

Real Estate in the Investment Portfolio

BY ROY T. BLACK, PH.D., J.D

1. HISTORY OF MODERN PORTFOLIO THEORY

Modern portfolio theory (MPT) began in 1952 with the publication of an important article by Harry Markowitz. Markowitz was the first researcher to prove the old adage “Don't put all your eggs in one basket.” Essentially, he proved mathematically that by diversifying investments, the investor can lower the risk of the investment portfolio, or conversely, earn a higher return for the same amount of risk as an undiversified portfolio. Perhaps more important than proving the common sense adage, Markowitz gave us the tool by which we could measure the benefits of diversification. Put simply, the objective of the investor is either to minimize portfolio risk subject to a target rate of return or to maximize the return on the portfolio subject to a target level of risk. To do this, the investor uses mean-variance portfolio analysis. This analysis can tell us how many eggs to put into which basket.

All investments have some degree of risk. We accept U.S. government securities, such as T-bills, as being risk-free because they are backed by the full faith and credit of the U.S. government. They have the lowest amount of risk, but also a very low return. Government securities illustrate the fact that investors expect to be compensated for taking risk. The higher the risk, the higher the investor's expected return. One generally accepted measure of risk is the variance of returns, measured by standard deviation. Standard deviation in this context is the amount by which returns vary over time around the average return. By way of simple example, if two investments both had a 10 percent return over a three-year period, but Investment A had annual returns of 2 percent,

18 percent, and 10 percent, and Investment B had returns of 8 percent, 10 percent, and 12 percent, then Investment A had a higher variance of returns. All other things being equal, a prudent investor would prefer Investment B because it had a lower risk. The higher the volatility of the investment, the more likely the investor might have to sell at a time when the investment was at a low ebb.

So how does MPT deal with lowering risk? The answer is simple in its elegance. Let's assume that there are two different investments, A and B, both returning 10 percent over time. They are both volatile with high standard deviations of returns. However, whenever Investment A goes up by one dollar, Investment B goes down by one dollar. Conversely, whenever Investment B goes up by one dollar, Investment A goes down by one dollar. These two investments would be said to be perfectly negatively correlated; that is, their covariance is -1. A positive change in one investment of one dollar is perfectly matched by a negative change in the other. The variance of each asset cancels out the other, and in this hypothetical case, the investor earns a 10 percent return with no variance in the return over time. This is one of the most important concepts of MPT: that it is not the variance of return of an investment that matters, it is the covariance of returns of that investment

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with other investments that matters. It is virtually impossible to find investments that are perfectly negatively correlated. However, investments can be found that have negative correlations less than -1, say, -0.5. Since any negatively correlated asset lowers the variance of returns of the portfolio, it provides some portfolio benefits. Even an asset with a low positive correlation provides some benefits, although not as much as a negative correlation.

The variance of returns of an individual asset is known as nonsystematic risk (or idiosyncratic risk). Markowitz proved that if you combine approximately 30 stocks in a portfolio, the variance of the stocks cancels out and most nonsystematic risk is eliminated. What the investor cannot eliminate by choosing several stocks is systematic risk, the general risk of the marketplace. No matter how many stocks the investor picks, she cannot eliminate the risk of the stock market. The risk of any market can be proxied by an index consisting of either all or a representative sample of the investments in that market. We are fortunate to have stocks traded on organized exchanges that have publicly reported daily (actually instantaneous) prices and publicly available information on dividends. The Standard & Poor's 500 is an example of such an index. From the daily returns of a stock we can calculate its covariance with other stocks. This means that rather than selecting stocks at random (naive diversification), we can seek stocks that display patterns of historic covariance and hope that the covariance continues in the future.

But what happens when we have achieved efficient diversification in the stock market? We have diversified away as much nonsystematic risk as we can in stocks. Can we go any further? The answer is yes, if we add an asset class to the portfolio that is negatively- or low positively-correlated with stocks.

2. WHY ADD REAL ESTATE TO A MIXED-ASSET PORTFOLIO?

The purpose of this paper is to examine the role of real estate in a mixed-asset portfolio. Real estate, both public and private, has a place in a portfolio of stocks and bonds, and this paper reviews evidence illustrating the benefits of including real estate.

As used in this report, the term “publicly traded REIT” means a real estate investment trust stock that is traded on a public exchange, such as the New York Stock Exchange. “Private” or “Direct” real estate refers to an investment in a

building, or in a nonpublicly traded investment such as a nonpublicly traded REIT, limited partnership, or other form of private syndication.

Geltner and Miller estimate that total investments in the United States, public and private, debt and equity, were \$40 trillion as of the late 1990s. Real estate represents more than one-third of this investable capital in the United States, with stocks, bonds, and private debt comprising the other two-thirds.¹ To understand the benefits of adding real estate to a portfolio of stocks and bonds, we apply Modern Portfolio Theory. To do so, we must know the return and risk or volatility. Thus, it would be helpful to have an index for real estate similar to the S&P 500 for stocks. Research by Liang and Webb,² Firstenberg, Ross and Zisler,³ Giliberto,⁴ Geltner,⁵ and Geltner⁶ has shown that to analyze real estate as an asset class, we must have an appropriate index to be able to compare it with other asset classes.

3. THE NCREIF INDEX

The National Council of Real Estate Investment Fiduciaries (NCREIF), along with the Frank Russell Company, started the NCREIF Property Index (NPI) in the late 1970s. This data series began in the first quarter of 1978. The Index represents a value-weighted aggregate of private U.S. real estate properties reported with no mortgages. The index is broken down into subindexes of apartment, hotel, industrial, office, and retail properties. There also are regional subindexes for the East, Midwest, South, and West. As of the first quarter of 2004, the NPI had a value of over \$136 billion. NCREIF members contribute data to the Index, which is updated quarterly. The NPI is the most widely cited performance measure for the market in direct real estate investments. Members contribute quarterly data on the income from each property, and the price of each building upon acquisition and sale. Because all properties do not sell each quarter, properties that have not been sold are appraised. The NPI thus computes the returns to real estate based upon net income from operations and any price increases (or decreases) measured by sales prices or appraisals.

There are problems with the NPI. One is the fact that it is only updated every quarter. Thus, we only know the volatility on a quarterly basis. It would be great if we could have it on a monthly or even weekly basis. However, considering the massive amount of data to be reported, and the difficulties of providing quarterly appraisals on every

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unsold building, the NPI is a phenomenal achievement. Also, some scholars feel that using appraised values as a part of the index understates the volatility of the asset prices. Further, the Index only contains investment-grade properties and might not be representative of small, local commercial buildings. Nevertheless, the NPI is the best national index we have that tracks the returns in direct real estate investments. Since the data are considered accurate and reliable, the NPI is generally considered to be a valuable proxy for investment-grade real estate returns. NCREIF is constantly working on improving the index, and its value as a benchmark of real estate returns is likely to increase in the future as better and faster data reporting methods are instituted.

4. WHAT ABOUT PUBLICLY TRADED REITS VS. PRIVATE REAL ESTATE INVESTMENTS?

If publicly traded real estate investment trusts were a perfect proxy for investing in real estate, this report would stop at this point. Many REITs are publicly traded, and thus we have the same information about them as we do for the stock market as a whole. Important studies by Ling and Naranjo⁷ found that publicly traded REITs behave differently than private investment real estate with regard to covariance and risk factors. Specifically, publicly traded REITs are more volatile and move more with the stock market than private real estate. Thus, publicly traded REITs will provide less portfolio benefits than private real estate. Publicly traded REITs will move more closely with the S&P 500 than will private real estate investments. Simply, private real estate has better covariance with the stock market, helping to smooth the volatility of a mixed asset portfolio better than publicly traded REITs. These findings were backed up by other studies.⁸

The index for publicly traded real estate investment trusts is the NAREIT Index, published by the National Association of Real Estate Investment Trusts, which is based on share prices and dividends of all publicly traded REITs. The NAREIT ALL REIT Index tracks REIT stocks trading on the New York Stock Exchange, the NASDAQ National Market System, and the American Stock Exchange since 1972. One study computed correlation coefficients between the NAREIT Index and the Russell 2000 Index (an index of small capitalization stocks), between the S&P 500 Index and the NCREIF Index, and between the NAREIT and NCREIF Index during the period 1979-1993.⁹ The researchers found a high positive cor-

relation (.722) between the NAREIT Index and the S&P 500, suggesting that publicly traded REITs do not provide much help in diversifying a stock portfolio. The correlation between the NAREIT Index and the Russell 2000 was even higher (.779). By comparison, there was a very low correlation between the NCREIF Index and the S&P 500 (.0523). The correlation between the NAREIT and NCREIF Index was also very low (.0276), indicating no relationship between direct investments in real estate and investments in publicly traded REITs. The conclusion to be drawn from this study is that adding publicly traded REITs to a portfolio of stocks provides little help in the way of portfolio benefits. Adding direct or nonpublicly traded investments in real estate does provide a significant level of portfolio benefits. However, this study did not include more recent years, and did not consider the effect of adding both private and publicly traded real estate to the portfolio.

This does not mean that publicly traded REITs have no place in a mixed asset portfolio. Publicly traded REITs can provide attractive returns. Mueller and Mueller found that over a 25-year period, publicly traded equity REITs had an average annual return of 14.45%, better than the 14.24% over the same period for the S&P 500.¹⁰ In addition, the returns for publicly traded REITs have a lower risk for the reward than the stock market as a whole. A widely accepted measure of risk-adjusted return is the Sharpe Ratio which is a fraction, the numerator of which is the risk premium (the compensation to an investor for investing in an asset that has risk) and the denominator of which is risk (defined by volatility, or standard deviation of returns). A recent report by Global Real Analytics LLC concluded that over the past 25 years, publicly traded REIT stocks have the lowest risk for the biggest reward when compared to the S&P 500 and Treasury Bonds.¹¹

Most of the early research found that publicly traded REITs move with the stock market more than with the direct real estate market and are best thought of as being closer in the small cap stock category. However, there is some evidence that the NAREIT Index is drifting to a lower correlation with the S&P 500 Index, but less dramatic declines were measured with other stock indices such as the Russell 3000 and 2000 Value and Growth Indices.¹² This means that there is some indication that publicly traded REITs will provide slightly better diversification benefits than was believed in the past, relative to stocks. The Mueller and Mueller study¹³ finds only a moderately high correlation of 0.55 over a 25-year period

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(quarterly) between publicly traded equity REITs and the S&P 500. As might be expected, the NCREIF Index over the same period had a low -0.03 correlation with the S&P 500, lending weight to the previous studies. Until recently, the research focused on the ability to improve a mixed-asset portfolio's efficiency by adding either publicly traded or private real estate but not both. Mueller and Mueller carried the analysis further by examining the inclusion of both publicly traded and private real estate. They found almost no correlation between the NAREIT Index and the NCREIF Index. This indicates that a mixed-asset portfolio could benefit from including both direct real estate and publicly traded REITs. They hypothesize that the lack of correlation may be due to the fact that during the 25-year time period of the study, the NAREIT Index consisted largely of retail and multifamily properties, while the NCREIF Index was mainly office, industrial, and retail properties. By testing different combinations of assets in portfolios, the authors found that the inclusion of both public and private real estate was more efficient than just including one or the other or neither. They found also that direct real estate (NCREIF) was more efficient for portfolios with lower risk and return, and publicly traded REITs were more efficient for portfolios with higher levels of risk and return. The implication is that a conservative investor benefits from adding both types of real estate to his portfolio, but is better off with a higher proportion of direct real estate. An investor who is willing to take on more risk also benefits from having both types of real estate in the portfolio, but benefits from a higher proportion of publicly traded REITs.

There could be more changes in the future, as the past is not always a good predictor of the future. If an investor seeks to create an efficiently diversified portfolio, publicly traded REITs will not provide the same diversification benefits (lowering the standard deviation of returns) as direct or nonpublicly traded investment vehicles, although a combination of both may provide the maximum efficiency. However, publicly traded REITs do provide some diversification benefits, since recent research refutes the earlier research and shows a lower correlation between the NAREIT Index and the S&P 500 Index.

Why are publicly traded REITs different from private investments? Since REITs are limited by law to predominantly real estate investments, and the law further requires REITs to pay 90 percent or more of its available cash flow to investors, conventional wisdom would suggest that

REITs should be close to a perfect proxy for direct or non-publicly traded real estate investments. However, there is one major difference between publicly traded REITs and private real estate: liquidity. Publicly traded REIT shares can be sold daily, whereas private real estate investments cannot. Information about rents and trends in real estate can be rapidly incorporated into the share prices of publicly traded REITs. These rapid fluctuations may account for the fact that publicly traded REITs exhibit a higher volatility than direct real estate. This liquidity also means that funds can flow freely and rapidly into the market for publicly traded REIT shares. One study shows that capital flows into REITs are positively related to prior returns, suggesting that publicly traded REIT investors may follow momentum trading strategies.¹⁴ Whatever the reason, the relatively high correlation of the NAREIT Index and the S&P 500 Index means that investors cannot use publicly traded REITs as a proxy for direct real estate.

Recent research by Clayton and MacKinnon shows that while public and private real estate are still separate and distinct markets, there is a trend for publicly traded REITs to behave more like direct real estate and less like stocks.¹⁵ This study shows the increased sophistication of recent research to look at smaller time periods to examine varying factors. The authors also distinguish between small cap REITs, which are "more like real estate," and large cap REITs that continued to display a stronger correlation with the stock market. This research into market segmentation means that we know more about publicly traded REITs and can use them more effectively as investment vehicles.

5. HOW MUCH REAL ESTATE SHOULD AN INVESTOR PLACE IN A MIXED ASSET PORTFOLIO?

Several researchers have looked at the question of how much real estate should be placed in a mixed-asset portfolio. Most of the research constructs a portfolio consisting of stocks, bonds, and either publicly traded equity REITs or private real estate (or both forms of real estate). The most comprehensive research articles calculate the "efficient frontier"—a set of all possible efficient portfolios. When this set is graphed with one axis of the graph representing return and the other representing risk, it forms a line with each point on the line being the maximum return for each level of risk for each portfolio. Using the calculation for the efficient frontier, an investor could combine different assets into a portfolio and choose the most efficient portfolio for any given level of risk or

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return. Thus, the amount of real estate in any mixed asset portfolio (and the balance between public and private real estate) will change for any portfolio along the efficient frontier. One early study by Fogler used Markowitz mean-variance analysis and concluded a minimum direct real estate commitment of 15% to 20% of the total portfolio.¹⁶ More recently, Mueller and Mueller calculate the efficient frontier for a mixed portfolio of stocks, bonds, and real estate over a 25-year period. At the lowest level of risk and returns, the portfolios are dominated by bonds. The authors calculate all efficient combinations of assets. Including private real estate (NCREIF Index) decreases the volatility of a Markowitz efficient portfolio for the lower half of the efficient frontier. Including publicly traded REITs provides improvement over the entire efficient frontier, but provides the most benefits in the upper half of the efficient frontier.¹⁷ The theoretical allocations to real estate exceed 50% of the portfolio. The previously-cited study by Global Analytics LLC constructs an “ideal” portfolio consisting of 46% publicly traded REIT shares, 32% dedicated to an S&P 500 Index fund, and 22% devoted to bonds.¹⁸

In summary, private real estate has a stabilizing effect on a portfolio of stocks because it does not fluctuate with the stock market as much as publicly traded REITs. Publicly traded REITs do not provide as much stability but add higher returns and volatility toward the top part of the efficient frontier (higher risk, higher return portfolios).

Other studies reach differing conclusions, probably depending upon the time period and indexes used, but a general consensus would place the allocation to real estate in the 20% range. This number would vary depending upon the individual investor's risk/return preferences, and also the balance between publicly traded and private real estate would vary. The main point is that the allocations to real estate from calculations of the efficient frontier exceed the normal allocations in the average portfolio. Theory and research support higher allocations.

6. WHAT ARE THE IMPLICATIONS FOR THE INVESTOR?

This paper is not an exhaustive review of portfolio theory, the role of real estate, and the distinction between publicly and privately traded real estate. Rather, it is an attempt to provide a perspective on real estate that provides information for financial professionals who want to know more

about the benefits of adding real estate to a mixed portfolio of investments. There are many studies that come to differing conclusions depending upon the time period studied, the research methodology used, and the database under analysis. However, there are some conclusions that can be reached about adding real estate to a mixed investment portfolio:

- Adding real estate improves the efficiency of the portfolio, giving either a higher return for the same amount of risk or a lower risk for the same return.
- Studies have found private, or nonpublicly traded real estate, provides more efficiency in terms of portfolio benefits because of covariance benefits and lower volatility compared to other asset classes. It provides stability to a portfolio of stocks and bonds by decreasing the volatility of returns.
- Publicly traded REITs have a place in the mixed-asset portfolio and, when used in combination with private real estate, may provide additional benefits, perhaps the maximum portfolio efficiency. Publicly traded REITs are beneficial to the investor in the upper part of the efficient frontier (higher risk, higher return portfolios) and such portfolios are better off with publicly traded REITs than without them.
- Some recent research is suggesting that publicly traded REITs are beginning to show a tendency to act “more like real estate,” which could show additional benefits as further research is completed. If further research shows this trend continuing, publicly traded REITs could become even more attractive in a mixed-asset portfolio. A continuing tendency toward favorable covariance with stocks and bonds would be very beneficial.
- Both private real estate and publicly traded REITs add efficiency to a mixed-asset portfolio. Studies continue to show that direct real estate is more efficient when added to a portfolio that has a lower risk/return profile, while publicly traded REITs are more efficient when added to a portfolio that has a higher risk/return profile. Either way, research shows that both public and private real estate is underrepresented in most mixed-asset portfolios. Investors could benefit by structuring portfolios with real estate to meet their risk/return preferences.

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■ The relatively high correlation of the NAREIT Index and the S&P 500 Index means that investors cannot use publicly traded REITs as a proxy for direct real estate.

Some caveats should be mentioned. First, obviously the selection of individual investments and their qualities can vary, and merely adding real estate to a portfolio is no guarantee of improved performance. Second, while we can reach general conclusions about the value of adding real estate to a mixed-asset portfolio, it should be obvious that real estate research is a moving target and the conclusions of the future may be different from those today. Particularly with publicly traded REITs, the research has shown different conclusions based on the size of the REIT, the time period under study, and the weighting of property types. Nevertheless, there is a strong argument to be made for adding real estate to a portfolio. Using MPT, a disciplined investor can take advantage of what is known about this asset to construct a balanced, efficient portfolio that should outperform in the long term most investors who chase yields and follow the investing fads of the day. ■

AUTHOR'S NOTE

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ENDNOTES

1. Geltner, David and Norman G. Miller, *Commercial Real Estate Analysis and Investments*, Prentice Hall, Upper Saddle River, NJ: 2001, pp. 19-20.
2. Liang, Y. and J. R. Webb, "The Hedged REIT Index and Mixed-Asset Portfolios," *Journal of Real Estate Portfolio Management*, Vol. 2, No. 1, 55-62 (1996).
3. Firstenberg, P. M., S. A. Ross, and R. C. Zisler, "Real Estate: The Whole Story," *Journal of Portfolio Management*, Vol. 14, No. 3, 22-34, (1998).
4. Giliberto, S. M., "Equity Real Estate Investment Trusts and Real Estate Returns," *Journal of Real Estate Research*, Vol. 5, No. 2, 259-64 (1990).
5. Geltner, D., "Estimating Real Estate's Systematic Return From Aggregate Level Appraisal-Based Returns," *AREUEA Journal*, Vol. 17, No. 4 (1989).
6. Geltner, D., "A Further Examination of Appraisal Date and the Potential Bias in Real Estate Return Indices," *Real Estate Economics*, Vol. 21, No. 2, 141-66 (1993).
7. Ling, David C. and Andy Naranjo, "The Fundamental Determinants of Commercial Real Estate Returns," *Real Estate Finance*, Vol. 14, No. 4, 13-24 (1998); and Ling, David C. and Andy Naranjo, "Economic Risk Factors and Commercial Real Estate Returns," *Journal of Real Estate Finance and Economics*, Vol. 14, 283-307 (1997).
8. Liu, Crocker, Terry V. Grissom, and David J. Hartzell, "The Impact of Market Imperfections on Real Estate Returns and Optimal Portfolios," *AREUEA Journal*, Vol.

18, No. 4, 453-478 (1990); Giliberto, Michael, and Anne Mengden, "REITs and Real Estate: Two Markets Reexamined," *Real Estate Finance*, Spring 1996, Vol. 13, No. 1, 56-60 (1996); and Karolyi, G. A. and A. B. Sanders, "The Variation of Economic Risk Premiums in Real Estate Returns," *The Journal of Real Estate Finance and Economics*, Vol. 14, No. 3, 245-262 (1998).

9. Paladino, Michael and Herbert Mayo, "Investments in REITs Do Not Help Diversify Stock Portfolios," *Real Estate Review*, Summer 1995, Vol. 25, No. 2, 23-26.

10. Mueller, Andrew G. and Glenn R. Mueller, "Public and Private Real Estate in a Mixed Asset Portfolio," *Journal of Real Estate Portfolio Management*, Sep.-Dec. 2003, 193-203.

11. Cited in Muto, S., "REITs Remain Strong Despite Rising Interest Rates," available at www.realestatejournal.com, June 30, 2004.

12. Ziering, B. and W. McIntosh, "REIT Correlations with Capital Market Indices: Separating Signal from Noise," *Real Estate Finance*, Vol. 15, No. 4, 61-67 (1999).

13. Mueller, Andrew G. and Glenn R. Mueller, "Public and Private Real Estate in a Mixed Asset Portfolio," *Journal of Real Estate Portfolio Management*, Sep.-Dec. 2003, 193-203.

14. Ling, David and Andy Naranjo, "The Dynamics of REIT Capital Flows and Returns," *Real Estate Economics*, Vol. 31, No. 3, 405-434 (2003).

15. Clayton, Jim and Greg MacKinnon, "The Relative Importance of Stock, Bond and Real Estate Factors in Explaining REIT Returns," *Journal of Real Estate Finance and Economics*, Vol. 27, No. 1, 39-60 (2003).

16. Fogler, H. Russell, "20% In Real Estate: Can Theory Justify It?" *Journal of Portfolio Management*, Winter 1984, 6-13.

17. Mueller, Andrew G. and Glenn R. Mueller, "Public and Private Real Estate in a Mixed Asset Portfolio," *Journal of Real Estate Portfolio Management*, Sep.-Dec. 2003, 193-203.

18. Cited in Muto, S. "REITs Remain Strong Despite Rising Interest Rates," available at www.realestatejournal.com, June 30, 2004.