DIVERSIFIED TRUST
COMPREHENSIVE WEALTH MANAGEMENT

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asset allocation with illiquid investments.

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At virtually every meeting, we remind our clients that asset allocation is the largest determinant of the risk and return on a portfolio, and our presentations typically include a graph or table that shows their current asset allocation versus the established targets. Moreover, we continuously monitor each client's portfolio weightings to ensure that they remain within the approved ranges and execute rebalancing trades as required. This exercise is relatively straightforward if the portfolio consists entirely of liquid investments because portfolio weightings can easily be adjusted by allocating cash additions, or alternatively, through select purchases and sales. However, asset allocation becomes much more complex and less precise when you introduce illiquid investments such as private equity and real estate. In this paper, we will discuss the difficulties in establishing and maintaining target weightings in these asset classes and argue that their attractive risk and return characteristics more than compensate for the extra effort required. Finally, based on "middle of the road" assumptions, we recommend a level of periodic commitments that should move the actual weighting toward reasonable target levels.

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the problem.

As you know, an allocation to a stock or bond fund or manager entails a transfer of funds which are typically invested by the portfolio manager in relatively short order. It is therefore easy to compute the percentage weighting that a particular segment represents in the overall portfolio at any given time. As mentioned above, it is also relatively easy to make adjustments in weightings as required. In contrast, in the case of both private equity and private real estate, the investor (limited partner) commits a specific dollar amount to a fund, and the capital is only called or drawn down over a number of years as the general partner or manager identifies and consummates investments. The first problem with achieving a target level of exposure in these categories is that the speed at which managers call capital varies considerably over time. Real estate managers tend to invest capital during the first three years of the partnership's life whereas private equity managers take as long as 5 to 7 years to completely invest their fund. However, during the technology boom in the late 1990's, some private equity funds were completely invested in less than one year. In contrast, during the recession of 2008-09, many managers did not complete a single transaction due to the general level of uncertainty in the financial world. So, it is very difficult to forecast the amount of a commitment that will actually be invested at any given point in time.

Having made a number of investments, the general partner or manager then works to enhance the value of the property or company with an eye toward exiting (selling) the investment at the optimal moment and returning capital to the investors. Once again, there is tremendous variation in the time required to realize returns. Typically, real estate funds harvest their investments in years 4-8 and private equity managers return the majority of their capital in years 5-10. (These funds typically have a ten year life.) But, in the late 1990's, some technology companies were able to go public in the first year of their existence and limited partners received very quick returns on their investment. In contrast, both public offerings and merger and acquisition activity completely ground to a halt in 2008-09 resulting in very few exits. So, once again, it is very difficult to forecast with any accuracy when capital will be returned.

The third difficulty in modeling private equity and real estate exposure is that returns vary considerably over time. Perhaps the most extreme example is venture capital which recorded an annualized return from 1991-2000 of 42.3% according to the Cambridge Associates Index only to be followed by a -4.5% annual return over the ensuing ten years. But, returns on the other illiquid categories are subject to cycles as well which makes it difficult to actually forecast the behavior of a given fund over its life.

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Additionally, because these investments are privately held, their carrying value at any given time may not reflect the return that will ultimately be realized.

Finally, since the target and actual allocations to any specific asset category are expressed as a percentage of the entire portfolio, it is necessary to forecast the value of the overall fund which requires estimates of investment returns, spending, and cash flows. While spending and cash additions or withdrawals may be relatively predictable, returns are not. To make that point, from 1991-2000, a traditional 60% stock/ 40% bond portfolio earned an annualized return in excess of 13% whereas the following decade only produced a return of about 4% per annum. What should one forecast for the next decade?

The bottom line is that the amount that should be committed to private investments in order to reach a target level is a function of a number of variables, each of which is subject to considerable uncertainty. In mathematical terms, there is a problem accurately forecasting both the numerator and denominator. Moreover, actual exposure to illiquid asset classes can drift significantly above or below targets as a result of extreme fluctuations in the capital markets. In the late 1990's, many venture capital investors found that they were overexposed to that category due to the extraordinary returns referenced above. Similarly, some private equity and real estate investors became overexposed to those categories in 2008-09 because their returns, while negative, were significantly better than those of the public equity markets. And given the illiquid nature of private equity and real estate, it is difficult and potentially very costly to make adjustments over short time frames.

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why private equity and real estate?

Given all of these complexities, it would be easy to simply throw up your hands and limit the portfolio to more traditional asset categories.

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The primary purpose of this paper is not to make the case for private equity and real estate, but the following table is instructive:

As you will note, both Private Equity and Venture Capital have generated returns that significantly exceed those of the S&P 500. Real Estate returns are comparable to the S&P Index but with just over one half of the volatility. Taking into account these data plus the correlation between all four asset classes, combining them in a portfolio in the correct proportion should both enhance returns and dampen volatility versus more traditional asset allocations. Moreover, the dispersion between the returns of real estate and private equity managers is significant which means that good manager selection should generate returns substantially in excess of broad indices such as those shown above. For all of these reasons, we believe the benefits of private investments far outweigh the difficulties for many investors.

20 Year Historical Data (Ending 12/31/2013)

	Annualized Return %	Standard Deviation %
Cambridge Assoc. Private Equity Index	13.5	11.0
Cambridge Venture Capital Index	30.0	20.6
NCREIF Real Estate Index	9.3	8.3
S&P 500 Index	9.2	15.2

how much should you commit to illiquid investments and how do you get there?

For those clients with sufficient assets, longer time horizons and the ability to tolerate illiquidity, we typically recommend a 5-10% allocation to private real estate and 10-15% exposure to private equity which includes both leverage buyouts and venture capital. For the purposes of this paper, let's assume target exposure 5% in real estate and 10% in private equity. How much should you commit to each category in order to achieve and maintain the targets?

First, we believe that it is difficult if not impossible to successfully make market timing decisions in these asset categories so we recommend regular commitments and consistent exposure.

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Important Notes And Disclosures

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Second, we strongly believe in diversification so our vehicle of choice in both categories is a fund of funds that has underlying exposure to 10-20 managers that are carefully selected for both their investment skill and unique strategies that complement the other managers included in the fund. Diversified Trust typically offers a private equity fund every three years which means that our clients need not make an annual commitment since the fund allocates capital to the underlying managers over the three year period. Similarly, we use an outside real estate manager that offers a fund of funds approximately every two years. So, assuming that a client is starting from scratch, how much should be committed every three years to private equity and every two years to real estate in order to reach targets of 10% and 5%, respectively?

don't try this at home!

In order to answer this question, it is necessary to build a fairly complex and sophisticated model that forecasts the pace of commitments, fund returns, the timing of capital distributions, and the return on the overall portfolio. While we will certainly get many of the assumptions wrong over short periods of time, the ups and downs should average out such that the model provides a realistic picture of the long term behavior of these asset classes. In fact, the commitment and distribution assumptions are fairly similar to historical experience. We won't bore you with all of the gory details, but several of the more important assumptions are:

Private Equity Return (Blend of LBO and Venture Capital)	**11.0%**
Real Estate Return	**8.0%**
Total Portfolio Return	**7.0%**
Annual Portfolio Spending Rate	**4.0%**

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Based on all of the assumptions, the model recommends commitments as follows:

For targets other than those assumed here, you can simply adjust the recommendations proportionately. For example, for a 7.5% real estate target, the appropriate two year commitment is one and one half times the value shown in the table above or 3.3%. What about those clients that already have some exposure to these categories and are interested in moving toward a higher target level? We can run the numbers for any given situation. But, in general, the recommended commitment levels are only modestly lower. The major difference is that the actual weightings will reach the targets much more quickly and may overshoot slightly on a temporary basis.

	Target Exposure*	**Commitment***
Real Estate (Every two years)	**5.0%**	**2.2%**
Private Equity (Every three years)	**10.0%**	**7.2%**

*** As a percentage of total portfolio**

When working with a model with lots of variables, it is worthwhile to test the sensitivity of the recommendations to changes in the underlying assumptions. In this case, moderate changes in the pace of capital contributions and withdrawals, returns on the illiquid categories, and overall portfolio returns do not meaningfully change the conclusions. Only in the case of extreme conditions would the recommendations change, and it would not seem sensible to base an investment program on assumptions that are possible yet unlikely.

The recommended commitment levels may seem large in comparison to the targets but it is important to remember that each commitment is drawn over a number of years, and some capital begins to be returned three or four years into the life of a fund. Interestingly, even at these commitment levels, actual exposure does not reach the target levels until year 7 in the case of real estate and year 10 for private equity. Thereafter, the exposure remains fairly constant at the target level. One might ask whether it makes sense to make a larger initial commitment in order to reach the target sooner. Unfortunately, this strategy might necessitate lower commitments in future years in order not to exceed the target. Once again, we favor level commitments in order to avoid being on the wrong side of the market cycle. It is also important to remember that these recommendations are based on a number of assumptions that may or may not turn out to be correct, so it is important to periodically repeat this exercise and adjust as required.

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takeaways.

First, significant commitments to private investments are required to reach target levels that we deem sufficient to meaningfully impact the risk and return on the overall portfolio. Second, it is important to realize that the introduction of private investments makes the process of establishing, monitoring and adjusting asset allocation levels less precise. Moreover, actual weightings can easily fall above or below approved ranges, and rebalancing may not be accomplished easily. However, we believe you are paid handsomely for this added complexity, particularly in a world of low interest rates and the prospect of only moderate returns on most of the traditional asset classes. ■