The Index Investor

Why Pay More for Less?

<u>Model Portfolios Performance Update</u>

The objective of our first set of model portfolios is to maximize return while taking on no more risk than their benchmarks. The first of these benchmarks is a portfolio comprised of 80% U.S. equities (based on the Dow Jones Total Market Index Exchange Traded Fund) and 20% U.S. bonds (based on the Vanguard Total Bond Market Mutual Fund). For the year to date through April 30th, our model portfolio has returned (6.3%), while the benchmark portfolio has returned (4.2%).   The second benchmark is a portfolio comprised of 60% equities and 40% bonds. Year-to-date, this portfolio has returned (2.4%), while our model portfolio has returned (4.8%).   The underperformance of both of these model portfolios has largely been caused by the weak performance of European equities relative to U.S. equities. The third benchmark is a portfolio comprised of 20% equities and 80% bonds. It has returned 1.0% year-to-date, while our model portfolio has returned (1.1%), largely due to the continued strength of the U.S. dollar and the resulting weak performance by non-U.S. dollar bonds.

The objective of our second set of model portfolios is to match their benchmarks' returns while minimizing the risk they take on. For the year through April, the 80/20 benchmark has returned (4.2%), while the model portfolio has returned (6.8%). During this same period, the 60/40 benchmark has returned (2.4%), while the model portfolio has returned (3.6%), and the 20/80 benchmark has returned 1.0%, while the model portfolio has returned between (1.4%) and .1%, depending upon which of our three recommended foreign bond funds you use to calculate the portfolio's return.

The objective of our third set of model portfolios is to maximize the probability of achieving a minimum rate of return, while taking on the lowest possible amount of risk. Through April, our 12% target portfolio has returned (6.3%), our 10% target portfolio has

returned (6.8%), our 8% target portfolio has returned (4.2%), and our 6% target portfolio has returned (2.0%).

In-Depth: Investing In Real Estate

Discussions about asset allocation typically focus on financial assets, such as stocks and bonds. However, on an aggregate basis, the value of all U.S. households' investments in residential real estate (net of the mortgages owed) is equal to approximately half the value of their aggregate investment in financial assets. In other words, equity in their home accounts for 33% of the "average" household's total assets. However, the average is skewed by the inclusion of the assets of the very rich, who make up a small percentage of the population, but hold a disproportionate share of households' total holdings of financial assets. In other words, for the typical family, the equity in their house is likely to account for much more than 33% of their total assets.

Given this, we came to the obvious conclusion that at some point we were going to have to talk about residential real estate as it relates to our ongoing concern with asset allocation. We have been researching this topic for quite a while, and are now ready to share some results with our readers.

The first problem we encountered was finding a good way to measure historical returns on residential real estate. Unlike stocks or bonds, the individual assets in question are unique, and aren't bought and sold very frequently. Given this, you need a very large data set to draw any meaningful conclusions about historical returns on investments in this asset class. Fortunately, in 1992 the U.S. Congress mandated that just such a set of data be published. As most readers know, a number of federally chartered corporations are active participants in the residential mortgage markets. Their principal activity is purchasing mortgage loans that have been made (also known as "originated" or "underwritten") by other companies, pooling them together, and then "securitizing" them, or selling new securities on which interest and principal payments depend on the cash flows generated by an underlying portfolio (or pool) of mortgage loans. Historically,

what has never been made clear to investors is the extent to which the U.S. Government stands behind the creditworthiness of the "mortgage backed securities" issued by these corporations. Back in 1992, this became enough of a concern that Congress passed a law requiring that a new agency (the Office of Federal Housing Enterprise Oversight, or OFHEO) be set up to monitor the safety and soundness of the government chartered corporations issuing the mortgage backed securities. In order to perform this function, OFHEO set about constructing a data set that would enable it to track the value of residential property across the United States, in order to assess the risk that it could become worth less than the mortgages backing the securities that had been issued (just as an individual homeowner wants to know the chances that he or she will be faced with "negative equity" at some point in the future). Fortunately, two of the federal mortgage corporations, the Federal National Mortgage Association ("Fannie Mae") and the Federal Home Loan Mortgage Corporation ("Freddie Mac") had independently (naturally…) been working on similar projects. OFHEO was therefore able to combine these two data sets to produce a very good series covering over 13 million transactions across the United States dating back to 1975.

At this point, any of our readers that are real estate agents must be thinking "but wait -- every house is unique. Doesn't that undermine the usefulness of this index?".   Not to worry. The developers of the index took this into account, and included only repeat transactions in which the same house was sold more than once (regression is used to estimate missing annual data points). We won't bore our readers with the technical details, but this approach has gained the support of many experts. Those wishing to read more about the index construction should check out OFHEO's website (www.ofheo.gov/housing/) or, for a more in-depth review of the technique, the discussion in Appraisal Today (www.appraisaltoday.com).

That being said, the index still has some limitations that we should discuss before we look at the historical data. We think four of them are most important. First, unlike the markets for stocks, bonds, and commodities, residential real estate is not a national market. In other words, there is a lot of variation around the national data that we use in

our analysis. For example, at the local (metropolitan statistical area) level, unleveraged returns on residential real estate in 2000 ranged from a low of, for example, (4.7%) in Utica-Rome New York, (4.5%) in Grand Forks, North Dakota, or (2.2%) in Terre Haute, Indiana to highs of 26.8% in San Jose, California, 17.8% in Barnstable-Yarmouth, Massachusetts, or 15.2% in Austin, Texas.

More specifically, there seem to be four main economic drivers of residential real estate prices: demand for housing, supply of housing, cash flow available to buyers (generally earnings, but sometimes, as in the case of Silicon Valley, cash flow generated by capital gains), and the level of mortgage interest rates. Only one of these (mortgage rates) is truly national, and even then one finds local variation in terms of the maximum mortgage loan to house value limit that lenders set. The status of the other three factors is mostly determined by local factors.

The second key issue with respect to the index is that the returns it reports are unleveraged. On the positive side, this makes them comparable with reported returns on other assets, the great majority of which are not purchased using debt financing. On the other hand, residential real estate is different from other asset classes in that most of it is purchased using debt (and, we might add, with vastly looser regulatory requirements for the people who sell it compared to people who sell stocks and bonds -- but that is a story for another day). To take this into account, we will report not only the results for unleveraged returns, but also for returns leveraged with 50% and 80% debt financing.

The third key issue we identified with respect to the index is that real estate returns have a higher degree of "serial correlation" than do returns on most financial assets. In layman's terms, "serial correlation" is the correlation of one year's returns with those preceding it; in other words, it measures the probability that next year's returns will be similar to this year's. In this case, the OFHEO data series confirm most people's instincts about real estate prices: when a neighborhood's prices start moving up or down, that trend is more likely to continue the following year than it is to reverse (hence the importance of getting involved to make sure schools, crime, and other local factors that

make a neighborhood attractive don't deteriorate). Given this, the standard deviation of returns understates the risk inherent in owning residential real estate.

The fourth key issue we identified is that the OFHEO data <u>may</u> underestimate the returns earned on investments in residential real estate. Let us explain. The returns earned on any investment come in two forms: annual returns that are earned each year the investment is held, and a single return that is earned when the investment is sold. For example, in the case of a stock, the annual returns take the form of dividends, and the a capital gain may be earned when the stock is sold. The question we need to ask is what are the equivalent returns in the case of residential real estate?

The easiest returns to measure are the capital gains that are earned when a house is sold. It is simply the difference between the purchase and sales price for the house, net of any amount used to repay any mortgage on the property, as well as the transaction costs associated with the sale. The really tough question is how to define the net annual returns from owning your own home. On the negative side, there are not only maintenance expenses, but also the interest we pay on any mortgage on the house, net of any tax benefits we receive (e.g., due to the deductibility of mortgage interest and property taxes). The negative returns are the easiest to measure. Things get more difficult on the positive side of the ledger. First, there is avoided rent -- that is, the rent we would otherwise have to pay if we didn't own a house. The general approach is to estimate this saving as the amount for which the house itself could be rented. Second, there is the value one attaches to the emotional benefits of owning one's own home instead of renting it. Most people find it difficult to quantify this, but most would probably say that it is greater than zero.

Now we come to the rub: the OFHEO data series only measures returns from capital gains on residential real estate, and assumes that the annual benefits net out to zero. We haven't come across (yet) any study that tests the validity of this assumption. However, given the substantial proportion of household portfolios that are invested in residential real estate, and the sacrifices that people make in order to own their own home, we think

that one can infer that the net annual returns are probably positive, rather than zero. If we are right, then the returns data we are about to describe understate the actual returns individuals believe they are realizing on their investments in residential real estate.

Having set the stage, let's go to the video tape -- err, data.

First, let's look at the returns, for the U.S. on average, on residential real estate over the twenty five years from 1976 to 2000. On an unleveraged basis, the average annual return over this period was just 5.69%. While this was better than average annual inflation over the same period (4.73%), it was below the average annual returns on bonds (9.60%, as measured by the Lehman Brothers Aggregate Bond Index), commodities (11.93%, as measured by the Goldman Sachs Commodities Index), international stocks (15.27% as measured by the MSCI EAFE Index), U.S. equities (16.21%, as measured by the Wilshire 5000 Index), and U.S. commercial real estate (16.38%, as measured by the National Association of Real Estate Investment Trusts Index).

On the other hand, the standard deviation of annual returns on unleveraged residential real estate over this same period was much lower than the standard deviations of returns on other asset classes. While residential real estate had a SD of 3.45%, bonds had 7.96%, commodities 21.48%, international stocks 20.64%, U.S. equities 14.20%, and U.S. commercial real estate 15.76%. Why might this be? Think about how residential real estate markets work. When prices drop, sales volumes tend to fall off very quickly. Most people would rather postpone selling rather than take a capital loss on their house. This is unlike other asset markets, where volume tends to fall by lesser amounts when prices decline. This also may explain why people are more willing to use debt to finance the purchase of residential real estate than they are in the case of investments made in other asset classes. Consider what happens when we leverage up the return and risk data to take leverage into account. When leverage is held at a constant 50%, the average annual return on residential real estate increases to 11.37%, while the standard deviation of returns increases to 6.89%. When leverage is taken even higher, to 80%, return rises to 28.43%, while standard deviation rises to 17.23%. From this data, it is easy to see --

even in the absence of any positive annual returns -- why people might rationally choose to invest a substantial portion of their total asset portfolio in residential real estate.

Of course, regular readers of The Index Investor know that standard deviation is only part of the risk equation. The correlation of an asset class's returns with those of other asset classes is also important -- the lower the correlation, the greater the diversification benefit (that is, reduction in overall portfolio risk) that can be achieved by investing in the asset class in question. So how do the reported returns from residential real estate correlate with those on the other asset classes? Here are the correlations of annual returns for the 1976 - 2000 period: U.S. bonds (.22); U.S. inflation .48; commodities .25; international equities .37; U.S. equities 0.0; and U.S. commercial real estate .21. In short, the data seem to suggest that individuals were able to realize considerable diversification benefits over the 1976 - 2000 period through their investments in residential real estate assets.

But will these trends hold true in the future? The obvious, and only true answer at this point is "nobody knows." However, at least one widely read argument has been made that suggests that future returns on residential real estate assets will be lower than they have been in the past. The paper in question was written in 1994 by Professor Daniel McFadden, an economist from the University of California at Berkeley. His argument can be summed up as follows: "three major factors influence the housing market -- demographics, income growth, and construction industry capacity and costs…Through the 1980s and early 1990s, all three factors were pushing prices up. In the future, at least, demographics [declining housing demand by baby boomers in non-retirement locations], and possibly construction factors [changes in technology making it cheaper to add supply] are going to be pushing the other way [on prices]." Obviously, there are a lot of ifs in this argument -- for example, increased immigration could offset some of the negative demographic effects caused by aging boomers selling their big homes, or faster than expected rises in incomes could help keep up prices. And nobody can be sure that mortgage interest will continue to be tax deductible. And finally, as we said earlier, real estate markets -- and investment returns -- are fundamentally local, and the trends that worry McFadden will surely not prevail everywhere. Nevertheless, they are something to

keep in mind when thinking about the percentage of ones' total asset portfolio that will be invested in residential real estate, and the extent to which that investment will be leveraged with debt.

Products and Strategies: Real Estate Index Funds

What are the major real estate indexes, and what vehicles are available to invest in them? Unfortunately, there isn't a residential real estate index in which one can invest. This is a real shame, because the ability to buy puts against the value of such an index would be a great way to hedge away some of the risk of a decline in the price of your house, much as you buy property insurance to protect against other sources of risk. But so far, nothing is available.

That leaves commercial real estate.   The first problem you run into here is that nobody seems very happy with the available real estate indexes. Let's take a look at the major ones to see what they're talking about. The National Council of Real Estate Investment Fiduciaries (NCREIF) publishes an index that tracks the performance of about 3,000 properties that are directly owned by tax exempt institutions. Values are calculated on an unleveraged basis through regular property appraisals, using a standard methodology. Criticisms of this index include the fact that it underweights certain regions of the country (e.g., the Northeast), and the fact that appraisals are only done annually, and, by definition, tend to be backward looking (due to their reliance on comparable sales data). A similar index -- the Investment Property Data bank -- is produced in the United Kingdom.

The second major index is produced by the National Association of Real Estate Investment Trusts. A REIT represents an alternative structure to direct ownership of equity in a commercial real estate project. In this case, a trust is formed, and trust units (shares) are issued to investors to raise funds. The REIT uses these funds to make equity investments in a number of commercial real estate projects (typically in a single type of project, such as health care, resorts, multifamily housing, shopping centers, office

buildings, and the like). The majority of the annual earnings from such investments are paid out to the holders of the REIT shares. A very similar type of company is called a real estate operating company, or REOC. The major difference between it and a REIT is that it is under no legal obligation to pay out a percentage of its annual earnings to investors in its shares.

The NAREIT index measures the performance of the shares issued by NAREIT members. Three criticisms have been leveled at this index. First, it includes many smaller REITS whose shares have low trading volume. This makes it a difficult index for investors to match. Second, it does not include Real Estate Operating Companies, which are very similar to REITs; it does not, therefore, represent the full universe of real estate shares that are available to investors. Finally, there is an ongoing argument as to whether REIT shares should be classified as equities or as real estate. The argument in favor of the former is that movements in the overall equity markets (and especially in small cap indexes) affect REIT returns. The argument in favor of the latter position is that the underlying assets are clearly real estate, with cash flow dynamics that are different from the average non-real estate company.

In response to these criticisms of the NAREIT Index, a number of other indexes have been developed. The Wilshire Real Estate Securities Index includes about 100 large REITs and REOCs. The Dow Jones Real Estate Index has a similar structure. Taking a slightly different approach have been Morgan Stanley, Standard and Poors, and Cohen and Steers, which have stuck with REITS, but focused their respective indexes on a subset of larger players -- 115 of them in the case of Morgan Stanley, 100 in the case of S&P, and only 30 in the case of Cohen and Steers.

As for indexed investment vehicles, there are four major alternatives available today. The first is the Vanguard REIT Index Fund, which tracks the Morgan Stanley Index. The minimum investment for regular accounts is $3,000, and $1,000 for retirement accounts. As is usually the case at Vanguard, expenses are very low, at .33% of assets.

If you want to track the Dow Jones Real Estate Index, iShares has an exchange traded fund that allows you to do so. Its trading symbol is IYR, and it carries an expense ratio of .60%.

IShares also offers an ETF that tracks the Cohen and Steers Index. Its symbol is ICF, and its expense ratio is only .35%.

Finally, the Wells family of funds offers an S&P REIT Index mutual fund (symbol WSPAX), which has a minimum investment of $2,500, and an annual expense ratio of .99%.

Given the differences in expense ratios, and the similarity of the underlying indexes, our recommendations from this group would be the Vanguard fund and the Cohen and Steers ETF.

Finally, real estate index funds are also available outside the United States. For example, investors located in Europe can invest in the Balzac Real Estate Index Fund, which is run by State Street Advisors, and tracks the Salomon Broad Market Euroland Property Index. Vanguard offers a similar fund to Australian investors that tracks the performance of property companies located in that country.