in average annual returns of this scale is very considerable: after 70 years, for example, the investment portfolio whose choices included real estate would be worth twice as much as the portfolio that was restricted to stocks and bonds.

The difference in potential retirement assets between a portfolio that includes real estate and one from which real estate is excluded is even greater if the historical data are used to identify *optimal* asset allocations. The attached Ibbotson Associates presentation shows, for example, that an optimized portfolio with a standard deviation of just 10% (*i.e.*, even less volatile than the portfolios assumed in the illustration cited above) would have earned 11.73% per year during 1990-2005, compared to just 9.91% per year for an optimized portfolio that did not include real estate as an option.[29] As before, this 18 percent increase in average annual returns—with no difference in portfolio risk—would have a dramatic effect over a worker's entire investment horizon: after just 40 years the portfolio that included real estate would be twice as large as the portfolio from which real estate was excluded.

Crucially, these studies make clear that inclusion of real estate in a balanced individual account plan portfolio will create greater retirement wealth without increasing portfolio risk, due to the low correlation between real estate investments and stock, bond, or cash investments. Different segments of the stock market tend to move fairly closely together: for example, the correlation between the supposedly different "value" and "growth" components of the Russell 2000 stock market index is 78.4%--high by any standard—and the correlation between the "value" and "growth" components of the Standard & Poor's 500® index is even higher at 79.8%.[30] This means that it is difficult or impossible for retirement investors to achieve *efficient* diversification within the stock market asset class, or indeed using any combination of investments that covers only the stock, bond, and cash asset classes.

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[28] "The Role of Global Listed Real Estate Equities in a Strategic Asset Allocation," prepared by Ibbotson Associates, November 2006. Figures are from page 2 of the attached extract, based on historical returns during the period 1990-2005.

[29] Ibid. Figures are from page 3 of the attached extract.

[30] Figures are based on the Russell 2000 Value, Russell 2000 Growth, S&P Barra 500 Value, and S&P Barra 500 Growth indices for the period 1993-2006.

The inclusion of real estate as an investment option, by contrast, has the potential to generate substantially larger retirement savings relative to a portfolio that is no less risky but does not include real estate. Even for small retirement portfolios the difference can easily amount to hundreds of thousands of dollars over just a few decades. As an illustration, assume that two workers contribute $1,000 every year toward retirement and use the optimal asset allocation identified in the Ibbotson presentation for the same level of portfolio risk, except that one is able to invest in real estate and the other is not. After just 30 years the unrestricted portfolio would be worth $100,000 more than the restricted portfolio: that is, the worker who had been permitted to invest in real estate would have amassed some $320,000 in retirement savings whereas the worker who had been permitted to invest only in stocks, bonds, and cash instruments would have amassed only about $220,000.

Finally, it is useful to note an additional benefit of the requirement that computer models be capable of taking into account all generally-accepted asset classes, including real estate, in order for it to qualify under ERISA section 408(g)(3)(B). The fiduciary has a responsibility to provide for a set of investments from among which each plan participant can select a prudent asset allocation. To the extent that a computer model fails to include the full set of generally-accepted asset classes, including real estate, the fiduciary may have to supplement the investment advice generated by the computer model with supplemental advice explaining the importance of investing in *additional* asset classes in order to achieve efficient portfolio diversification. Such an approach would be inherently costly and confusing.

Accordingly, the proposed requirement would make it easier for the fiduciary to meet its prudence obligation by directing plan participants to a single integrated source of investment advice that can help plan participants of *any* age, life expectancy, risk tolerance, asset/income situation, or preference achieve efficient diversification in his or her retirement portfolio. In contrast, NAREIT anticipates that the costs to computer model programmers to embed certifiable models with the ability to make real estate investment allocation recommendations should be very small, quite short-term in duration, and far outstripped by the long-term value of the benefits. NAREIT expects that most currently existing computer models that would otherwise qualify under Section 408(g)(3)(B) would already have the capability of addressing real estate as an asset class. In general, the requirements enumerated in the statute generally describe a computer model that is sophisticated in its ability to incorporate relevant information about participants with generally accepted investment theories and objective criteria to formulate individualized investment advice, and it seems unlikely that any computer model so sophisticated in its other elements would fail to have the capability of taking into account an asset class as large and important as real estate.

More importantly, any computer model would generally be developed under the assumption that it would be applied, with modifications as appropriate, to serve customers under many different retirement plans and/or under a given retirement plan that might well change over time. That is, any computer model will likely have been developed with the capability of taking into account, analyzing, and presenting a variety of investment options regardless of the set of options that are

included in a given plan as of a given date. It is likely, then, that market forces would encourage the development of computer models capable of presenting real estate as an asset class, in the event that a plan provider elects to include real estate as an investment option under the plan.

For this reason, NAREIT anticipates that the costs associated with requiring that a "certifiable" computer model recognize real estate as a separate asset class, and possess the capability to analyze real estate and make portfolio recommendations that include real estate, will be minor, while the benefits of such a requirement are likely to be large even for each individual retirement investor.

E. The Investment Advice Regulations Should Recognize that "Certifiable" Computer Models Can Satisfy Capability Requirements Respecting Real Estate By Offering Such Recommendations in the Form of Publicly-Traded Real Estate Securities

Since real estate securities offer liquidity and, in publicly-traded form, true and objective capital market pricing, it has been the primary form of real estate investing made available by individual account plan fiduciaries to participants who direct the investment of their accounts. In recognition of the accessibility of real estate securities, David Swensen, Chief Investment Officer overseeing more than $18 billion in endowment assets at Yale University, recommends a "basic formula" for individual investors that allocates 20 percent of the investment portfolio to real estate, specifically in the form of REITs.[31]

In light of the suitability and popularity of real estate securities as a form of real estate investing for participant-directed account plans, for the reasons stated below NAREIT further believes that the investment advice regulations should make clear that computer models can satisfy a capability requirement to consider and analyze real estate as an asset class, and provide portfolio recommendations that include real estate, if the model is capable of analyzing publicly-traded real estate securities and making portfolio recommendations for participants that include such real estate form.

First, academic economists and industry professionals recognize that real estate securities are not merely an industrial sector within the category of stock investment, but rather a form of real estate investment. They also recognize that real estate securities—generally in the form of REIT shares—provide liquidity and pricing characteristics that make it an eminently suitable form of real estate investing for accounts in a defined contribution plan, which often are not sufficiently large in size to allow easy access to this distinct asset class.

[31] Interview on National Public Radio's "All Things Considered," October 5, 2006. See also David F. Swensen, *Unconventional Success: A Fundamental Approach to Personal Investment*, New York: Free Press, 2005 at 34.

- IBM, the largest private-sector 401(k) plan provider in the United States, says "*We are committed to REITs* as a core asset class for defined contribution plans…."[32]

- Barclays Global Investors emphasizes that "*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.[33]

- The best-selling investment guide *Investing for Dummies* recommends that "quality real estate investment trusts (REITs)…are infinitely better alternatives (than direct real estate investment through limited partnerships). REITs, unlike limited partnerships, are also completely liquid."[34]

- Other books on retirement investing and asset allocation for general readership also specifically mention REIT stocks as a particularly good way for most individuals to invest in real estate:

    - "The emergence of the real estate investment trust (REIT) asset class over the past 20 years has made it possible for smaller investors to enjoy the benefits of owning an interest in a diversified portfolio of real estate. Now even the smallest retail investors can include a REIT mutual fund among their holdings and have the positive diversification of real estate."[35]

    - "The vast majority of wealth advisors recognize REITs as a separate asset class and tend to include it in most people's portfolios."[36]

    - "The goal of diversification is to improve the balance between risk and return in your investment portfolio. Historically, diversifying to include more than just a single type of investment (such as U.S. stocks, U.S. investment-grade bonds, and REITs) has achieved this goal."[37]

    - Several personal finance books make specific recommendations regarding the share of the individual's investment portfolio that should be allocated specifically to REITs:

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[32] R.L. Vivian, Managing Director, IBM, letter to Congressman Jon Porter contained in "H.R. 1578, Real Estate Investment Trusts [REITs]: Can They Improve the Thrift Savings Plan?", hearing before the Subcommittee on the Federal Workforce and Agency Organization, 1st Sess., 109th Cong. At 116 (April 19, 2005) (emphasis added).
[33] Corin Frost, Amy Schioldager, and Scott Hammond, "Real Estate Investing the REIT Way: A Guide to REIT Benchmarks and Investing," *Investment Insights* 8 (2005) (emphasis added).
[34] Eric Tyson, *Investing for Dummies* (3rd edition) Hoboken: Wiley Publishing, Inc. (2003) at 245.
[35] Richard Imperiale, *The Micro Cap Investor: Strategies for Making Big Returns in Small Companies*, John Wiley & Sons (2005) at 47.
[36] Russell Wild, *Exchange-Traded Funds for Dummies*, For Dummies (2006) at 185.
[37] Marvin Appel, *Investing with Exchange-Traded Funds Made Easy*, FT Press (2006) at 113.

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- Marvin Appel[38] recommends a "one-decision" asset allocation with 20 percent of the portfolio invested specifically in REITs or, for "less conservative investors," with 29 percent (two-sevenths) of the portfolio invested specifically in REITs.

- Ben Stein and Phil DeMuth[39] describe "a pretty good income allocation" of 20 percent invested specifically in REITs.

- Raymond J. Lucia[40] recommends "20 percent of the entire portfolio" invested specifically in REITs.

- Sheryl L. Rowling[41] outlines four portfolio asset allocation strategies, each with 10 percent invested specifically in REITs.

- Steve Vernon[42] suggests allocating 10 percent specifically to REITs for portfolios that include real estate investments.

Second, real estate securities possess similar low correlation attributes as direct real estate investments, and provide a natural form of investment portfolio diversification for the long term investor, such as an individual account pension plan investor. Every asset class displays unique return characteristics and price volatility, and correlation measures the extent to which different asset class returns move together over time. Diversifying across different asset classes with relatively low correlations means that as certain asset classes under-perform the market, the less correlated alternative asset classes will typically outperform the market or at least stabilize the portfolio. Investment attributes of REITs include long term performance, reliable and significant current income which grows over time, and protection from inflation in addition to mere portfolio diversification.

As a result, numerous studies show that real estate securities are a particularly attractive form of real estate investment to increase return when added to a portfolio, because they are relatively uncorrelated with the returns of other stocks and bonds. Morningstar, Inc. Senior Analyst Meg Ryan, for example, notes that "Real estate stocks do not move in lockstep with the rest of the market, and that makes them good portfolio diversifiers."[43] Numerous academic researchers reach the same conclusion:

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[38] Ibid. 104-124.
[39] *Yes, You Can Be A Successful, Income Investor: Reaching for Yield in Today's Market!*: *Reaching for Yield in Today's Market*, New Beginnings Press (2005) at 59.
[40] *Buckets of Money: How to Retire in Comfort and Safety*, John Wiley & Sons (2004) at 215.
[41] *Tax and Wealth Strategies for Family Businesses*, CCH (2006) at 220.
[42] *Live Long and Prosper: Invest in Your Happiness, Health and Wealth for Retirement and Beyond*, John Wiley & Sons (2004) at 190.
[43] "Real Estate Trusts Keep Winning: Analysts Still Counsel Using Them for Portfolio Diversity," *Washington Post* January 15, 2006.

- "REITs compare favorably with stocks. Our findings suggest that *equity REITs can enhance the risk-return relationship of an investment portfolio* and should be considered as a major asset class just like stocks or bonds."[44]

- "REITs are increasingly seen as an attractive addition to the mixed-asset portfolio. … The findings show that REITs' attractiveness as a diversification asset increases as the holding period increases. In addition, their diversification qualities span the entire efficient frontier, providing return enhancement properties at the lower end, switching to risk reduction qualities at the top end of the frontier."[45]

- "There is a significant component of REIT returns unrelated to stock and bond factors. As a result, … we conclude that there is a unique element to REITs, which implies it offers significant diversification benefits beyond those of small capital value stocks."[46]

- "Diversification opportunities are maintained and *REITs would provide additional benefits to a portfolio already containing value stocks*…the two can not be viewed as substitutable."[47]

Accordingly, in the participant-directed pension plan environment real estate securities are a particularly appropriate form of real estate investment. NAREIT requests therefore that the Secretary's regulations make clear that a "certifiable" computer model can satisfy the capability requirements for real estate as long as it is able to analyze, process, and make diversified investment portfolio recommendations that include real estate securities.

F. The Investment Advice Regulations Should Require Disclosures to Participants and Plan Sponsors About a Computer Model's Capabilities Respecting Real Estate Investing

NAREIT requests that the investment advice regulation's mandated disclosures to participants and plan sponsors include notice that "certifiable" computer models will have the capability to analyze all generally recognized asset classes, including real estate, and will be able to make investment portfolio recommendations that include all such asset classes if offered as an investment option. Such a disclosure would be consistent with other provisions

[44] Jorg Bley and Dennis Olson, "An Analysis of Relative Return Behavior: REITs vs. Stocks," working paper (2003) (emphasis added) available at http://ssrn.com/abstract=391687.
[45] Stephen Lee and Simon Stevenson, "The Case for REITs in the Mixed-Asset Portfolio in the Short and Long Run," *Journal of Real Estate Portfolio Management* 11:55-80 (2005) (emphasis added).
[46] Randy Anderson, Jim Clayton, Greg MacKinnon, and Rajneesh Sharma, "REIT Returns and Pricing: The Small Cap Value Stock Factor," *Journal of Property Research* 22:267-286 (2005) (emphasis added).
[47] Stephen Lee and Simon Stevenson, "The Substitutability of REITs and Value Stocks," working paper (2005) (emphasis added) available at http://www.cass.city.ac.uk/faculty/s.stevenson/files/Lee_&_Stevenson_Substitutability.pdf.

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of the exemption. For example, the fiduciary advisor who uses the computer program is already required to provide certain written disclosures to the plan participant receiving the advice, such as the role of any party that has a material affiliation or contractual relationship with the financial advisor in the development of the program, and in the selection of investment options available under the plan and the past performance and historical rates of return of those options. *See* ERISA section 408(g)(3)(B)(i) and (ii).

It is a natural extension of the disclosure requirement to require the fiduciary advisor who uses the computer program to provide certain basic information about what the computer program will do, how it operates, what factors it considers and how it considers those factors when dispensing investment advice. Disclosure to plan participants should include information about the various asset classes that can be taken into account and the ability of the program model to construct portfolio recommendations that include allocations to each of the basic asset classes. If the model is required to consider real estate as an asset class, this needs to be communicated to the end-user.

Required disclosure should also include correlations of each asset class over periods of time with other asset classes, so that participants can determine the strength of the advice and determine whether or not to follow the advice provided by the computer model. The disclosure would allow participants to judge how well the computer model takes into account their investment goals, such as efficient diversification.

Moreover, disclosure about the computer model should be made to plan sponsors as well since they are the ones who make the decision to hire and retain the investment advice in the first instance. Plan sponsors need to know how these computer models operate in order to determine whether or not to utilize them.

III. CONCLUSION

In creating a prohibited transaction exemption in connection with professional investment advice, the PPA recognizes that the use of professional advisors to construct individual account plan portfolios offers plan participants an excellent opportunity to achieve better and more efficiently diversified pension account portfolios. In order to meet the public policy goals behind the PPA, the Secretary's investment advice regulations should require that for a computer model to be certifiable by an "eligible investment expert," the model must have features that enhance the prospect of efficient diversification. This objective will be well served if the regulations require that a certifiable computer model recognize real estate as an asset class, have the capability to analyze a plan's real estate investment options, and make portfolio recommendations that include allocations to those real estate options.

Furthermore, a clear statement in the regulations that real estate securities can be the form of real estate that computer models have the capability to analyze and include in the construction of individual account portfolios will further benefit plan participants by ensuring that certifiable

computer models account for real estate through a form that is particularly appropriate for pension plans, and offers the opportunity for reduced overall portfolio correlation and thus enhanced risk-adjusted, long-term returns.

Finally, disclosure to plan participants and sponsors of the forms of investing the computer model is able to consider also should be mandated, so that plan sponsors can make a more informed determination whether to retain the investment adviser and the computer model that it uses, and individual participants may make informed decisions as to whether they should utilize the advice proffered by the computer model.

Respectfully submitted,

Michael R. Grupe
Executive Vice President, Research & Investor Outreach

ATTACHMENT A

- "A major part of any investment plan is portfolio asset allocation. That is the amount of money you invest in each of various asset classes, such as stocks, bonds, real estate, and cash. In the long run, your asset allocation largely determines your rate of return and your level of portfolio risk."

  "One of the great insights of modern portfolio theory is that holding low-correlated asset classes in a portfolio and rebalancing periodically reduces total portfolio risk and increases long-term return. Real estate is one of the few asset classes that have had a low correlation with stocks and bonds. A well-diversified portfolio that holds real estate investments alongside stocks and bonds has proven to be a superior portfolio to one that does not include real estate."[48]

- "Real estate is not an alternative to stocks and bonds—it is a fundamental asset class that should be included within every diversified portfolio. Equity, fixed income, cash, and real estate … are the basic asset classes that must be held within a diversified portfolio."[49]

- "Real estate should represent a significant position in every investor's portfolio. … (R)eal estate should be a core holding in all portfolios."[50]

- "(T)he major asset classes include stocks, bonds, cash, and real estate…. With the diversification benefits of real estate investing, and the ease, convenience, and lower costs of index-based real estate products, it is rapidly becoming an *essential* core asset class that belongs in most investors' portfolios."[51]

- "Typically, good portfolios first allocate assets between asset classes—usually stocks, bonds, real estate, and cash."[52]

- "Asset class: A group of assets with similar risk and reward characteristics. Cash, debt instruments, real estate, and equities are examples of asset classes."[53]

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[48] Richard A. Ferri, *All About Asset Allocation*, McGraw-Hill (2005) at 3 and 155.
[49] Mark J.P. Anson, *Handbook of Alternative Assets*, Wiley (2006) at 7.
[50] Robert M. Doroghazi, *The Physician's Guide to Investing: A Practical Approach to Building Wealth*, Humana Press (2005) at 175.
[51] Steven A. Schoenfeld, *Active Index Investing: Maximizing Portfolio Performance and Minimizing Rick Through Global Index Strategies*, Wiley (2004) at 21 and 338. (emphasis in original).
[52] Peter Sander, *The 250 Personal Finance Questions Everyone Should Ask*, Adams Media Corporation (2005) at 110.
[53] Larry E. Swedroe, *The Only Guide to a Winning Investment Strategy You'll Ever Need*: *The Way Smart Money Invests Today*, St. Martin's Press (2004) at 297.

- "You can build a portfolio that's safer and more profitable by investing in many asset classes (for example, stocks, bonds, real estate, cash) than you can by investing in only one class."[54]

- "Asset allocation is the allotment of money going into the broad asset classes of common stock, bonds, real estate and cash."[55]

- "For many investors diversifying is simple. It involves investing in a broad-based stock index fund and other asset classes, such as real estate and bonds, with the portion devoted to each asset class reflecting an individual's taste for risk."[56]

- "Real estate investing (REITs and direct real estate) should form a substantial basis of most investment portfolios."[57]

[54] Raymond J. Lucia, *Buckets of Money: How to Retire in Comfort and Safety*, John Wiley & Sons (2004) at 29.
[55] Eric L. Prentis, *The Astute Investor*, Prentis Business (2006) at 327.
[56] Deborah J. Lucas, *Textbook Finance*: *Leading Financial Professors From the World's Top Business Schools on the Fundamentals all Business Professionals Should Know About Finance*, Aspatore Books (2003) at 107.
[57] Don Chambers, *Successful Investing: Using Real Estate, Stocks and Bonds*, Healthy Wealth (2004) at 91.

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Commercial Real Estate: The Role of Global Listed Real Estate Equities in a Strategic Asset Allocation

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About Ibbotson Associates
Ibbotson Associates opened its doors in 1977 to bridge the gap between modern financial theory and real-world investment practice. Professor Roger G. Ibbotson, the company founder, pioneered the collection of the requisite historical data used in asset allocation and quantified the benefits of diversification. Ibbotson continues to provide solutions to investment and finance problems for a diverse set of markets.

Entrusted to create asset allocation models for many of the largest companies in the finance and investment industries, Ibbotson Associates is a leading provider of retirement advice programs and investment consulting services to institutions. Ibbotson Associates is a registered investment advisor and wholly owned subsidiary of Morningstar, Inc.

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Executive Summary

Commercial real estate equity has become an increasingly popular and accessible asset class for investment in the United States over the last 10 years, due in large part to the proliferation and success of real estate investment trusts (REITs). Today, REITs and similar securitized products are becoming more available across the globe. In particular, the transparent tax treatment of REITs gives investors access to the same cash flow characteristics that previously were only available to *direct* commercial real estate equity investors. The introduction and growth of REITs and listed real estate stocks worldwide has created new investment opportunities for strategic asset allocation policy makers. We focus on the *equity* commercial real estate asset class and its two sub-classes, private [direct] commercial real estate equity and public [indirect] commercial real estate *equity*, and we use global REIT and listed real estate indices to proxy the commercial real estate asset class.

When developing a strategic asset allocation to commercial real estate, investors should consider REITs and listed real estate stocks as well as *direct* commercial real estate. For a large number of investors, REITs and listed real estate stocks are the only reasonable way to gain exposure to the commercial real estate equity asset class. Advantages of REITs and listed real estate stocks over *direct* real estate include liquidity, corporate transparency and governance, real-time pricing, and lower transactions costs.

We analyzed the historical performance of six traditional asset classes plus North American, European, and Asian real estate from 1990 to 2005. Over 11 different levels of risk, as measured by the standard deviation of annual portfolio returns, ranging from 5% to 15%, the addition of these three asset sub-classes to the opportunity set improved efficient asset allocation returns by an average of 182 basis points! The vast majority of this benefit is attributed to the outstanding performance of North American real estate.

When one is trying to create a robust forward-looking asset allocation policy, it does not make sense to only use the results of a short-term historical optimization, which often excludes important asset classes. Just as equity and bond investments should be diversified internationally, so should real estate investments. Because our historical data only extend back to 1990, we also examine two different methods of forward-looking analysis that provide an alternative perspective—the capital asset pricing model (CAPM) and the Black-Litterman model. Forward-looking capital market assumptions were used with *resampled* mean-variance optimization to create forward-looking asset allocations. From this alternative perspective, all of the asset classes in the opportunity set, now including European and Asian commercial real estate, receive allocations across the risk spectrum. We believe the total real estate asset allocation should be diversified internationally and implemented with a mixture of REITs and listed real estate stocks as well as direct real estate in which the relative weightings mirror market capitalization-based weights.

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Introduction

Previous Ibbotson research demonstrated the benefits of including real estate investment trusts (REITs) among the universe of investable assets. The purpose of this paper is to examine within a strategic asset allocation setting the role of global commercial real estate investment through global REITs and listed property companies.

Most strategic asset allocations have consisted primarily of allocations to the three "traditional" asset classes—stocks, bonds, and cash. Expanding the investable universe beyond these three asset classes typically improves the risk-return characteristics of a strategic asset allocation. Asset classes with low correlations to the current opportunity set of asset classes provide the largest benefit. Unfortunately, there is little agreement on the role of other asset classes in a strategic asset allocation. Prior to the development of large stock and bond capital markets during the last century, real estate (or property as it was called then) dominated most strategic asset allocations. Modern asset allocators may have temporarily lost sight of the importance of commercial real estate, but commercial real estate is a "traditional" asset class and belongs in the investor's opportunity set.

For years, many institutional investors have included a policy or strategic asset allocation to commercial real estate. Historically, this meant a *direct* investment in commercial real estate—physical property ownership. But the introduction and subsequent popularity of REITs and listed real estate stocks has created confusion for strategic policy makers that we believe is largely unrecognized.

REITs are publicly traded real estate companies that provide almost all investors access, albeit *indirectly*, to commercial real estate. The transparent tax treatment of REITs gives investors access to the same cash flow characteristics that previously were only available to *direct* commercial real estate investors. Today, the growth of global REITs and listed real estate stocks provides investors around the world with access to commercial real estate investment, which should provide investors with new diversification and return enhancement opportunities. Nevertheless, the dramatic growth of REITs and listed real estate also creates new questions for asset allocators as the definition of "real estate investing" evolves.

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In Section 1 we examine the commercial real estate asset class and its various components. We identify REITs and listed real estate stocks as an accessible and viable method of obtaining exposure to commercial real estate. Our analysis focuses on the FTSE EPRA/NAREIT Global Real Estate Index® and its regional sub-indices. Section 1 also identifies the relevant set of asset classes in the opportunity set, their respective asset class index proxies, and the approximate size of the asset classes in the global market portfolio.

Section 2 analyzes the historical performance of the asset classes in the opportunity set. Using the traditional Markowitz's asset allocation model (see Markowitz [1952, 1959]) we determine the asset allocations that would have been optimal in the *past*.[1]

In Section 3, we develop two forward-looking sets of capital market assumptions to determine possible forward-looking asset allocations. The first set of forward-looking capital market assumptions is based on the Sharpe-Lintner-Mossin-Treynor Capital Asset Price Model (CAPM). The second set of forward-looking capital market assumptions is based on a sophisticated robust asset allocation technique: the Black-Litterman asset allocation model (see Black and Litterman [1992]). Using the Black-Litterman model, the CAPM expected returns are blended with the historical returns to produce a mixed estimate of expected returns. The CAPM approach and the Black-Litterman approach help mitigate problems associated with input estimation error, thereby leading to more diversified forward-looking asset allocations. Additionally, we use an enhanced version of the Markowitz framework, called *resampled* mean-variance optimization (or *resampled* MVO), which expressly acknowledges that the capital market assumptions driving the model are not known with certainty in a forward-looking context.[2]

1 Bruno de Finetti also deserves substantial credit for developing much of the mean-variance framework in work that predated that of Markowitz (see Rubinstein [2006], Markowitz [2006], Barone [2006], and de Finetti [1940]).

2 Ibbotson's proprietary version of *resampled* MVO grew out of the pioneering work of Jobson and Korkie [1980, 1981], Jorion [1992], DiBartolomeo [1993], and Michaud [1998].

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Section 1: Commercial Real Estate, REITs, and the Opportunity Set

Commercial Real Estate

Real estate is an extremely diverse asset class that can be broadly segmented into two largely unrelated types: residential real estate and commercial real estate.[3] Strategic asset allocation decisions generally focus on exposure to commercial real estate, although residential real estate often is the single largest investment, albeit highly leveraged, for most individual investors. The role of residential real estate in a strategic asset allocation is usually an individual investor concern that is often a byproduct of the investor's housing choice. Residential real estate is beyond the scope of this article, although mortgages backed by residential real estate are a relatively large part of the broad fixed income markets.

Commercial real estate is part of a growing family of asset classes that are thought of as real return assets. Other real return assets include Treasury Inflation-Protected Securities (TIPS) and commodities, all of which are thought to provide a hedge against inflation.[4]

Prudential Real Estate Investors (see Conner and Liang [2005]) and the European Public Real Estate Association (EPRA) (see Hughes and Arissen [2005]) estimate the total value of the commercial real estate market worldwide at approximately $14 trillion. A number of authors segment commercial real estate into four broad segments or quadrants:

- Private (direct) commercial real estate: debt
- Public (indirect) commercial real estate: debt
- Private (direct) commercial real estate: equity
- Public (indirect) commercial real estate: equity[5]

No single, real-time index measures the collective performance of all four segments.

3 The seemingly tight connection between residential real estate and commercial real estate that exists in the minds of some investors seems like a topic ripe for behavior finance.

4 Greer and Yocham [2006] provides an overview of the role of real return asset in a portfolio.

5 See for example, Hudson-Wilson and Harbaugh [2006] and Hudson-Wilson, Fabozzi, and Gordon [2003]. We should also not that Hudson-Wilson, Fabozzi, and Gordon [2003] attempts to develop a composite index to measure the performance of the four commercial real estate segments.

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Private (direct) commercial real estate *debt* is only available to the largest investors, although smaller investors may obtain some exposure through the stocks of *mortgage* REITs, commercial banks, and other specialty finance companies. The Giliberto-Levy Commercial Mortgage Performance Index is the most prevalent index for measuring the performance of private (direct) commercial real estate *debt*.

Public (indirect) commercial real estate *debt*, primarily commercial mortgage-backed securities (CMBS), was added to the Lehman Brothers US Aggregate Index in 1999 and is a component of most aggregate fixed income indices (see Gendron and Berkley [2002]).

Private (direct) commercial real estate *equity* is typically measured using the National Council of Real Estate Investment Fiduciaries (NCREIF) property index or a refined transaction-based index such as those proposed in Fisher, Gatzlaff, Geltner, and Haurin [2003] or Fisher, Geltner, and Pollakowski [2005]. Appraisal based indices, such as the NCREIF, suffer from excessive smoothing and serial correlation. The refined transaction-based indices try to mitigate these issues.

Public (indirect) commercial real estate *equity* is available to almost all investors through *equity* REITs and other listed real estate companies for which there are a variety of publicly available indices to measure performance.

In this article we focus on the *equity* commercial real estate asset class and its two sub-classes, private [direct] commercial real estate equity and public [indirect] commercial real estate equity, and we use global REIT and listed real estate indices to proxy the commercial real estate asset class.

Not long ago, only the largest investors had access to the commercial real estate market. Since then, the introduction and subsequent growth of REITs, most notably in the United States, have given all investors access to diversified commercial real estate. REITs in the United States were created in 1960 when President Eisenhower signed into law the Cigar Excise Tax Extension, which included the "Real Estate Investment Trust" provision.

REITs are publicly traded companies that own, and in most cases, operate investment-grade commercial real estate such as office buildings, apartments, shopping centers, hotels, and warehouses. To qualify as a REIT under the Internal Revenue Code, a company must operate in the real estate business. In particular, a company must invest at least 75% of its total assets in qualifying real estate assets and derive at least 75% of its gross income from rents from real

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property or interest on mortgages on real property. In addition, a REIT must distribute annually to its shareholders at least 90% of its taxable income in the form of dividends. In return, the company is permitted to deduct from its corporate taxable income each dollar of dividends distributed. As a result, most REITs remit at least 100% of their taxable income to their shareholders and therefore owe no corporate tax. Thus, shareholders benefit from a single level of taxation (or tax transparency) on corporate earnings and pay taxes on the dividends and on any capital gains received.

In recent years, REITs and REIT-like corporate entities have been introduced in many other countries throughout the world and have experienced exceptional growth.

Although all investors may not yet agree that *direct* commercial real estate investments and *indirect* commercial real estate investments (REITs) provide the same risk-reward exposure to commercial real estate, a growing body of research indicates that investment returns from the two markets are either the same or nearly so. Still, the remaining ambiguity coupled with investors' growing preference for, and access to, *indirect* commercial real estate equity has created some lingering confusion among asset allocators.

Advantages of *direct* real estate investment include direct control, the ability to select individual properties, greater capacity (size), and for taxable individual investors, some potential tax-timing benefits. Advantages of REITs and listed real estate include investor access, lower costs (for most investors), liquidity, independent analysis, corporate governance and real-time pricing in public capital markets.

Even though the underlying assets are the same, Conner and Falzon [2004] argues that there are performance differences that go beyond performance measurement.

Feldman [2003] studies the relationship between *direct* real estate and *indirect* real estate (REITs) using the two *direct* real estate indices developed by Fisher, Gatzlaff, Geltner, and Haurin [2003].[6] It finds that REIT performance is statistically indistinguishable from the two *direct* real estate indices at conventional significance levels. However, the correlation coefficients between the REIT index and the two *direct* real estate indices were only 0.08 and 0.31, suggesting that these indices are less than perfect substitutes for one another. Feldman [2003] concludes that *direct* real estate and REITs are complementary investments that together should play a large role in strategic asset allocations. We share this view, but we

[6] These are enhanced versions of the NCREIF Property Index.

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believe the split between *direct* real estate and *indirect* real estate should not necessarily be made entirely by an optimizer given the amount of uncertainty in forward-looking capital market assumptions.

Fisher, Geltner, and Pollakowski [2005] refines the *direct* real estate index construction methodology proposed in earlier research and performs a series of optimizations using a relatively standard opportunity set and various combinations of REIT and *direct* real estate proxies. No matter which real estate proxy they used, real estate played a prominent role in the optimal asset allocation based on the *traditional* mean-variance optimization approach. Of note, the correlation coefficients between REITs and the enhanced *direct* real estate index proxies remained low, at 0.13 and 0.15, respectively.

Hudson-Wilson, Fabozzi, and Gordon [2003] finds that despite various private or public labels associated with different commercial real estate investments, the same set of common factors influences their returns. Using a market capitalization weighted composite of commercial real estate-public debt, -public equity, -private debt, and -private equity with an opportunity set that includes cash, bonds, and equities, mean-variance optimization leads to large allocations to commercial real estate.

Perhaps most important for the approach that we take in this article, Pagliari, Scherer, and Monopoli [2005], among others, finds that there are not statistically meaningful differences in the means and volatilities of public and private real estate equities, thereby suggesting a "seamless real estate market in which public- and private-market investments display a long-run synchronicity." Like Frost, Schioldager, and Hammond [2005], we conclude that REITs can be viewed as a proxy for *direct* real estate as well as *indirect* real estate. Hudson-Wilson and Harbaugh [2006] asks "...why not use the better real estate equity quadrant index to measure performance of the less well-measured equity quadrant?" We agree with this sentiment and proceed using public (indirect) commercial equity indices to proxy total commercial real estate *equity*.

Over long time horizons, direct commercial real estate investments and *indirect* commercial real estate investments should yield similar results because the underlying investments are largely the same. During shorter periods, structural differences may create performance disparities that will remain difficult to measure with precision given the performance

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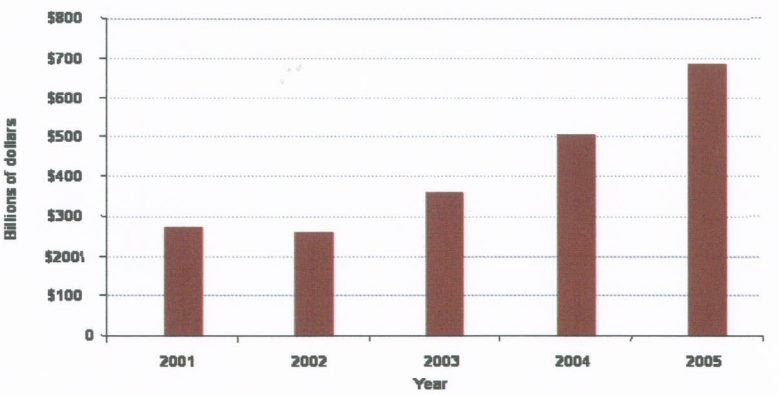
measurement issues with respect to *direct* real estate.[7] While REITs currently represent a moderate percentage of total commercial real estate investment, investor demand for REITs is causing an intra-asset class shift from *direct* real estate to *indirect* real estate.

Global Listed Real Estate Investment

Over the last 30 years, the United States and Australia have provided the majority of investment opportunities for REITs and publicly traded real estate companies. However, REITs today operate in more than 20 countries, and listed real estate companies operate in many more, resulting in significant worldwide growth of publicly traded real estate equity market capitalization (see Bergsman [2005]). The introduction of REIT-like companies around the world is chronicled in Conner and Liang [2006]. The dramatic increase in the amount of money invested in global REITs and listed real estate equities is evident in Figure 1. Between January 2002 and June 2006, the free float equity market capitalization of global REITs and listed real estate equities grew from $280 billion to $720 billion, a compound annualized increase of 23%. REITs and listed real estate companies comprise an asset class that is now available to investors around the globe.

Figure 1: Free Float Market Capitalization of Global REITs and Listed Real Estate Equities



Source: FTSE EPRA/NAREIT Global Real Estate Index

[7] Works such as Fisher, Gatzlaff, Geltner, and Haurin [2003] and Fisher, Geltner, and Pollakowski [2005] go a long way toward addressing performance measurement issues associated with *direct* real estate indices. Interested readers can download some of these improved *direct* real estate indices from the MIT Center for Real Estate (http://web.mit.edu/cre/).

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In the United States, there are three types of REITs: equity REITs, mortgage REITs, and hybrid equity-mortgage REITs. Equity REITs own and operate income-producing real estate. Mortgage REITs invest in loans secured by residential or commercial real estate or in residential or commercial mortgage-backed securities, but do not generally own or operate real estate. As the name suggests, a handful of so-called hybrid REITs both own properties and invest in the secured or securitized debt of other real estate owners and operators. REITs also are classified by property sectors, of which the largest are office buildings, apartments, regional malls, shopping centers, and industrial facilities.

The last 15 years has seen a dramatic increase in the U.S. REIT industry, with publicly traded equity market capitalization growing from approximately $20 billion in 1992 to around $370 billion as of June 30, 2006. The investable equity market capitalization of the largest U.S. REIT (Simon Property Group) was $18.3 billion as of June 30, 2006.

Like other publicly traded companies, REITs and listed real estate companies are actively traded on the major stock exchanges. The largest REITs are constituents of the broad equity market indices, such as the Russell 3000 or the MSCI EAFE. As of April 2006, nearly 100% of U.S.-domiciled REITs and listed real estate companies in the FTSE EPRA/NAREIT Global Real Estate Index also were members of the Russell 3000.[8] Of European REITs and listed real estate companies in the FTSE EPRA/NAREIT Global Real Estate Index, nearly 25% were constituents of the MSCI EAFE Index. And for Asian REITs and listed real estate companies in the FTSE EPRA/NAREIT Global Real Estate Index, more than 53% were included in the MSCI EAFE Index.

Investments in products that track these broad equity market indices imply an investment allocation to the REITs and listed real estate companies that are part of these indices and should be accounted for when developing an overall allocation to commercial real estate equities. If an investor already has fulfilled an allocation to commercial real estate through a combination of direct investment vehicles and well-diversified stock indices, then a separate

[8] Our analysis was based on constituent data provided by NAREIT and Morningstar, Inc. At the time of the analysis, 121 of the 124 US REITs in the FTSE EPRA/NAREIT Global Real Estate index were members of the Russell 3000. Regarding the three non-overlapping constituents, two of three REITs had recently been purchased by private firms and had not yet been removed from our FTSE EPRA/NAREIT constituent list, and the third was scheduled to be added to the Russell 3000 during the June / July Russell rebalancing.

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and distinct allocation to REITs and listed real estate equities could create an overweighted position in real estate, relative to a market capitalization weighted portfolio, and an underweighted position in other equities. However, in the absence of a distinct commercial real estate allocation, either through direct investments or through listed real estate equities, an investor is unlikely to achieve an appropriate allocation to commercial real estate by relying entirely on the REIT and listed real estate constituents included in broad equity indices.

Table 1 lists the equity indices in the opportunity set as well as the Russell 1000 Value Index and Russell 1000 Growth Index. The table identifies the numbers of REITs and listed real estate stocks in each of the indices, the approximate market capitalization of the REITs and listed real estate stocks in each of the indices, the market capitalization of the index, and the percentage of the market capitalization of each index that is represented by REITs and listed real estate stocks. REITs and listed real estate stocks represent a very small percentage of the total market capitalization of the S&P 500 and the MSCI EAFE indices, and slightly higher percentages of the value-oriented indices.

Table 1: REITs and Listed Real Estate Stocks Included in Major Equity Indices
as of June 30, 2006

Asset Class Proxy	Total Number of REITs and Listed Real Estate Stocks	Approximate Market Capitalization of REITs and Listed Real Estate Stocks in Index	Market Capitalization of Index	Percentage of Market Capitalization Represented by REITs and Listed Real Estate Stocks
S&P 500	11	$98	$11,529	0.85%
Russell 1000 Value	42	$185	$6,470	2.86%
Russell 1000 Growth	12	$32	$6,264	0.51%
Russell 2000 Value	67	$52	$639	8.08%
Russell 2000 Growth	28	$11	$642	1.79%
MSCI EAFE	64	$242	$11,167	2.16%

Index constituent data were provided by NAREIT and Morningstar, Inc. Among the Russell indices, no attempt was made to adjust for REITs that are partially assigned to both a growth and value index; thus, the approximate market capitalization of REITs in the Russell indices is biased upward.

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The percentages in the right-hand column of Table 1 raise two concerns. First, because traditional equity market asset class proxies have varying proportions of REITs, a fact that may not be well-known to investors, some asset allocators may be unaware of their true asset allocations to REITs, as well as to other equities. For example, investors having a distinct allocation to REITs plus a large allocation to the Russell 2000 Value Index may have a somewhat larger overall exposure to commercial real estate and lower overall exposure to other equities than they realize. Likewise, investors having only an allocation to the S&P 500 or to either of the Russell growth indices are likely to have a much smaller overall exposure to commercial real estate than they realize. Second, the overlap between all of the equity market proxies and the REIT-specific indices raises issues of multiple exposures to a set of companies. Given the propensity of asset allocators to have a distinct allocation to commercial real estate, asset allocation transparency would be improved if index providers supplemented their popular equity benchmarks with "ex-REIT" or "ex-listed real estate" versions.

The total return from an investment in equity REITs comes from the distribution of collected rents through dividend payments plus long-term stock price appreciation. Because U.S. REITs are required to distribute at least 90% of their taxable income annually in the form of dividends, approximately 60% of the total return from U.S. REITs over the past 20 years has come from such dividends. The distribution requirements for non-U.S. REITs are governed by the respective laws in different countries, but most are at least 80%.

During prosperous economic times, rental income is typically strong, and property owners enjoy pricing power as leases renew. Long-term leases also protect property owners from income decreases during recessions. Given that dividends are known with some certainty in advance, the current yield of REITs can be calculated by dividing the dividend by the current stock price. Thus, some income-oriented investors have viewed REITs as an alternative to fixed income investments, even though they are legally equities and even though the dividends typically grow over time.

Some investors compare fixed income yields with REIT dividend yields as a measure of relative value. In particular, institutional investors looking to fund long-term liabilities often have used investments in income-producing properties in a manner similar to that of long-term bonds. The cash flow characteristics of income-producing properties can be similar to those of a long bond, or even better, an inflation-linked bond, both of which help meet long-term liabilities. Other investors assess relative value by comparing the price multiples of REITs with the price multiples of other equities.

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As with any investment, the current market price of REIT equities can be interpreted as the market's estimated present value of expected cash flows. However, the current price of all listed equities (including listed REITs) is a function of supply and demand. It is likely that the recent propensity of investors, especially large institutions, to reduce allocations to traditional asset classes in favor of dedicated commercial real estate investments (often implemented with REITs) increases the overall demand for REIT equities. Presumably, market forces are at work to transform more *direct* real estate investments into securitized REIT-like investments to help meet growing investor real estate allocations and balance supply and demand.

Like most publicly traded companies, REITs and listed real estate companies finance their property portfolios with a diversified capital structure of debt and equity, implying the use of some leverage. In recent years, equity REITs on average have maintained a ratio of debt divided by total market capitalization of between 40% and 50%—currently in the lower part of that range. Such use of leverage is more conservative than typical leverage ratios of privately owned real estate and reduces the interest rate risk of most equity REITs. Nevertheless, declining interest rates tend to reduce borrowing costs of most REITs, while rising interest rates tend to increase borrowing costs, thereby affecting profitability. In general, lower *real* interest rates arguably have decreased the cost of capital for all real estate investors and contributed to the general increase in property values. The increase in property values increases the value of a REIT's assets (properties), the market's assessment of the REIT's future cash flows, and ultimately, the market capitalization of REITs and listed real estate companies.

The Opportunity Set

A critical element of any asset allocation study is the identification of the relevant opportunity set of investable asset classes. The asset classes used in this study include cash, U.S. bonds, non-U.S. bonds, U.S. large-cap stocks, U.S. small-cap stocks, non-U.S. stocks, and global real estate equities. Table 2 lists the asset classes and the asset class proxies used to represent each asset class in the analysis. We will refer to the first six asset classes as "traditional" asset classes because they are a more granular version of the asset classes that have come to dominate most asset allocation strategies, namely, stocks, bonds, and bills (cash). Real estate is treated as a distinct asset class because its high-income yields arguably create a hybrid investment that combines attributes of both stocks and bonds, and its investment returns reflect those hybrid characteristics. For most U.S. investors, referring to non-U.S. bonds as a traditional asset class is a bit of a stretch; however, for non-U.S. investors it certainly is an important asset class. Thus, given the large size of non-U.S. bonds in the capital markets, it should be part of investors' opportunity sets.

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Table 2: Opportunity Set

Asset Classes	Asset Class Proxies
Cash	Citigroup U.S. Domestic 3-Month T-Bill
U.S. Bonds	Lehman Brothers U.S. Aggregate Bond
Non-U.S. Bonds	Citigroup World BIG x-U.S. Index (1999 – 2005) Citigroup Non-U.S. Dollar World Government Bond Index (1990 – 1998)
U.S. Large-Cap Stocks	S&P 500
U.S. Small-Cap Stocks	Russell 2000
Non-U.S. Stocks	MSCI EAFE
Global Real Estate	FTSE EPRA/NAREIT Global Real Estate Index
North American Real Estate	FTSE EPRA/NAREIT Global Real Estate Index North America Series
European Real Estate	FTSE EPRA/NAREIT Global Real Estate Index Europe Series
Asian Real Estate	FTSE EPRA/NAREIT Global Real Estate Index North Asia Series

In subsequent discussion, we will use the asset class names in Table 2 when referring to the asset classes. Global Real Estate is proxied by the FTSE EPRA/NAREIT Global Real Estate Index and its three regional sub-indices. For those who are interested, Frost, Schioldager, and Hammond [2005] provides a comprehensive review of the various real estate indices. In general, the FTSE EPRA/NAREIT Global Real Estate Index received high marks.

FTSE EPRA/NAREIT Global Real Estate Index

The FTSE EPRA/NAREIT Global Real Estate Index is a market capitalization weighted index representing all "qualifying" real estate stocks world wide. As of June 30, 2006, the index included 321 REITs and listed real estate companies from 20 countries and Hong Kong with an aggregate market capitalization of approximately $720 billion. The index consists of three regional sub-indices: North America (including the United States and Canada), Asia (including Australia, Japan, Hong Kong, Singapore, and New Zealand), and Europe (including the United Kingdom, Netherlands, France, Sweden, Spain, Austria, Switzerland, Germany, Belgium, Italy, Finland, Denmark, Poland, and Greece). As of June 30, North America's contribution to the index was about half (47.6%), with 31.4% coming from Asia, and 21.0% from Europe. The United States represented 92.7% of the North American index while Canada represented 7.3%. Japan, Australia, and Hong Kong represented 36.6%, 32.7%, and 25.0%, respectively, of the Asian index. The United Kingdom represented the lion's share (47.1%) of the European index, followed by France and the Netherlands at 11.4% and 11.3%, respectively.

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Companies must meet several criteria to qualify for the index. They must be listed on an official exchange, meet defined geographic and financial standards for each series, and be able to demonstrate that a majority of earnings or a large percentage of assets is the result of relevant real estate activity. The index defines relevant real estate activities as the ownership, trading, and development of income-producing real estate.[9]

9 For additional details, see Ground Rules for the Management of the FTSE EPRA/NAREIT Global Real Estate Index® Version 2.3, April 2006.

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Section 2: Historical Analysis

Having defined asset class proxies for all of the asset classes in our opportunity set, we proceed with a historical analysis in which we focus on returns, standard deviations, and correlations. In addition to providing insights with respect to the historical performance of the asset classes, the returns, standard deviations, and correlations form a *historical* set of capital market assumptions. When coupled with a *traditional* mean-variance optimization, these assumptions will identify specific asset allocations that would have been optimal in the *past*.

Historical Performance

Figure 2 shows the growth of a one dollar investment in each of the asset classes from the end of 1989 to the end of 2005, the longest period for which all proxies are available. The performance of North American real estate is truly impressive over this time period. The speculative episode in U.S. large-cap stocks is evident in the late 1990s, and it is clear that, by the end of 2005, U.S. large-cap stocks still had not recovered all of their losses. The decline of U.S. large-cap stock share prices, which began in early 2000, nearly coincides with the tremendous performance of North American real estate. Figure 2 also demonstrates that, over short time periods, it is nearly impossible to predict which asset class will be the best performer. There are clearly upside and downside risks for non-diversified asset allocations, and we caution investors not to focus on the recent out-performance or under-performance of individual asset classes but to maintain diversified allocations across all asset classes and to rebalance those allocations in a disciplined manner as necessary.

Figure 2: Growth of a $1 Investment, December 1989 – December 2005

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Based on annual data, the historical returns and standard deviations of the asset classes included in the opportunity set are presented in Table 3. Over the last 16 years, North American real estate was the highest-returning asset class with an average annual arithmetic return of nearly 17%. North American real estate, U.S. bonds, and U.S. large-cap stocks had the highest Sharpe Ratios over the 16 years, while non-U.S. stocks, European real estate, and Asian real estate had the lowest Sharpe Ratios. Asian real estate was the most volatile, with an annual standard deviation of 32.56%.

Table 3: Historical Returns, Standard Deviations, and Sharpe Ratios, 1990 – 2005 (in USD)

Asset Class	Arithmetic Annual Return	Compounded Annual Return	Standard Deviation	Sharpe Ratio
Cash	4.23%	4.22%	1.88%	0.06
U.S. Bonds	7.50%	7.36%	5.61%	0.60
Non-U.S. Bonds	8.13%	7.63%	10.62%	0.38
U.S. Large-Cap Stocks	11.95%	10.54%	17.89%	0.44
U.S. Small-Cap Stocks	12.32%	10.67%	19.72%	0.42
Non-U.S. Stocks	6.82%	5.12%	19.37%	0.14
Global Real Estate	11.36%	8.95%	24.77%	0.29
North American Real Estate	16.97%	15.17%	20.44%	0.63
European Real Estate	9.53%	7.17%	23.81%	0.23
Asian Real Estate	11.58%	7.34%	32.56%	0.23

Some of the more abnormal numbers in Table 3 deserve further comment. Relative to U.S. large-cap stocks and U.S. small-cap stocks, this was not a particularly strong period for non-U.S. stocks. At the other end of the return spectrum, it can be argued that the increased scrutiny brought to bear on publicly traded real estate companies in North America as *direct* real estate investments increasingly have been securitized, led to gradual efficiency gains that in turn contributed to the out-performance of historical real estate returns over the period of observation. Perhaps European real estate has lagged the two more well-established REIT and listed real estate regions for a similar reason. The United Kingdom represents approximately half of European real estate, but the United Kingdom had not yet adopted a transparent REIT like structure that would encourage private companies to go public.[10] Finally, the standard

[10] At the time of this writing, REITs are scheduled to become legal corporate entities in the United Kingdom on January 1, 2007.

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deviation of Asian real estate may have been abnormally high during this time period. One would expect the formative years of a new asset class to be more volatile. Additionally, Asian currency markets may have been abnormally volatile over the time period studied. Asian real estate is more diversified today, the market has a better understanding of the asset class, and fewer currency events may lead to reduced volatility in the future.

A core theme of modern portfolio theory is that asset classes should be viewed in a portfolio or asset allocation context. It is the interaction or, more precisely, the degree to which asset class returns do not move together that provides diversification. When assets are less than perfectly correlated, their composite or total variability when combined in the portfolio is less than the sum of the individual volatilities of each asset class. Even volatile asset classes can reduce overall portfolio volatility if they have low positive correlation or negative correlation with other asset classes. The classic example of diversification is that the volatility of an all bond asset allocation can be reduced by adding a small allocation to more volatile equities.

Table 4 summarizes historical correlation coefficients of all asset classes in the opportunity set for the period 1990 to 2005. The data illustrate that global real estate in most cases has had low correlation coefficients with the traditional asset classes. In particular, global real estate has had low or negative correlations with U.S. large-cap stocks, U.S. small-cap stocks, and U.S. bonds. Furthermore, European real estate has had very low or negative correlations with all U.S. asset classes.

Table 4: Correlations, 1990 – 2005

	Cash	U.S. Bonds	Non-U.S. Bonds	U.S. Large-Cap Stocks	U.S. Small-Cap Stocks	Non-U.S. Stocks	Global Real Estate	North American Real Estate	European Real Estate	Asian Real Estate
Cash	1.00	0.34	-0.17	0.16	-0.19	-0.41	-0.48	-0.26	-0.62	-0.40
U.S. Bonds	0.34	1.00	0.43	0.17	0.14	-0.26	0.04	0.20	-0.09	0.00
Non-U.S. Bonds	-0.17	0.43	1.00	0.13	0.07	0.17	0.21	-0.01	0.33	0.21
U.S. Large-Cap Stocks	0.16	0.17	0.13	1.00	0.76	0.64	0.22	0.34	0.06	0.31
U.S. Small-Cap Stocks	-0.19	0.14	0.07	0.76	1.00	0.64	0.48	0.71	0.17	0.53
Non-U.S. Stocks	-0.41	-0.26	0.17	0.64	0.64	1.00	0.66	0.28	0.56	0.76
Global Real Estate	-0.48	0.04	0.21	0.22	0.48	0.66	1.00	0.56	0.83	0.94
North American Real Estate	-0.26	0.20	-0.01	0.34	0.71	0.28	0.56	1.00	0.30	0.44
European Real Estate	-0.62	-0.09	0.33	0.06	0.17	0.56	0.83	0.30	1.00	0.68
Asian Real Estate	-0.40	0.00	0.21	0.31	0.53	0.76	0.94	0.44	0.68	1.00

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Among the three traditional *equity* asset classes—U.S. large-cap stocks, U.S. small-cap stocks, and international stocks—the correlations range from .64 to .76. The average correlation of the three equity asset classes was .68. For the three sub-asset classes of global real estate—North American, European, and Asian—the correlations range from .30 to .68. The average correlation of the three sub-asset classes of global real estate was .47. Despite the relatively high intra-equity correlations, it is widely accepted that the equity portion of a well-diversified asset allocation should be diversified among the equity sub-asset classes. Likewise, it is reasonable to postulate that real estate investors should achieve additional diversification benefits by diversifying across the three global real estate sub-asset classes, something that can be achieved with separate allocations to the sub-asset classes or a single allocation to global REITs and listed real estate. Somewhat puzzling is the fact that, of the three global real estate regional sub-asset classes, North American real estate has the lowest correlation (0.56) with global real estate even though North America is the largest constituent of the overall group. One possible explanation for this is that of the three constituents, the European and Asian series are more closely correlated with each other and collectively represent more than half of the global index.

In general, global real estate has lower correlations with the four traditional U.S. asset classes than North American real estate. This suggests that global real estate is a better diversifier for U.S.-centric asset allocations. North American real estate has lower correlations with non-U.S. bonds and non-U.S. stocks than does global, European, or Asian real estate. This suggests that North American real estate is a better diversifier for non-U.S.-centric asset allocations.

The correlations listed in Table 4 also reflect in part the extent of overlap between the constituents of the listed real estate indices and the traditional equity indices. For example, the Russell 2000 index includes a relatively high proportion of U.S. REITs, and the correlation between North American real estate and U.S. small-cap stocks is a relatively high .71.

Historical Efficient Asset Allocations With and Without Global REITs

The above historical analysis provides the three investment attributes for the asset classes that drive the Markowitz *traditional* mean-variance optimization. Using the historical arithmetic returns and standard deviations in Table 3 and the historical correlations in Table 4, we can determine the historical efficient frontier. The historical efficient frontier identifies the asset allocation that would have been optimal in the *past*.

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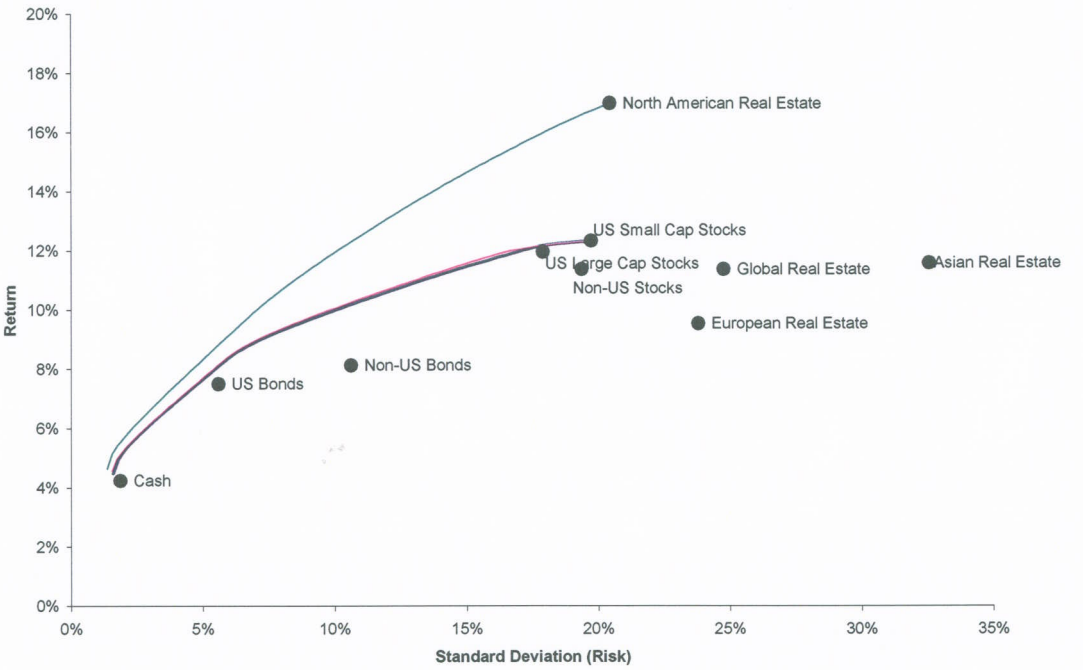
Figure 3 displays the results of three optimizations. In the first optimization (lowest frontier in blue), only the six traditional asset classes are included in the opportunity set. In the second optimization (middle frontier in red), we have added global real estate to the opportunity set. In the third optimization (highest frontier in green), we replaced global real estate with the three sub-asset classes that form global real estate: North American real estate, European real estate, and Asian real estate.

Figure 3: Historical Efficient Frontiers



The two lower efficient frontiers are nearly indistinguishable. The relatively low average annual return of European real estate coupled with the high standard deviation of returns from Asian real estate offset the exceptional performance of North American real estate, resulting in a composite (global real estate) with equity-like returns and high volatility. Thus, adding global real estate as a whole improved performance of the efficient asset allocation only slightly.

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Replacing global real estate with its three sub-indices—North American, European, and Asian real estate—improved the performance of the efficient allocations significantly because investments may now be allocated to each regional sub-index separately.

Table 5 quantifies the benefits of expanding the opportunity set. For each of the three efficient frontiers in Figure 5 we list efficient asset allocation returns corresponding to discrete standard deviation levels across the risk spectrum.

Table 5: Return Improvement with Global Real Estate

Standard Deviation (%)	Traditional Asset Classes	Traditional Asset Classes + Global Real Estate	Traditional Asset Classes + North American Real Estate + European Real Estate + Asian Real Estate
5%	7.66%	7.73%	8.33%
6%	8.39%	8.47%	9.15%
7%	8.91%	8.99%	9.96%
8%	9.31%	9.39%	10.69%
9%	9.66%	9.75%	11.34%
10%	9.99%	10.08%	11.94%
11%	10.31%	10.40%	12.52%
12%	10.61%	10.71%	13.08%
13%	10.91%	11.01%	13.63%
14%	11.20%	11.31%	14.15%
15%	11.47%	11.59%	14.64%
Average Return	9.86%	9.95%	11.77%
Average Improvement		0.09%	1.82%

Including global real estate in the opportunity set improved efficient asset allocation returns by an average of nine basis points over 11 different asset allocation standard deviation points ranging from 5% to 15%.

However, replacing global real estate in the opportunity set with the three sub-indices—North American, European, and Asian real estate—improved efficient asset allocation returns by an average of 182 basis points!

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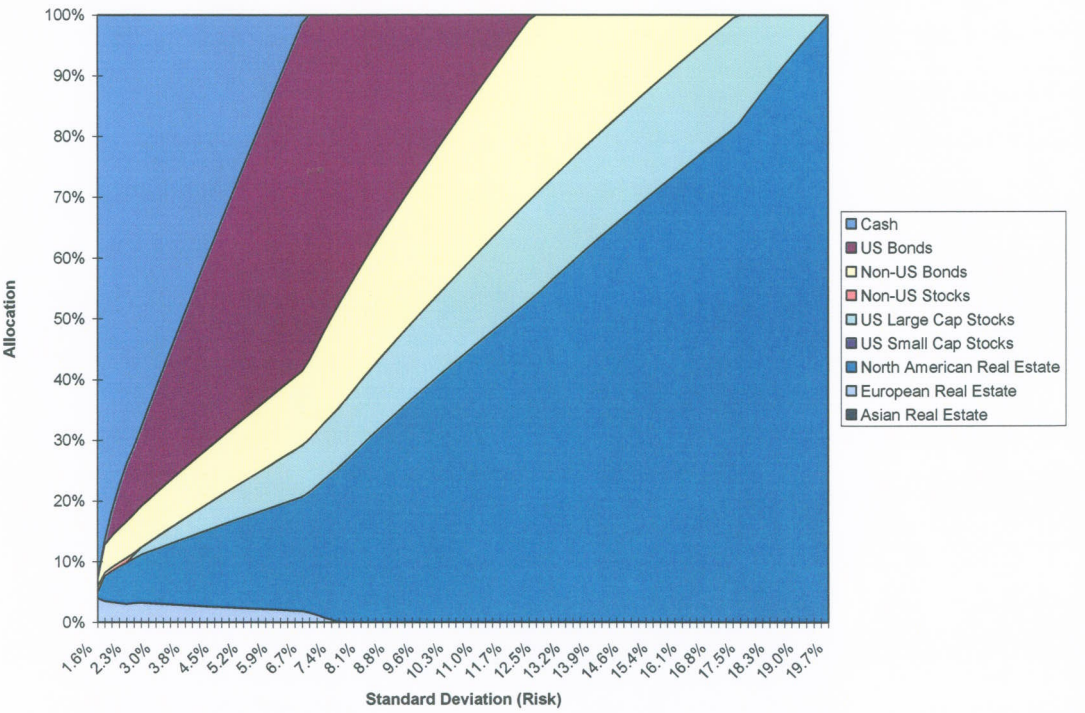
Efficient frontier area graphs display the composition of the efficient asset allocations across the entire risk spectrum. Figure 4 shows the asset allocations based on the efficient frontier in which North American real estate, European real estate, and Asian real estate are included with the six traditional asset classes in the opportunity set. Risk is measured by the standard deviation of annual portfolio returns and is shown on the horizontal axis. The vertical cross sections identify the composition of the efficient asset allocations at all levels of risk.

At the lowest risk level, the minimum variance asset allocation contains approximately 93% cash, 1% non-U.S. bonds, 1% non-U.S. stocks, 1% North American real estate, and 4% European real estate. At the highest risk level, the maximum return asset allocation contains 100% North American real estate. For the 1990 to 2005 period, with calendar-year rebalancing, *ceteris paribus*, Figure 4 identifies the best possible performing asset allocations for each of the possible risk levels.

Figure 4: Historical Asset Allocation Area Graph



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Non-U.S. stocks receive a very small allocation in some of the lower risk asset allocation while U.S. small-cap stocks and Asian real estate are entirely omitted from the asset allocations that were optimal over this historical period. With hindsight, this is perfectly acceptable. If, on the other hand, one is trying to create a robust forward-looking asset allocation policy, excluding allocations to non-U.S. stocks, U.S. small-cap stocks, and Asian real estate across the risk spectrum does not seem wise. In a forward-looking context, a more robust or balanced approach to diversification is required.

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Section 3: Forward-Looking Analysis

Robust, forward-looking asset allocations should diversify an investor's holdings across the asset classes in the opportunity set and do so in a manner that is based on sound portfolio theory. However, portfolio theory as represented by the *traditional* Markowitz optimization approach rarely leads to robust forward-looking asset allocations, especially when the capital market assumptions are based on short-term historical returns.

The *traditional* mean-variance optimization approach treats the capital market assumptions as if they were known with 100% certainty. In the historical analysis of Section 2, we knew the capital market assumptions with 100% certainty and were able to determine the asset allocations that were optimal in the *past*. We saw that the inclusion of North American real estate in the opportunity set dramatically improved *past* performance of the optimal asset allocations.

But in a forward-looking context, the capital market assumptions are forecasts; therefore they are not known with 100% certainty. It is well documented in the literature that *traditional* mean-variance optimization is very sensitive to small changes and errors in the capital market assumptions. Chopra and Ziemba [1993] estimates that *traditional* mean-variance optimization is 11 times more sensitive to estimation error in returns relative to estimation error in risk (variance) and two times more sensitive to estimation error in risk (variance) relative to estimation error in covariances (which also applies to correlations).

Because of these issues, we use an enhanced optimization technique called *resampled* mean-variance optimization that recognizes capital market assumptions are not known with certainty. *Resampled* mean-variance optimization is a more robust asset allocation procedure that combines *traditional* mean-variance optimization with Monte Carlo simulation.

In addition to using *resampled* mean-variance optimization, we will use a forward-looking model of expected returns. The global listed real estate asset class proxies have data that begin in 1990; but, unfortunately, short-term historical returns are often regarded as some of the worst predictors of future performance. As a result, we use the CAPM, which is one of the cornerstones of modern portfolio theory. More precisely, we use the specialized version of the CAPM from Sharpe [1974] that is often referred to as reverse optimization. In order to develop a forward-looking set of expected returns using the CAPM, we must create a working version of the unobservable, all-inclusive market portfolio.

In our final analysis, we use a Bayesian asset allocation model called the Black-Litterman model, which generally leads to well-diversified asset allocations. Using the Black-Litterman

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model, we combine the CAPM expected returns with the historical returns to create a mixed estimate of expected returns.

The Role of Real Estate in the Market Portfolio

> *"The starting point should be to include real estate and the other assets at their market weights, and then to adjust the weights in order to best achieve investment objectives."*
>
> *- Hudson-Wilson, Fabozzi, and Gordon [2003]*

Geltner and Miller [2001], Feldman [2003], Hudson-Wilson, Fabozzi, and Gordon [2003], and most recently, Dopfel [2006] touch on the role of real estate in the market portfolio. With the CAPM, the market-neutral weight of any asset is proportional to the market capitalization relative to the world's total market capitalization.

While the market values of the FTSE EPRA/NAREIT Global Real Estate Index and the three regional sub-indices are readily available, based on our previous analysis of commercial real estate, we are using REIT and listed real estate stock indices as a proxy for the broader asset class of commercial real estate equity and the regional sub-asset classes. However, unlike global REITs and listed real estate stocks, estimates of the market capitalization of investment-grade *private* commercial real estate are not universally accepted. The largest investors (large institutions) will likely implement their target allocations with a more heavily weighted *direct* commercial real estate investment program, while smaller investors will likely implement their targets more heavily weighted with REIT and listed real estate stocks. Ideally, we believe the total real estate asset allocation should be implemented with a mixture of REITs and listed real estate stocks as well as *direct* real estate in which the relative weightings mirror market capitalization-based weights.

Miles and Tolleson [1997] is one of the most detailed attempts to determine the sizes of the major components of the U.S.-investable universe, including the size of investment-grade real estate. Hudson-Wilson, Fabozzi, and Gordon [2003] estimates real estate's role in the market portfolio at 8.3% based on data from the Roulac Capital Flows Database published in *Investment Property*, and the Federal Reserve Board. Dopfel [2006] uses the average asset allocation of the 200 largest U.S.-defined benefit plans. Finally, focusing strictly on global commercial real estate, Liang and Gordon [2003] estimates the market value of commercial

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real estate for 50 countries using a top-down approach based on individual country gross domestic product (GDP) and GDP per capita. The Liang and Gordon 2003 estimate of $12.5 trillion is frequently cited. Conner and Liang [2005] updates the Liang and Gordon figure to $14.1 trillion. Most of these estimates are for the total of the four commercial real estate quadrants identified earlier.

We believe the most robust and applicable figures for the U.S. may come from Michael Giliberto's group at J.P. Morgan Asset Management Real Estate, which we identify as J.P. Morgan Asset Management Real Estate [2006]. As of March 1, 2006, they estimate the total value of U.S. commercial real estate at $6.7 trillion. The details for the four commercial real estate quadrants are:

1. Private (direct) commercial real estate: Debt	
a. Mezzanine	$90 to $170 billion
b. Commercial Mortgages	$1.6 trillion
2. Public (indirect) commercial real estate: Debt	
a. Commercial Mortgage-Backed Securities	$709 billion
b. Commercial Mortgages	$272 billion
3. Private (direct) commercial real estate: Equity	
a. Direct Real Estate	$1.9 trillion
4. Public (indirect) commercial real estate: Equity	
a. REITs	$383 billion
b. Corporate-Owned Real Estate	$1.7 trillion

For our purposes the interesting figure is the $1.9 trillion associated with what they identify as *Direct Real Estate*. Recall that we have combined the two *equity* commercial real estate asset sub-classes as a member of our opportunity set and believe that a large portion of public real estate debt is included in the fixed-income asset classes.[11] Below, we use the $1.9 trillion coupled with the $350 billion market capitalization for the FTSE EPRA/NAREIT Global Real Estate Index North America Series to estimate the market capitalization for investment-grade North American real estate equity at $2.25 trillion.

[11] As of September 30, 2006, the total market value of the Lehman Brothers U.S. Aggregate Bond Index was $8,679 billion, including $409 billion or 4.71% of commercial mortgage-backed securities.

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For the asset classes in our opportunity set, Table 6 contains our estimate of their respective weights in the market portfolio. The column labeled "Market Capitalization (Estimate 1)" contains rounded values based on the appropriate index proxy or a very similar index proxy. Dividing each of the individual market capitalizations by the total leads to one possible definition of the market portfolio, albeit a definition in which REITs and listed real estate stocks represent a small fraction of the total market portfolio. However, in keeping with our earlier statement that REITs and listed real estate stocks are effective proxies for both public and private equity commercial real estate, we form an alternative definition of the market portfolio using market capitalization estimates for all equity commercial real estate. The column labeled "Market Capitalization (Estimate 2)" contains the $2.25 trillion estimate for North American real estate as well as estimates for European real estate and Asian real estate. The latter two estimates are based on the relative percentages of the FTSE EPRA/NAREIT Global Real Estate Index and the $2.25 trillion estimate for North American real estate.

Table 6: Market Capitalization Estimates

Asset Class	Market Capitalization (Estimate 1) (In Billions)	Weight in Market Portfolio (Estimate 1)	Market Capitalization (Estimate 2) (In Billions)	Weight in Market Portfolio (Estimate 2)
Cash	$584	1.13%	$584	1.05%
U.S. Bonds	$8,278	15.96%	$8,278	14.84%
Non-U.S. Bonds	$13,191	25.43%	$13,191	23.64%
U.S. Large-Cap Stocks	$12,734	24.55%	$12,734	22.82%
U.S. Small-Cap Stocks	$1,281	2.47%	$1,281	2.30%
Non-U.S. Stocks	$15,088	29.09%	$15,088	27.04%
Global Real Estate	$721	1.39%	$4,637	8.31%
North American Real Estate	$350	0.67%	$2,250	4.03%
European Real Estate	$144	0.28%	$929	1.66%
Asian Real Estate	$227	0.44%	$1,458	2.61%
Total	$51,876	100.00%	$55,792	100.00%

At the beginning of 2006, *Pensions & Investments* estimated the average real estate asset allocation of the 200 largest U.S.-defined benefit plans was 4.2%, a figure that is considerably lower than the 8.31% based on a market capitalization weighting approach. Defined benefit plans are some of the more adherent practitioners of modern portfolio theory; thus, the large

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discrepancy between the average reported real estate allocation and the market capitalization weight is somewhat of a puzzle.[12]

Both of the weighting schemes in Table 6 provide different definitions of the market portfolio. Moving forward, we proceed with "Market Capitalization (Estimate 2)."

CAPM Forward-Looking Efficient Asset Allocations

In this section we create forward-looking efficient asset allocations in which the expected return estimates are based on the CAPM. More specifically, we use the reverse optimization procedure described in Sharpe [1974], which is a specialized version of Sharpe [1964].[13] Under the CAPM model, assets that make the market portfolio more volatile must also offer above-average expected returns to compensate investors for the added systematic risk.

Based on the definition of the market portfolio, an assumed long-term risk-free rate of 5.25% (reflective of yields at the time of writing), and the U.S. large-cap stock equity premium of 6.05%, the market equilibrium consensus returns based on the CAPM are presented in the second column of Table 7.

[12] Geltner and Millar [2001] discusses this conundrum and provides an overview of the literature related to the pension fund investment puzzle. Part of the conundrum may be due to the bad practice of including debt and equity in the total estimate. We would argue that a large portion of real estate debt is included in the fixed income benchmarks and should be considered part of the fixed income asset class rather than the real estate asset class.

[13] The application of the CAPM to an opportunity set that includes real estate has become the textbook approach to developing capital market assumptions as evidenced by Geltner and Millar [2001]. Geltner and Millar [2001] chronicles the application of the CAPM to real estate.

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Table 7: CAPM Expected Returns and Historical Return Comparison

Asset Class	CAPM Return	Historical Arithmetic Return	CAPM Return less Historical Arithmetic Return
Cash	5.07%	4.23%	0.84%
U.S. Bonds	5.56%	7.50%	-1.94%
Non-U.S. Bonds	7.13%	8.13%	-1.00%
U.S. Large-Cap Stocks	11.30%	11.95%	-0.65%
U.S. Small-Cap Stocks	11.55%	12.32%	-0.77%
Non-U.S. Stocks	12.27%	6.82%	5.45%
North American Real Estate	8.87%	16.97%	-8.10%
European Real Estate	10.01%	9.53%	0.48%
Asian Real Estate	14.58%	11.58%	3.00%

For comparison purposes, we've also included the historical arithmetic returns as well as the difference between the CAPM returns and the historical arithmetic returns. Clearly there are some substantial differences, particularly for non-U.S. stocks and North American real estate. For North American real estate, the large difference between the CAPM return and the historical arithmetic return is striking. We offer two possible explanations for this large difference. First, the nearly 17% historical average annual return is simply tremendous and may represent an unusually prosperous but transitory period for North American listed real estate. As suggested earlier, the structural transformation of property ownership and management from *direct* real estate investment to publicly traded securities may yield appreciable operating efficiencies that elevate investment returns to listed real estate over the period of transition but should not be expected to persist indefinitely. A limitation of the CAPM returns is that they cannot account for idiosyncratic asset class specific transforming events that are largely uncorrelated with systematic market behavior.

Second, the CAPM is far from perfect. There is a large body of literature addressing CAPM return anomalies; the most famous of which are the small-cap effect, the valuation effect, and the momentum effect. Perhaps North American real estate represents a similar or related anomaly as North American real estate could be characterized as a small value oriented asset class subject to periods of momentum.

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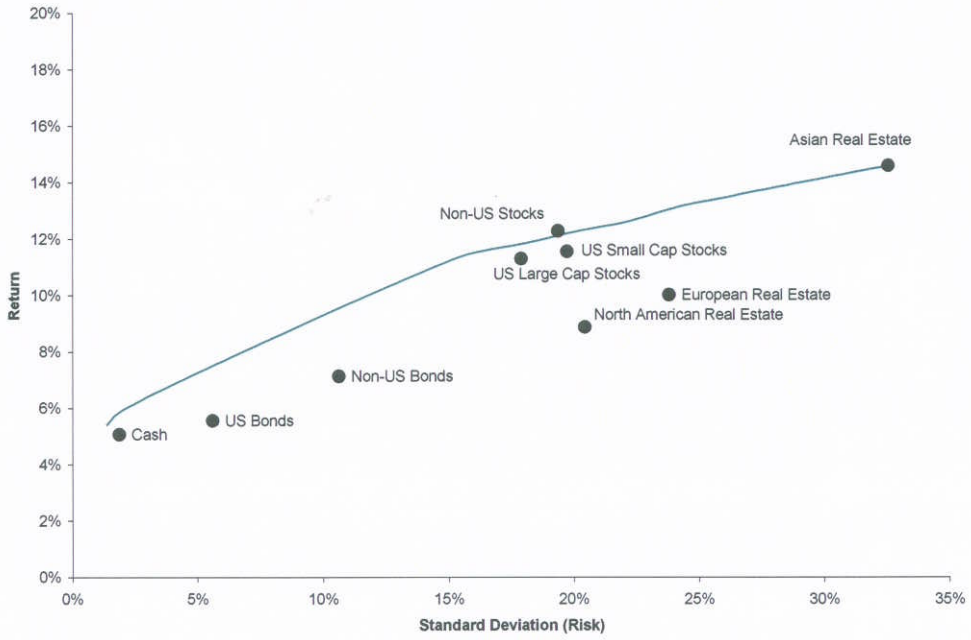
We should also note that for simplicity we have applied the traditional CAPM in which currency risk is part of the total risk of the non-U.S. asset classes. Using U.S. dollar-hedged versions of the non-U.S. asset classes would decrease the volatility of the asset class and, consequently, the risk-based return forecasts of the non-U.S. asset classes. Relative to North American real estate, European real estate and Asian real estate have expected percentage point premia of 1.14% and 5.71%, respectively. Using a very different approach based on country-specific credit ratings and hurdle rates, Liang and Gordon [2003] finds that Asian commercial real estate should offer a significant premium above North American and European commercial real estate.

Using the CAPM forward-looking returns in Table 7, the standard deviations from Table 3, and the correlations from Table 4, we calculate the *forward-looking* efficient frontier using *resampled* mean-variance optimization.

Figure 5: CAPM Efficient Frontier Using Resampled Mean-Variance Optimization



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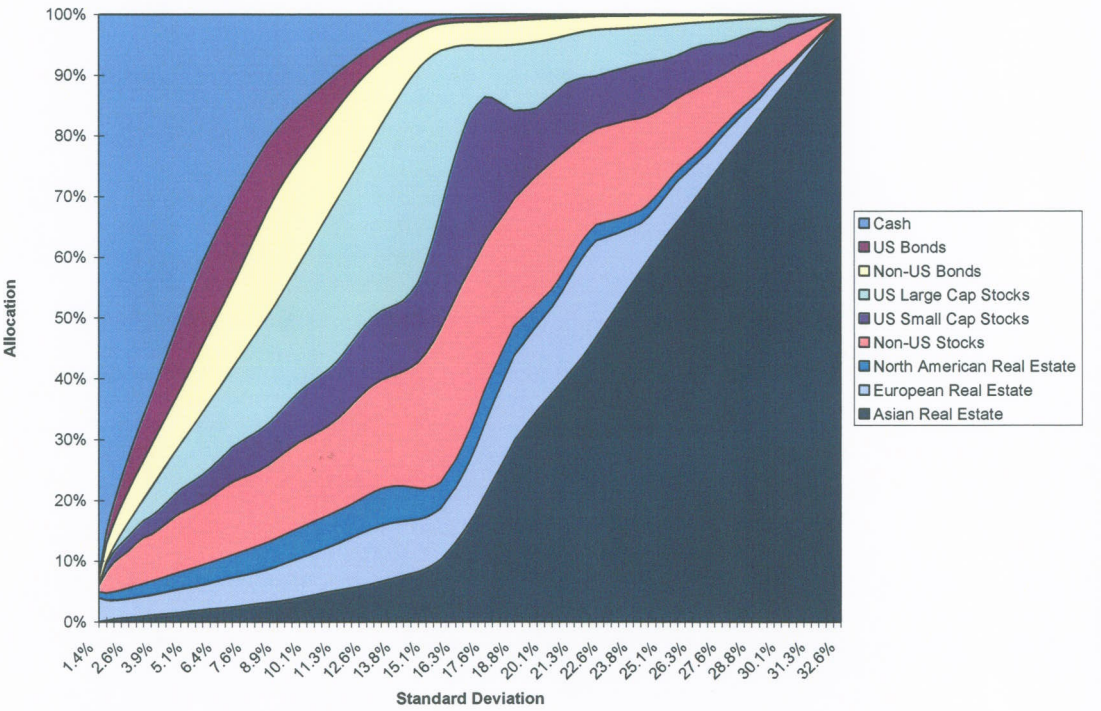
At first glance there is nothing particularly noteworthy about this efficient frontier. However, efficient frontier graphs mask the asset allocations that lead to the various points across the efficient frontier. So, as we did in the historical analysis, we use an efficient frontier area graph to display the composition of the efficient asset allocation across the entire risk spectrum (see Figure 6).

Figure 6: CAPM Asset Allocation Area Graph



The differences between the historical asset allocation area graph (Figure 4) and the forward-looking asset allocation area graph (Figure 6) are quite dramatic, both of which are based on an opportunity set that includes the six traditional asset classes as well as North American real estate, European real estate, and Asian real estate. All nine asset classes in the opportunity set receive meaningful allocations across the risk spectrum, without the need for artificial constraints.

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In the absence of additional constraints, the efficient frontier culminates at the highest level of risk with the asset class with the highest expected return. Thus, at the highest level of risk, 100% is allocated to a single asset class. Around the mid-point of a typical efficient frontier, the allocations begin to become highly concentrated in the asset classes with the highest expected returns. For this reason, investors almost never select asset allocations from the riskier half of the efficient frontier, an area of the frontier that most investors should rightly ignore. Thus, we focus our analysis on the left-hand side of Figures 5 and 6. More specifically, we've identified three possible model asset allocations designated Conservative, Moderate, and Aggressive with expected risk levels of 5%, 10%, and 15%, respectively.

Table 8: CAPM Forward-Looking Asset Allocations

Asset Class	Conservative	Moderate	Aggressive
Cash	47.8%	14.4%	1.4%
U.S. Bonds	12.4%	8.3%	1.1%
Non-U.S. Bonds	9.4%	17.1%	5.5%
U.S. Large-Cap Stocks	8.1%	21.7%	33.9%
U.S. Small-Cap Stocks	4.0%	8.4%	14.3%
Non-U.S. Stocks	9.8%	14.3%	21.8%
North American Real Estate	2.9%	5.0%	4.8%
European Real Estate	3.9%	6.7%	8.5%
Asian Real Estate	1.7%	4.1%	8.6%
Expected Return	7.3%	9.3%	11.2%
Standard Deviation	5.0%	10.0%	15.0%
Sharpe Ratio	0.40	0.41	0.40

The Conservative asset allocation is approximately 70% fixed-income, 22% equities, and 8% commercial real estate equities. The Moderate asset allocation is approximately 40% fixed-income, 44% equities, and 16% commercial real estate equities. The Aggressive asset allocation is approximately 8% fixed-income, 70% equities, and 22% commercial real estate equities.

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Black-Litterman Forward-Looking Efficient Asset Allocations

In our final analysis, we use the Black-Litterman asset allocation model to create a forward-looking set of expected returns that combines the CAPM expected return of the previous analysis with the historical returns. Table 9 contains the Black-Litterman model expected returns.[14]

Table 9: Black-Litterman Expected Returns

Asset Class	Black-Litterman Returns
Cash	4.92%
U.S. Bonds	6.07%
Non-U.S. Bonds	7.68%
U.S. Large-Cap Stocks	10.94%
U.S. Small-Cap Stocks	12.51%
Non-U.S. Stocks	11.57%
North American Real Estate	11.30%
European Real Estate	11.05%
Asian Real Estate	14.94%

Using the Black-Litterman forward-looking returns from Table 9, coupled with the historical standard deviations and correlations, we can determine another possible *forward-looking* efficient frontier, a frontier that incorporates information from the CAPM expected returns as well as information embedded in the historical returns (see Figure 7). As before, we use *resampled* mean-variance optimization.

[14] The Black-Litterman combined expected returns were calculated using the Morningstar / Ibbotson EnCorr software, in which each of the historical returns were entered as an absolute view with a confidence level of 25% (see Idzorek [2006] for more details).

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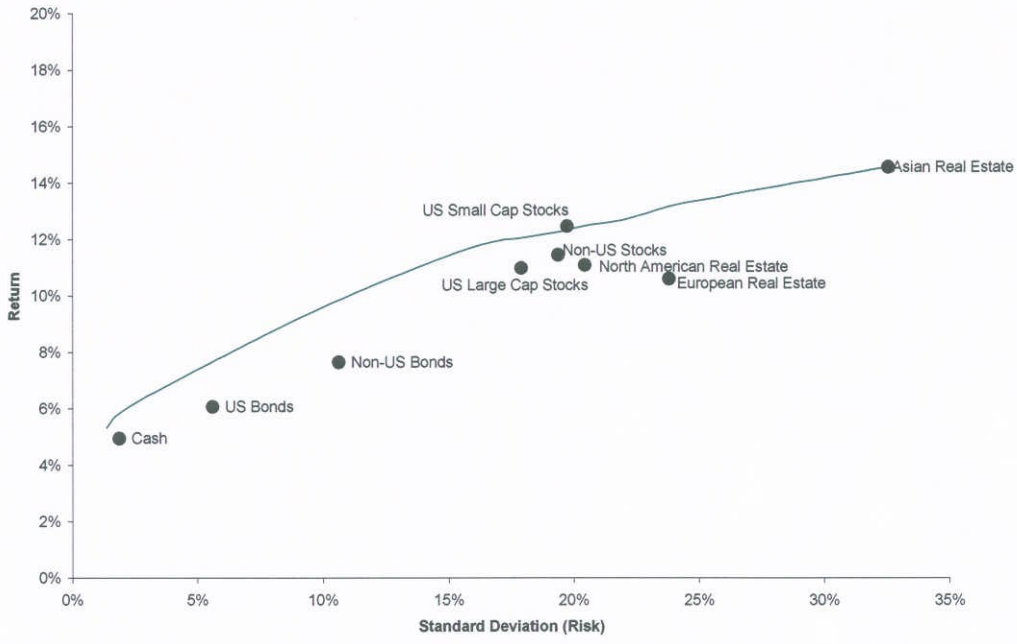
Figure 7: Black-Litterman Efficient Frontier Using Resampled Mean-Variance Optimization



The underlying efficient asset allocations that produce the efficient frontier shown in Figure 7 are displayed in Figure 8. Again, for totality we show the asset allocation across the entire risk spectrum, although in practice investors typically use asset allocations only from the left half of the frontier.

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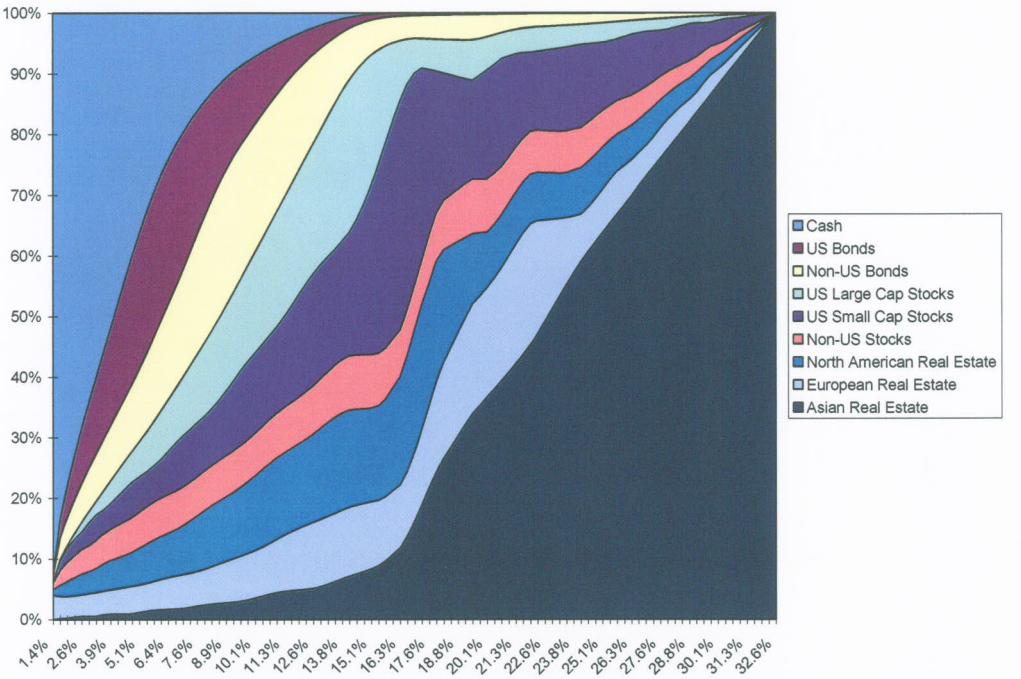
Figure 8: Black-Litterman Asset Allocation Area Graph



As before, we focus our analysis on the left-hand side of the efficient frontier and the efficient frontier asset allocation area graph. Again, we've identified three possible model asset allocations designated Conservative, Moderate, and Aggressive with expected risk levels of 5%, 10%, and 15%, respectively.

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Table 10: Black-Litterman Forward-Looking Asset Allocations

Asset Class	Conservative	Moderate	Aggressive
Cash	37.6%	7.4%	0.3%
U.S. Bonds	21.8%	11.4%	0.9%
Non-U.S. Bonds	11.7%	21.2%	5.9%
U.S. Large-Cap Stocks	5.6%	16.4%	22.3%
U.S. Small-Cap Stocks	5.8%	13.2%	26.9%
Non-U.S. Stocks	5.9%	7.0%	9.0%
North American Real Estate	5.9%	12.1%	15.4%
European Real Estate	4.5%	7.8%	11.1%
Asian Real Estate	1.1%	3.4%	8.2%
Expected Return	7.4%	9.6%	11.4%
Standard Deviation	5.0%	10.0%	15.0%
Sharpe Ratio	0.43	0.44	0.41

The Conservative asset allocation is approximately 71% fixed-income, 17% equities, and 12% commercial real estate equities. The Moderate asset allocation is approximately 40% fixed-income, 37% equities, and 23% commercial real estate equities. The Aggressive asset allocation is approximately 7% fixed-income, 58% equities, and 35% commercial real estate equities.

Relative to the CAPM-based asset allocations, the Black-Litterman-based asset allocations have larger allocations to worldwide commercial real estate equities and smaller allocations to non-U.S. stocks. These changes are intuitive given the strong historical performance of global REITs and listed real estate stocks and the relatively weak performance of non-U.S. stocks over this particular historical time period. Among the three real estate asset classes, the Black-Litterman-based allocations favor North American real estate and European real estate relative to the CAPM-based asset allocations.

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Some Words of Caution

First, the two forward-looking sets of asset allocations represent only two possible asset allocation sets based on reasonable, analytically based forward-looking expected returns. While it is unlikely that any forward-looking asset allocation will, in fact, prove to be the most efficient, Markowitz and Usmen [2003] indicates that asset allocations based on *resampled* mean-variance optimization are likely to outperform asset allocations based only on *traditional* mean-variance optimization.

Second, because Global REITs and listed real estate stocks still represent a small portion of worldwide commercial real estate equity investments, our use of listed real estate stock returns to represent the long-term investment performance of *all* commercial real estate equity investments may be questioned. As Hudson-Wilson and Harbaugh [2006] notes, the degree to which REITs and listed real estate stock returns accurately represent investment performance in the larger real estate market is an empirical question. However, as the percentage of total commercial real estate investment represented by REITs and listed real estate stocks increases, using REITs and listed real estate stock returns as a proxy for all commercial real estate investment will only become more appropriate and representative.

Third, we believe almost all investors should own REITs and listed real estate stocks; however, for investors who meet two conditions, a separate or distinct strategic asset allocation to REITs and listed real estate stocks may not be necessary. When an investor has 1) an appropriate *direct* real estate asset allocation and 2) an appropriate equity asset allocation that includes an implicit, typically market capitalization-weighted allocation to REITs and listed real estate stocks, a separate, explicit allocation to REITs and listed real estate stocks is unnecessary. However, this statement only applies to a very small number of the largest and most sophisticated investors with access to *direct* real estate and the ability to diversify that investment. For investors *without* appropriate *direct* real estate asset allocations (a condition that describes most investors), a separate asset allocation to commercial real estate proxied and implemented with exposure to REITs and listed real estate stocks worldwide seems to be the best alternative. We should also note that even for investors who meet the two conditions, from a tactical and operational perspective, the advantages of REITs and listed real estate stocks (e.g., liquidity, corporate governance, real-time pricing and lower transaction costs) over *direct* real estate make them important investment options.

Fourth, the CAPM-based asset allocations are market-oriented asset allocations that are rooted in modern portfolio theory and do not include a U.S. or home bias. A different definition of the market portfolio will result in different asset allocations; it should be clear that there is considerable uncertainty regarding the role of commercial real estate in the market portfolio. In

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the equity world, index providers are working toward refining float-adjusted weighting methodologies. For commercial real estate, we are working toward ballpark estimates; clearly more work on this topic is needed.

Fifth, investors are well advised to expand their opportunity sets to include all of the major asset classes that make up the unobservable market portfolio, including those asset classes not considered in this study such as TIPS, commodities, convertible bonds, emerging market stocks, emerging market bonds, high-yield bonds, etc. All else equal, expanding the opportunity set to include additional asset classes will tend to decrease the total allocation to the asset classes considered in this study.

Sixth, the Black-Litterman-based asset allocations are also market-oriented asset allocations that are augmented with information contained in the historical returns. Like the CAPM-based asset allocations, a different definition of the market portfolio will result in different asset allocations. The size of the Black-Litterman-based asset allocation is largely affected by the short-term historical returns that are blended with the CAPM returns, although the degree to which the allocations are affected is far less than most other approaches.

Finally, *resampled* mean-variance optimization helps to compensate for limited data periods and reflects the uncertainty of future investment performance by using different levels of asset returns, volatilities, and correlations of returns. As such, the asset allocations from *resampled* mean-variance optimization are those that are expected to perform best given the uncertainty of future outcomes. Nevertheless, actual asset allocation should be customized based on the investor's unique circumstances.

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Conclusions

Commercial real estate investment is a large part of the investable universe that should be included in all investors' opportunity sets even though the role of commercial real estate in the market portfolio is not yet well understood. When developing a strategic asset allocation to commercial real estate, investors should consider REITs and listed real estate stocks as well as *direct* commercial real estate. For a large number of investors, REITs and listed real estate stocks are the only reasonable way to gain exposure to the commercial real estate equity asset class. REITs and the worldwide growth of listed real estate stocks give all investors an effective and efficient method of obtaining exposure to commercial real estate equity.

Within the global commercial real estate asset class a shift is underway. The advantages of REITs and listed real estate stocks over *direct* real estate include liquidity, corporate transparency and governance, real-time pricing, and lower transactions costs. These advantages create a natural preference for REITs and listed real estate stocks and, over time, we believe a significant amount of *direct* real estate will be securitized. As REITs and listed real estate stocks continue to grow worldwide, their share of the commercial real estate market will also grow, as will their acceptance as a method of obtaining exposure to the commercial real estate asset class.

In a historical context, the inclusion of North American real estate in the opportunity set of investable assets leads to dramatic improvements in risk-adjusted performance. Over the historical time period reviewed in this study, the same is not true for European real estate or Asian real estate. However, this observation does not mean that these asset classes should be excluded from an investor's asset allocation. Just as equity and fixed-income investors should diversify across their respective investable universes, commercial real estate investors should diversify as well. Knowing that what was optimal in the *past* almost certainly will not be optimal in the *future* encourages us to look for sensible approaches to developing robust asset allocations.

In what is best described as a modern portfolio theory approach to asset allocation, CAPM-based and Black-Litterman-based forward-looking asset allocations diversify across all of the asset classes in the opportunity set.

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References

Bergsman, Steve. (2005). "Investing in the Global Market." *Real Estate Portfolio*, Special Issue, 16-20.

Berkley, Steve, and Nick Gendron. (2002). "A Guide to the Lehman Global Family of Fixed Income Indices." *Lehman Brothers Fixed Income Research*, February.

Black, Fischer, and Robert Litterman. (1992). "Global Portfolio Optimization." *Financial Analysts Journal*, September/October, 28-43.

Luca Barone. (2006). "The Problem of 'Full-Risk Insurances'" *Journal of Investment Management*, Vol. 3, Third Quarter, 19-43.

Chopra, Vijay. K., and William T. Ziemba. (1993). "The effect of errors in means, variances, and covariances on optimal portfolio choice." *Journal of Portfolio Management*, Winter, 6-11.

Conner, Philip, and Robert Falzon. (2004). "Rational Differences Between Public and Private Real Estate." Prudential Real Estate Investors, May.

Conner, Philip, and Youguo Liang. (2006). "Global REITs: A New Platform of Ownership." Prudential Real Estate Investors, January.

de Finetti, Bruno. (1940). "Il Problema dei <<pieni>>." *Giornale dell'Instituto degli Attuari*, 11 (1), 1-88.

DiBartolomeo, Dan. (1993). "Portfolio Optimization: The Robust Solution." Prudential Securities Quantitative Conference. Available online at http://208.15.47.66/Papers/NorthfieldResearchDocs/19931221_optimization_robust.pdf.

Dopfel, Frederick E. (2006). "Leverage and the Limits of the Possible." *Journal of Portfolio Management*, Spring, 12-25.

Feldman, Barry E. (2003). "Investment Policy for Securitized and Direct Real Estate." *Journal of Portfolio Management*, Special Issue, 112-121.

Fisher, Jeff, Dean Gatzlaff, David Geltner, and Donald Haurin. (2003). "Controlling for the Impact of Variable Liquidity in Commercial Real Estate Price Indices." *Real Estate Economics*, v. 31, 269-303.

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Fisher, Jeff, David Geltner, and Henry Pollakowski. (2005). "A Quarterly Transactions-Based Index of Institutional Real Estate Investment Performance and Movements in Supply and Demand." MIT Center for Real Estate, April.

Frost, Corin, Amy Schioldager, and Scott Hammond. (2005). "Real Estate Investing the REIT Way: A Guide to REIT Benchmarks and Investing." *Investment Insights*, Barclays Global Investors, September.

Geltner, David, and Norman G. Miller. (2001). *Commercial Real Estate Analysis and Investments*. Ohio: South-Western Publishing.

Greer, Robert J., and Don Yocham. (2006). "The Role of Real Return Assets in a Portfolio." In Robert J. Greer, editor, *The Handbook of Inflation Hedging Investments*. New York: McGraw-Hill.

Hudson-Wilson, Susan, Frank J. Fabozzi, and Jacques N. Gordon. (2003). "Why Real Estate? An expanding role for institutional investors." *Journal of Portfolio Management*, Special Issue, 12-25.

Hudson-Wilson, Susan, and Margaret Harbaugh. (2006). "Implementing a Real Estate Allocation." In Robert J. Greer, editor, *The Handbook of Inflation Hedging Investments*. New York: McGraw-Hill.

Hughes, Fraser, and Jorrit Arissen. (2005). "Global Real Estate securities – Where do they fit in the broader market?" European Real Estate Association Research (EPRA).

Ibbotson, Roger G., and Peng Chen. (2003). "Long-Run Stock Returns: Participating in the Real Economy." *Financial Analysts Journal*, January/February, 88-89.

Idzorek, Thomas M. (2007). "A Step-By-Step Guide to the Black-Litterman Model: Incorporating User-Specified Confidence Levels." Forthcoming in *Forecasting Expected Returns*, edited by Stephen Satchell. London: Elsevier.

Jobson, David J., and Bob Korkie. (1980). "Estimation for Markowitz Efficient Portfolios." *Journal of the American Statistical Association*, Vol. 75, September, 544-554.

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Jobson, David J., and Bob Korkie. (1981). "Putting Markowitz Theory to Work." *Journal of Portfolio Management*, Summer, 70-74.

Jorion, Phillipe. (1992). "Portfolio Optimization in Practice." *Financial Analysts Journal*, January-February, 68-74.

J.P. Morgan Asset Management Real Estate. (2006). "Real Estate Universe - 4 Quadrants 2006Q1." J.P. Morgan Asset Management Real Estate, March.

Kallberg, Jarl G., Crocker H. Liu, and D. Wylie Greig. (1996). "The Real Estate Investment Decision in the Portfolio Allocation Process." *Journal Real Estate Economics*, 24 (3): 359-377.

Liang, Youguo, and Nancy M. Gordon. (2003). "A Bird's Eye View of Global Real Estate Markets." Prudential Real Estate Investors, March.

Lintner, John. (1965). "The Valuation of Risk Assets and the Selection of Risky Investments in Stock Portfolios and Capital Budgets." *Review of Economics and Statistics*, February, 13-37.

Markowitz, Harry M. (1952). "Portfolio Selection." *The Journal of Finance*, March, 77-91.

Markowitz, Harry M. (1959). *Portfolio Selection: Efficient Diversification of Investments*. New York: Wiley, 1959.

Markowitz, Harry M. (2006). "de Finetti Scoops Markowitz." *Journal of Investment Management*, Vol. 3, Third Quarter, 5-18.

Markowitz, Harry M., and Nilufer Usmen. (2003). "Resampled Frontiers versus Diffuse Bayes: An Experiment." *Journal of Investment Management*, Fourth Quarter, 9-25.

Michaud, Richard O. (1998). *Efficient Asset Management*. Boston: Harvard Business School Press.

Miles, Mike, and Nancy Tolleson. (1997). "A Revised Look at How Real Estate Compares with Other Major Components of Domestic Investment Universe." *Real Estate Finance*, Spring, 11-20.

Mossin, Jan. (1966). "Equilibrium in a Capital Asset Market." *Econometrica*, October, 768-783.

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Pagliari, Joseph, Kevin Scherer, and Richard Monopoli. (2005). "Public versus Private Real Estate Equities: A More Refined Long-term Comparison." *Real Estate Economics*, March, 147-187.

Rubinstein, Mark. (2006). "Bruno de Finetti and Mean-Variance Portfolio Selection." *Journal of Investment Management*, Vol. 3, Third Quarter, 3-4.

Sharpe, William F. (1966). "Mutual Fund Performance," The Journal of Business, January 119-138.

Sharpe, William F. (1964). "Capital Asset Prices: A Theory of Market Equilibrium." *Journal of Finance*, September, 425-442.

Sharpe, William F. (1974). "Imputing Expected Security Returns from Portfolio Composition." *Journal of Financial and Quantitative Analysis*, June, 463-472.

Treynor, Jack L. (1961). "Market Value, Time, and Risk." Unpublished Manuscript dated August 8, 1961.

Treynor, Jack L. (1962). "Toward a Theory of Market Value of Risky Assets." Unpublished Manuscript dated Fall 1962.

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Real Estate Investment Trusts

Extract prepared for
Office of Regulations & Interpretations
Employee Benefits Security Administration
U.S. Department of Labor

September 2006

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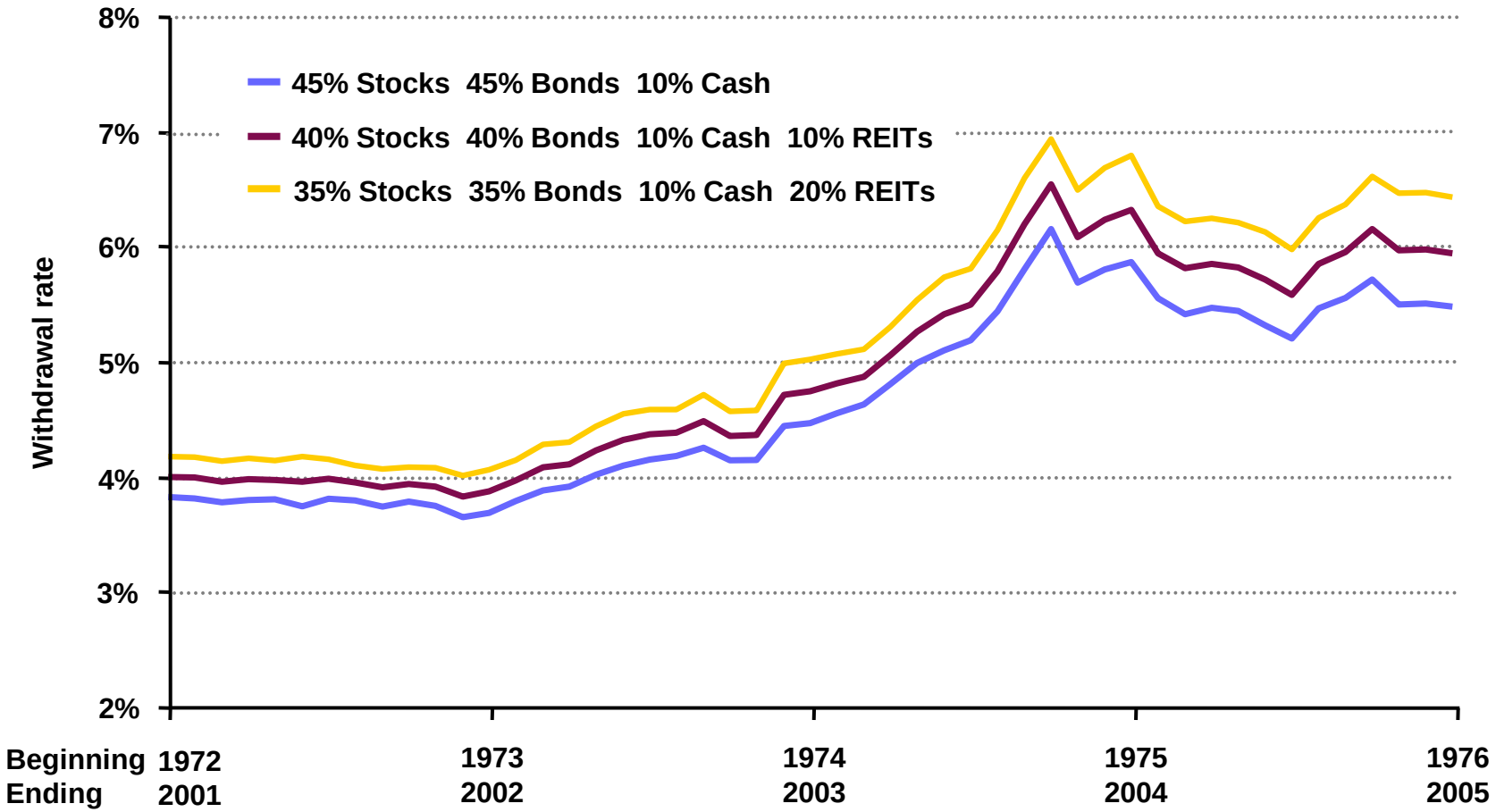
Historical maximum sustainable withdrawal rates

Rolling 30-year periods January 1972–December 2005



Source: Stocks—Standard & Poor's 500®, which is an unmanaged group of securities and considered to be representative of the stock market in general; Bonds—20-year U.S. Government Bond; Cash—30-day U.S. Treasury Bill; REITs—FTSE NAREIT Equity REIT Index.

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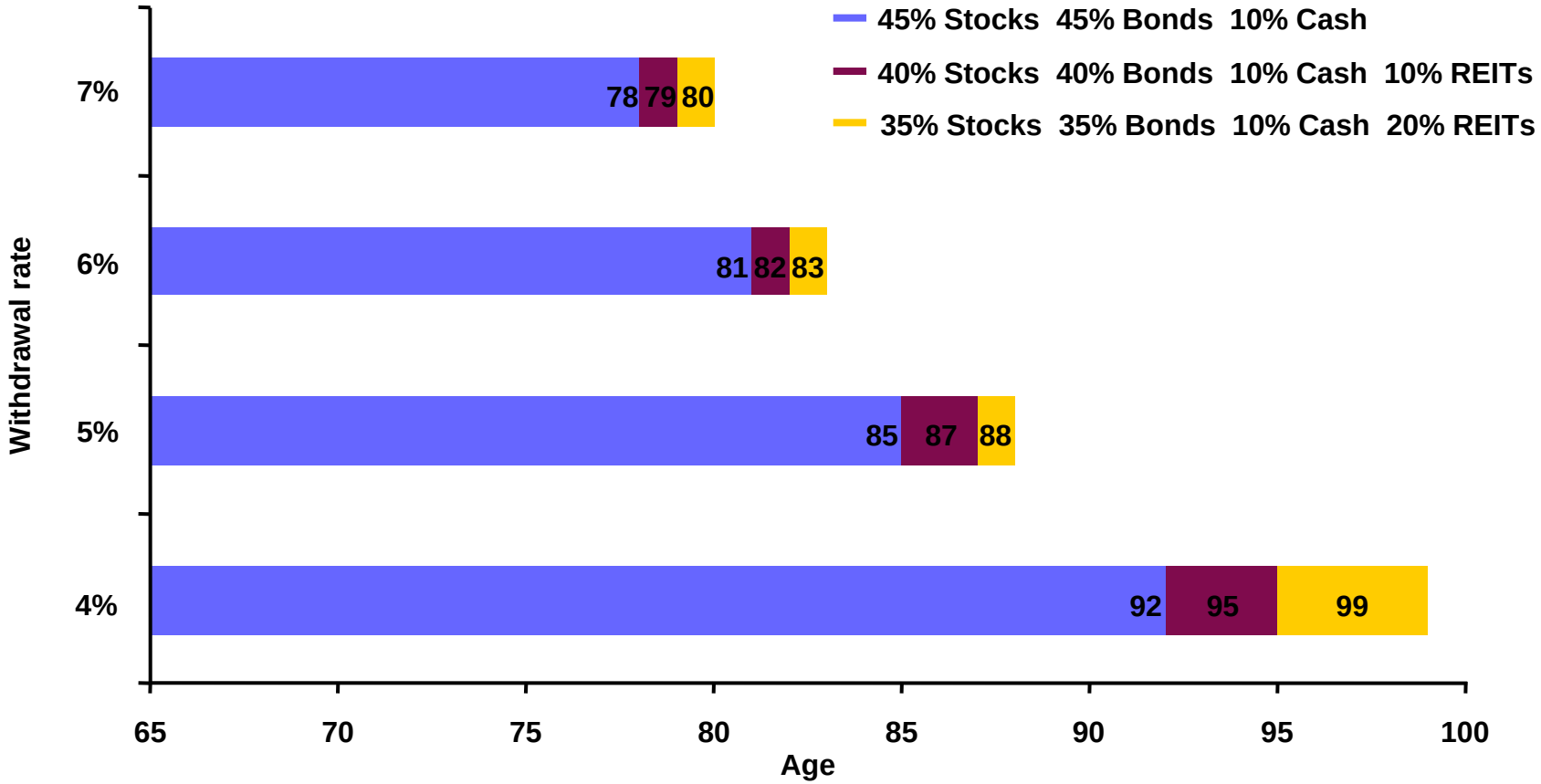
Retirement portfolios

Age to which portfolio may last (90% confidence level)



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Source: Stocks—Standard & Poor's 500®, which is an unmanaged group of securities and considered to be representative of the stock market in general; Bonds—20-year U.S. Government Bond; Cash—30-day U.S. Treasury Bill; REITs—FTSE NAREIT Equity REIT Index.

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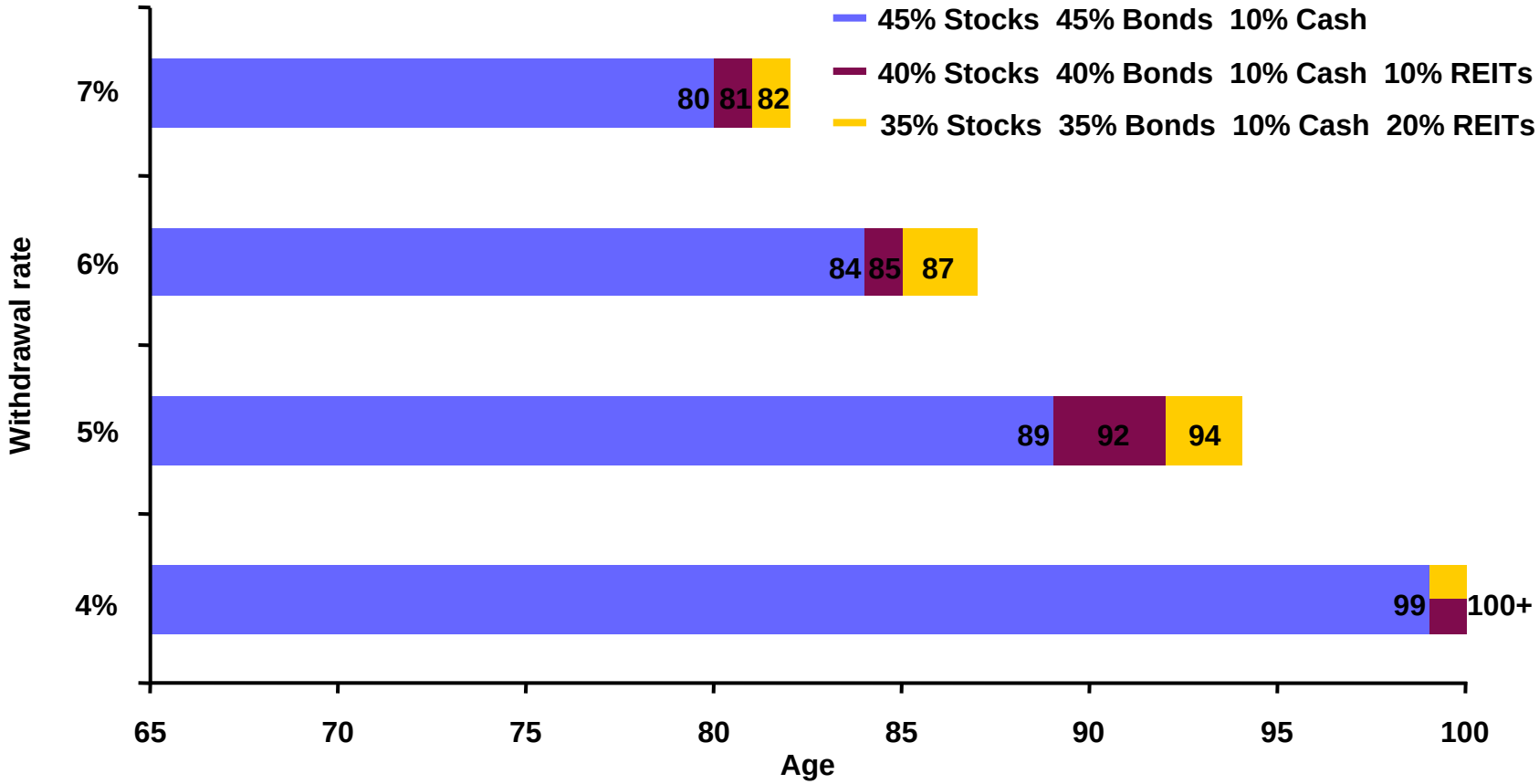
Retirement portfolios

Age to which portfolio may last (75% confidence level)



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Probability of shortfall over a 30-year retirement

Various withdrawal rates and portfolio allocations

		45% Stocks 45% Bonds 10% Cash	40% Stocks 40% Bonds 10% Cash 10% REITs	35% Stocks 35% Bonds 10% Cash 20% REITs
Withdrawal rate	4%	15%	9%	5%
	5%	43%	33%	25%
	6%	69%	61%	52%
	7%	87%	82%	76%
	8%	95%	93%	90%

More likely Less likely

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Source: Stocks—Standard & Poor's 500®, which is an unmanaged group of securities and considered to be representative of the stock market in general; Bonds—20-year U.S. Government Bond; Cash—30-day U.S. Treasury Bill; REITs—FTSE NAREIT Equity REIT Index.

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An investment cannot be made directly in an index.
Past performance is no guarantee of future results. 5/1/2006

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Probability of shortfall over a 30-year retirement

Various withdrawal rates and portfolio allocations

		90% Bonds 10% Cash	80% Bonds 10% Cash 10% REITs	70% Bonds 10% Cash 20% REITs
Withdrawal rate	4%	56%	36%	20%
	5%	87%	75%	58%
	6%	97%	94%	87%
	7%	100%	100%	97%
	8%	100%	100%	100%

More likely Less likely

Results may vary over time and each time the simulation is run. IMPORTANT: The projections or other information generated by Ibbotson Associates regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results, and are not guarantees of future results. No transaction costs or taxes are assumed.

Source: Bonds—20-year U.S. Government Bond; Cash—30-day U.S. Treasury Bill; REITs—FTSE NAREIT Equity REIT Index.

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An investment cannot be made directly in an index.
Past performance is no guarantee of future results. 5/1/2006

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The Role of Global Listed Real Estate Equities in a Strategic Asset Allocation

Extract prepared for
Office of Regulations & Interpretations
Employee Benefits Security Administration
U.S. Department of Labor

November 2006

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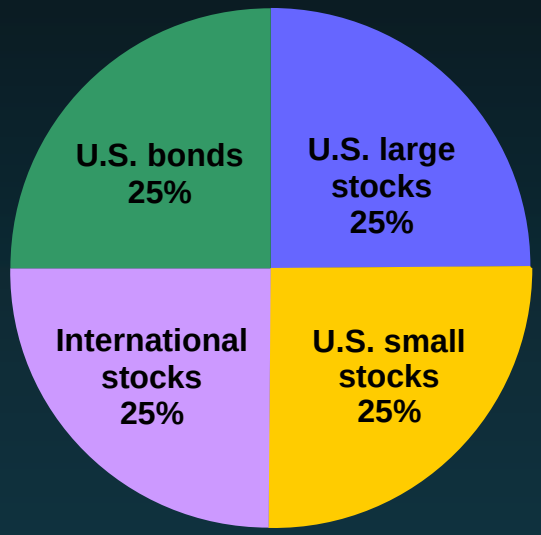
Potential to increase return without increasing risk

Sample portfolios with and without global real estate 1990–2005

Portfolio without real estate



Return	9.6%
Risk	12.7%
Sharpe Ratio	0.42

Portfolio with 20% global real estate

Return	10.7%
Risk	12.7%
Sharpe Ratio	0.51

Source: U.S. Large Stocks—Standard & Poor's 500®, which is an unmanaged group of securities and considered to be representative of the stock market in general; U.S. Small Stocks—Russell 2000; International Stocks—Morgan Stanley Capital International Europe, Australasia, and Far East (EAFE®) Index; U.S. Bonds—Lehman Brothers Aggregate Bond Index; North American Real Estate—FTSE EPRA/NAREIT Global Real Estate Index North America Series; European Real Estate—FTSE EPRA/NAREIT Global Real Estate Index Europe Series; Asian Real Estate—FTSE EPRA/NAREIT Global Real Estate Index Asia Series. *Global real estate portfolio composition—North America 16%, Europe 2%, Asia 2%.

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Efficient portfolio returns

Traditional portfolios with and without North American real estate

Standard deviation	Traditional portfolio (Percent)	Traditional portfolio + North American real estate (Percent)	Increase in portfolio return (Basis points)
5	7.62	8.18	56
6	8.30	9.01	71
7	8.81	9.78	97
8	9.22	10.49	127
9	9.58	11.13	155
10	9.91	11.73	182
11	10.22	12.30	208
12	10.52	12.86	234
13	10.81	13.40	259
14	11.10	13.93	283
15	11.39	14.45	306
Average	9.77	11.57	180

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REAL ESTATE: THE FOURTH ASSET CLASS

In addition to cash, stocks and bonds, real estate has finally achieved its place as a major asset class among institutional investors.

BY MARILEN CAWAD

For years, many large institutional investors have been skeptical about real estate's role as a distinct asset class. Today, that skepticism has been replaced by recognition of the positive impact that real estate can have on their portfolios. "We're seeing so much liquidity in the real estate market around the world because it has become a mainstream asset class in the minds of most institutional investors. Pension funds and insurance companies have allocated an increasing portion of their portfolios in real estate," says Michael Pralle, president and CEO of GE Real Estate.

In the past five years, real estate has delivered strong absolute and relative performance, at far lower volatility than equities. Over this period, global real estate has generated around 10 percent annual total returns compared with 3 percent for equities, according to a report by RREEF, a subsidiary of Deutsche Bank Real Estate.

"Investors have an increasing desire to diversify their holdings," says Edward LaPuma, president of W. P. Carey International LLC, a global real estate investment firm and provider of net lease financing for corporations worldwide. "Investors have historically held stocks, bonds and cash, but after the meltdown in our equity markets in 2000, investors became more attracted to real estate which can diversify risk and is a tangible asset."

In the US, improving economic and business climates have driven demand for office space in the top urban markets, while limited developable sites and escalating construction costs have restrained new development. "The resulting favorable fundamentals, combined with historically low interest rates, have attracted investors in search of stable returns and the potential for capital appreciation," says Steven Wechsler, senior managing director at Tishman Speyer.

November 2006 // This Sponsored Report was prepared by the Special Projects Department of *Institutional Investor*.

Although domestic investors play the dominant role in the US real estate market, a significant portion, $17 billion, of last year's total direct real estate investment in the country came from foreign capital. In the first half of 2006, overseas capital was already more than $10 billion.

Uptrend in US Commercial Real Estate

What appears to be a slowdown in the housing market has not affected the commercial real estate sector in general. "The two markets are pretty independent," says Benjamin Harris, managing director and head of domestic investments at W. P. Carey & Co. LLC. "Both are impacted by interest rates and the overall economy but have different supply and demand characteristics. A major correction in the residential market could turn retail investors away from REITs and other real estate securities targeted at retail investors, but there is so much equity from so many different sources chasing real estate investments that we don't think this would spell disaster for the commercial market."

Benjamin Harris
W. P. Carey & Co. LLC

The decline in commercial real estate vacancy rates is leading to more widespread rent growth, "particularly in the more volatile 'bounceback' markets, with San Francisco, for instance, experiencing a 460 basis point decline in vacancy rates during 2005," says Peter Hobbs, head of global real estate and infrastructure research at RREEF. Other markets that have experienced a significant reduction in vacancy rates in 2006 include Austin, Boston, Denver, Oakland, Portland and Seattle.

Steven Wechsler
Tishman Speyer

The commercial multifamily sector has been supported by the economy's strong employment market and the shortage of rental units. This has been amplified, Wechsler says, by both the recent trend of condo conversions and significant barriers to entry, such as escalating construction and land costs. "If interest rates continue to increase," he adds, "demand for multifamily rental units will increase as potential home buyers choose to rent instead of buy."

Peter Hobbs
RREEF

Meanwhile, the industrial sector is enjoying a broad-based recovery as vacancy rates fell below 10 percent by the end of 2005. This decline is continuing in 2006, with national industrial vacancy expected to fall to 9 percent by the end of the year. "This shift from a tenant's to a landlord's market is putting upward pressure on rents and the industrial sector is now firming in the growth phase of the cycle," says Hobbs. The recovery is being led by the warehouse sector and the global gateway markets: Southern California, Oakland (East Bay), Seattle (Tacoma), South Florida and New Jersey.

Retail sales are expected to fall back to below 5 percent, after rising by more than 8 percent in 2004 and 2005. Despite this, Hobbs says that vacancy rates remain low by historical standards, and there are few signs of overbuilding, so rent growth is likely to keep pace with, or slightly exceed, inflation across most markets, especially in California, the Northeast and Mid-Atlantic, South Florida and the Pacific Northwest.

Surge of Interest from Foreign Investors

Although domestic investors play the dominant role in the US real estate market, a significant portion, $17 billion, of last year's total direct real estate investment in the country came from foreign capital. In the first half of 2006, overseas capital was already more than $10 billion.

The composition of this foreign investment has changed over time, with German investment, which accounted for 40 to 50 percent of foreign activity at the start of the decade, falling to 6 percent in the first half of 2006. "Australian investors have greatly increased their activity, from less than 10 percent at the start of the decade to more than 50 percent in 2005," says Hobbs. More recently, there has been a surge of interest among Middle Eastern and Pacific Rim investors, who together represented more than 50 percent of cross-border activity in the first half of 2006.

GE's Pralle says a lot of foreign investors are going into prime office

Share of US Cross-Border Real Estate Investment by Investor's Nationality

	2001	2002	2003	2004	2005	2006 H1
Australia	1%	7%	27%	27%	51%	21%
Pacific Rim	3%	2%	2%	2%	1%	23%
Germany	48%	44%	42%	34%	18%	6%
Middle East	10%	19%	12%	10%	10%	34%

Note: Share of Total Annual Cross-border Investment by Nationality
Source: Real Capital Analytics

From a return perspective, the operating income from real estate varies through different rent and vacancy cycles. Because these cycles are not synchronized across countries, holding real estate in different countries tends to smooth out fluctuations in yields.

Michael Pralle
GE Real Estate

space in the US. "You see German and British investors buying landmark office buildings in New York, Los Angeles and Washington DC. They're also investing in retail, but not to the same degree as office," says Pralle.

Kevin Fitzpatrick, president of AIG Global Real Estate, believes that there is slightly less interest in residential real estate because foreign investors look at it as a very local market. "Although some investors with diversified portfolios have residential as part of their portfolios, most would probably be uncomfortable with the idea of a residential-only portfolio," says Fitzpatrick.

Holding a Globally Diversified Portfolio

For many institutional investors, having a diversified portfolio now means taking an international outlook on real estate. From a return perspective, the operating income from real estate varies through different rent and vacancy cycles. Because these cycles are not synchronized across countries, holding real estate in different countries tends to smooth out fluctuations in yields.

Lijian Chen
UBS Global Asset Management

"The low correlations between real estate returns and returns from other asset classes can be clearly demonstrated in the countries where real estate return data exist," says Lijian Chen, global head of research at UBS Global Asset Management, Real Estate. "For example, the correlation across regions is considerably lower for real estate securities than it is for stocks and bonds. This suggests that the benefit of holding a globally diversified portfolio of real estate securities is higher than for bonds or broad equities."

Global diversification of a real estate portfolio can also help protect investors from economic and political uncertainty, particularly when an investor is based in a relatively small or less developed nation. "Even for investors in the US," says Chen, "where we estimate the real estate market offers the largest stock of institutional grade real estate in the world, the domestic market still comprises only about 40 percent of the global real estate universe, and it pays to diversify beyond national borders."

Kevin Fitzpatrick
AIG Global
Real Estate

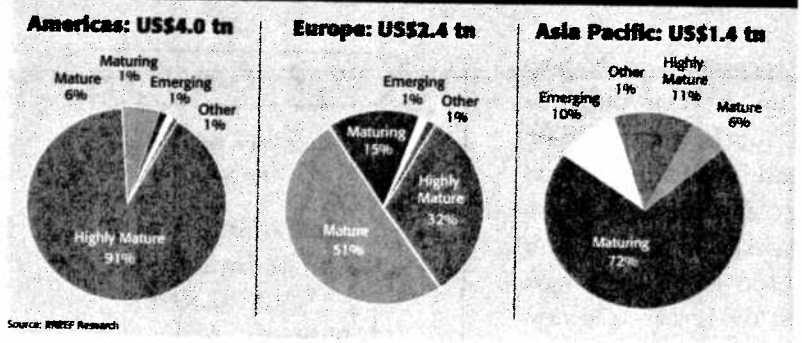
Investors are now becoming increasingly comfortable in taking on emerging market risks. Says AIG's Fitzpatrick: "The impressive returns of emerging market stock portfolios are making many US CIOs more comfortable with emerging market real estate as an asset class in their real estate portfolio." He notes that improved transparency and more currency trading are also making it easier for investment officers to transact business in emerging markets.

"Explosive economic and employment growth combined with unprecedented urbanization trends are building a strong foundation for the real estate markets in China and India," says Wechsler of Tishman Speyer. "Multinational corporations have been increasing their presence in these markets, increasing demand for high-quality commercial spaces. In addition, several hundred million people will be moving to urban centers over the next several decades, increasing demand for residential and retail space."

In Brazil, fiscal stability and an expanding middle class have drawn global interest in the real estate markets of São Paulo and Rio de Janeiro. The governments of all of these emerging markets have continued to create more stable regulatory and political environments, building a compelling argument for US real estate investors to go abroad.

"The world is becoming flatter and the trend toward increasing global real estate investment continues," says Chen. As barriers to investing in international real estate come down, capital is becoming more global.

Marked Variations in the Size and Maturity of Global Real Estate Markets



Source: INREIT Research

Globalization of REITs

As more real estate assets become securitized worldwide, real estate investment trusts (REITs) and REIT-like structures are also beginning to expand

their real estate investments across borders. "In the US, some of the larger companies have begun to expand their property portfolios and investor bases outside of the country," says Michael Grupe, executive vice president of research and investor outreach at the National Association of Real Estate Investment Trusts (NAREIT).

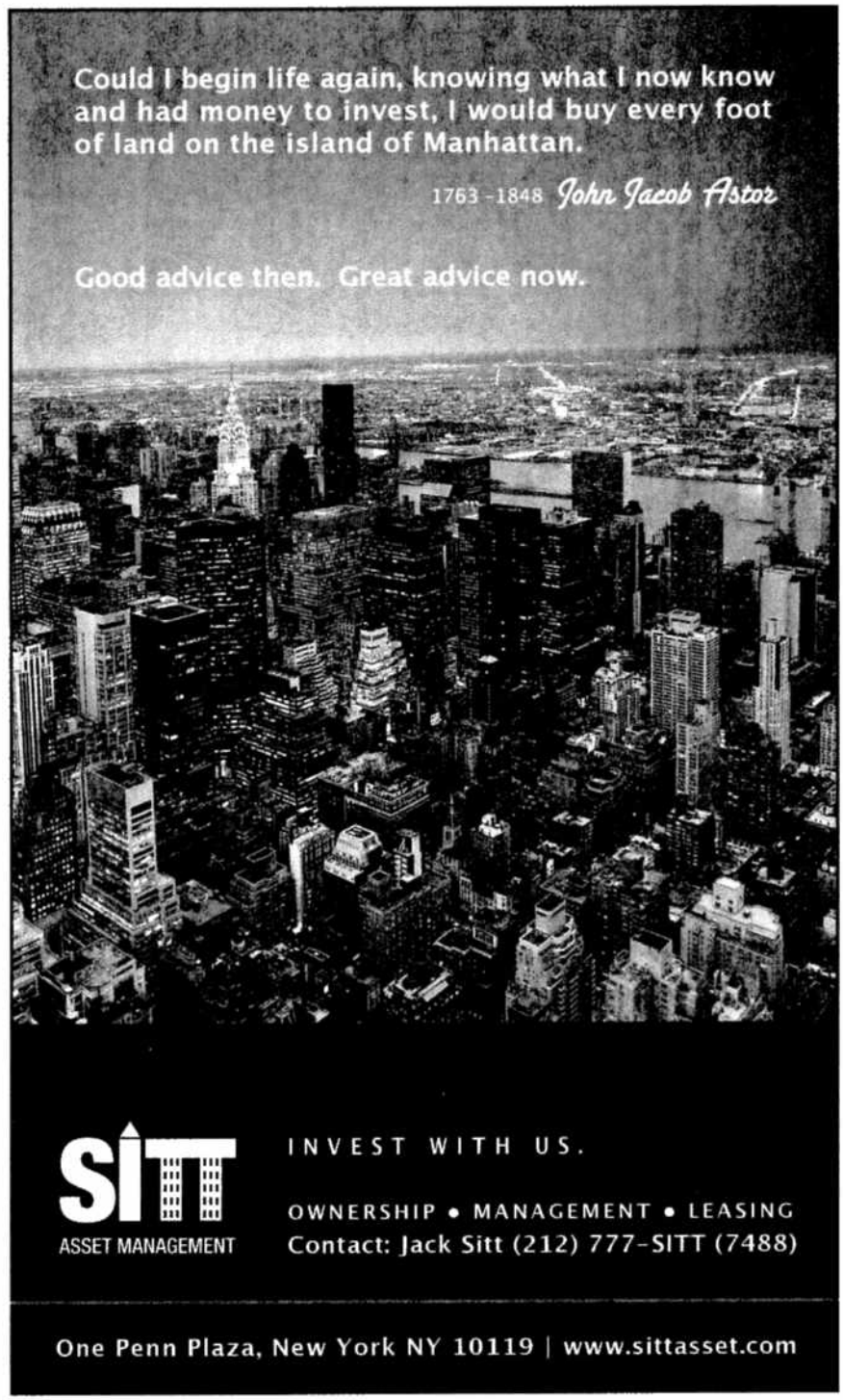
Michael Grupe
NAREIT

Many of these activities are in the industrial and retail sectors. "Companies such as ProLogis and Simon Property Group are dealing with major global operators, so it's natural for them to expand," says Grupe. He adds that US REITs that are seeking opportunities abroad are doing so in a slow, careful and deliberate manner.

Within the US, REITs have grown significantly as a core investment. As of September 2006, there were nearly 200 publicly traded REITs with a total equity market capitalization of $403 billion, according to NAREIT. In the last five to 10 years, however, REITs have also been introduced in other countries. At least 16 countries now have REITs or REIT-like companies, and an additional seven countries are considering REITs, with the UK in line to join the world club in 2007.

Edward LaPuma
W. P. Carey
International LLC

In Asia, Hong Kong called attention to REITs when it successfully delivered the Link REIT in 2005. It became the largest REIT IPO in the world when it issued shares with an aggregate value of $2.8 billion. The first three Hong Kong REITs to have IPOs, all in late 2005, raised a combined total of $3.3 billion.

"Hong Kong has been competing with Singapore to provide an exchange to publicly list and provide liquidity to real estate investors for investments across Asia. This led to a rapid evolution of the market," says LaPuma.

The aging demographic profile in many countries has contributed to the REIT momentum. "We see REITs growing as pension capital moves from defined benefit plans to defined contribution or 401(k) type plans. And this is happening not only in the US but in many European countries as well," says Grupe. Whether they are individual retirees or large plan sponsors, investors are looking for ways to generate income from their investments. ■