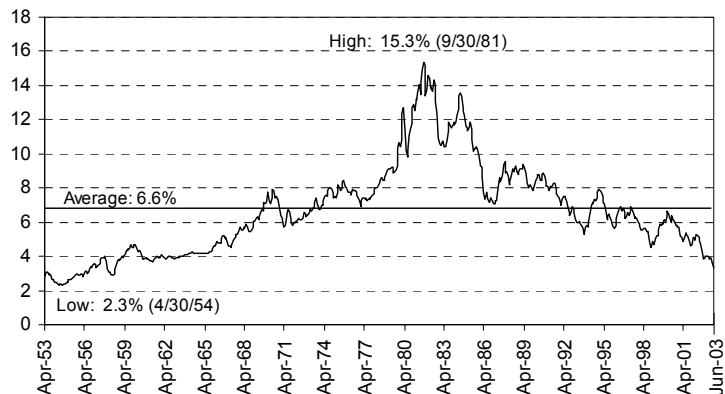


Asset Allocation

Bernard Winograd
President
Prudential Investment Management

Investment returns for defined benefit plans have been terrible the last few years. Unfortunately, that is far from the biggest problem confronting investment staffs of these plans. The real problem is that it is unlikely that investment returns in the next few years will be strong enough to meet the return targets that are being used by their funds. The problem is simple – the return targets are built around long-term historical averages for the major asset classes, but the near-term outlook for those asset classes is more likely to be below the long-term averages. A quick review of some numbers for each of the major asset classes illustrates why.

Exhibit 1: Treasury Yields*



Source: Federal Reserve Board

*Note: Interest rates, 10-year constant maturity securities, % p.a.

As **Exhibit 1** depicts, yields on long term Treasuries since 1953 have averaged 6.6%, and are currently around 4%.

As **Exhibit 2** summarizes, if the ending yield in ten years is the long-term average of 6.6%, then the rate of return from investing in long-term Treasuries over the next ten years will be 4.2%, assuming rates rise ratably over the period. If rates go to zero, the return still will not exceed 6%. So returns from Treasury bonds over the next ten years are likely to fall between 4% and 6%. Move up the risk spectrum as much as you like to take credit risk to add value to that outcome, but it's unlikely to add more than 100 basis points over a ten-year period.

Prudential Investment Management
Gateway Center 3, 15th Floor
Newark, NJ 07102

Ph 973.367.5550
Fax 973.367.8888
bernard.winograd@prudential.com

Exhibit 2: Treasury Ten Year Returns on Investment

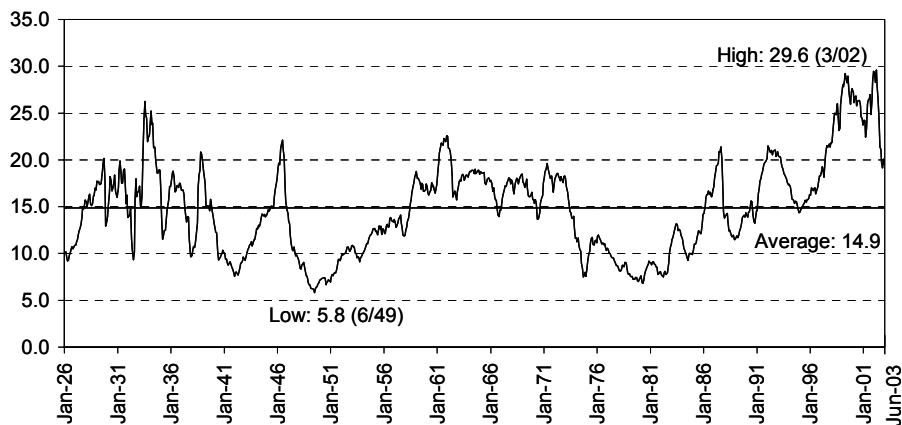
Ending Yield	Total Return
0.0%	6.0%
2.3%	5.5%
6.6%	4.2%
15.3%	2.0%

Source: Prudential Investment Management

Now, it's been better. From 1981 to 1991, when long-term Treasury yields started at about 13.5% and ended at 7%, the return from Treasury investing alone was almost 16%. But we're not starting at 13.5%, and rates are unlikely to fall far enough to make a meaningful difference over the next ten years, and returns certainly won't be helped if they rise instead.

So let's go to stocks.

Exhibit 3: P/E Ratios



Source: Prudential Investment Management

Note: Based on trailing 12 months reported (operating) earnings.

Exhibit 3 recaps the history of P/E ratios. Roughly speaking, the range is from 5X to 30X. The long term average is 15X. Today we are at about 19X. We know that dividend yields are about 1.9%, so we can start there. Let's assume that dividends grow by 5% a year, reflecting growth in profits in excess of almost any reasonable long-term estimate of GDP growth.

Exhibit 4: Equity Ten Year Returns on Investment

Final P/E Ratio	Expected Returns
5	-6.2%
15	4.4%
19	6.9%
30	11.8%

Source: Prudential Investment Management

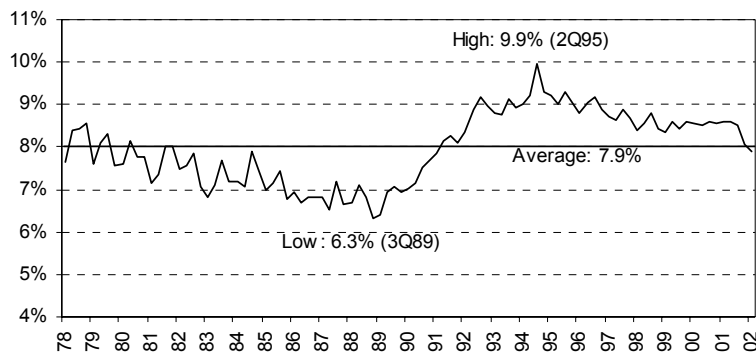
Using these assumptions, **Exhibit 4** shows what total returns from stock investing look like over the next ten years if P/Es remain the same, or if they go back to historic averages, historic lows or historic highs at the end of the ten years. As you see, you get a range of -6.2% to 11.8%, low by historical standards, and not even better than bonds in all cases.

Please keep in mind that this is not a forecast of the probability of these outcomes. Like the fixed-income table, it is merely the arithmetic of what would happen if each asset class reverted to mean, high or low multiples. Implicitly, the table raises a question about the nature and the extent of the risk premium for investing in stocks. It would be highly unusual to have a ten year period of negative equity returns, and almost as unusual to have a ten year period in which fixed-income investing outperformed equity investing.

The realized (as opposed to the expected) risk premium for stocks is a long-term phenomenon, one likely to be reasonably predictable over the long term. However, the extent to which it is realized in any short- or medium-term period is less certain, as equities often overshoot or undershoot the central tendency of their long-term values. Hence, given today's starting point of somewhat above-average P/Es, low dividends and above-average growth prospects, the medium-term outlook for equities is mixed. It is possible that equities will do well enough over the next ten years to help CIOs achieve target returns, but much less certain than is comfortable.

Now, finally, let's look at the history of real estate cap rates.

Exhibit 5: NCREIF Current Value Cap Rates, 1978-2002



Source: NCREIF

As **Exhibit 5** illustrates, real estate cap rates have been pretty stable, from a little under 6.5% to a high of about 10%. NCREIF is at about 8% today. Income returns from NCREIF were 8.3% for the most recent four quarters ending the first quarter of 2003, and capital expenditures, which we should subtract to get to a cash return comparable to a dividend yield on stocks, have averaged 2.5% of value.

Exhibit 6: Real Estate Ten Year Returns on Investment

Ending Cap Rate	Total Return
9.9%	6.2%
6.3%	10.8%

Source: Prudential Investment Management

Exhibit 6 illustrates the resulting range of returns from NCREIF investing for ten years, based on historical patterns. The answer will be equal to the starting cash yield plus inflation plus the valuation effect of a change in cap rates, and results in a range of roughly 6.2% to 10.8%, depending on whether cap rates go to the bottom or the top of their historic range.

Exhibit 7: Forecast Ten Year Total Returns

	Low	Mid point	High
Bonds	2.0%	4.2%	6.0%
Stocks	-6.2%	4.4%	11.8%
Real Estate	6.2%	8.3%	10.8%

Source: Prudential Investment Management

Exhibit 7 puts all this together and makes the extent of the CIO's worries clear. Given the starting point, the mid range of plausible returns for the next ten years doesn't look like the long run returns that are used to set expected returns for most pension funds, which have an average expected return assumption of a little more than 9%.

The other significant asset class, private equity, is more difficult to model than these asset classes because of the lack of a comparable index of valuation. But we do know that the venture capital industry raised a ten year supply of capital in the last two years of the 1990s, and that asset values and expected returns in that sector have been falling ever since. We also know that a strong stock market helped inflate the returns that were earned in the 1990s, and that those conditions look unlikely to recur. Buyout funds are likewise suffering from an oversupply of capital, falling values and the lack of a turbo-charged public-market exit opportunity. Let us return to the question of private equity in a little while.

The punch line remains: no reasonable combination of the other major asset classes is a safe bet to produce the assumed returns. And the consequences are serious if they don't. For public

pension plans, the result can be a requirement to ask for tax dollars to fund liabilities at a time when local government finances are already in a precarious condition. For corporate plans, the adverse effect will flow through the profit and loss statement, cash contributions to a majority of plans may be required of sponsors for the first time in a decade or more, and, in extreme cases, there are risks to the credit rating or financial viability of the plan sponsor.

It is little wonder that chief investment officers feel themselves increasingly to be in a box from which traditional asset allocation studies offer no escape. An increasing number of voices have been calling for a “postmodern” portfolio theory, an effort to find a new approach to thinking about portfolio construction that will resolve this painful situation.

Some have also chosen to go at the problem from a different angle altogether. After all, faced with an unattainable benchmark, one can either look for ways to meet it – or develop arguments as to why it should be changed. And there is a school of thought with an interesting argument to make along those lines. This school advocates changing a pension fund’s focus to plan liabilities instead of targeted rates of return.

Oversimplifying, the argument is that pension plans are not foundations and endowments, but rather pools of capital designed to fund two sets of liabilities. One of those is known, the benefits due retirees. The other is unknown, and consists of the benefits that will ultimately be due to today’s active employees. That first liability looks very much like a fixed, long-term liability, and, the argument goes, is best funded with a like amount of long-duration, fixed-income assets.

The pain plans are bearing today is, by this line of reasoning, entirely attributable to funding fixed liabilities with risk assets like equities. Plans would be better off settling for lower returns, to the extent that they can determine their liabilities, and restrict the use of risk assets to funding active employee liabilities. This argument can be extended to any plan with a reasonably predictable set of liabilities.

This is an appealing line of thought in many ways, and very familiar to those of us in the US life insurance business. We build portfolios all the time to fund relatively predictable costs – such as payouts on death benefits. And we generally build them out of long-duration, fixed-income assets in order to minimize our risks.

Despite the appeal of the logic, this idea is unlikely to gain much of a following among US pension plans. It makes the most sense for a plan that is overfunded with a relatively high proportion of retired liabilities. In such plans, the sponsor’s shareholders have little to gain by outperformance and a lot to lose if there is underperformance, so a Board of Directors can feel that it is reasonable to forego the upside in order to protect against the downside for shareholders.

For underfunded plans, by far the majority today, there is plenty to gain and little more to lose by going for returns. Moving heavily into long-duration fixed income at a time when beginning interest rates are extraordinarily low (revisit **Exhibit 1**) locks in low rates of return, potentially requiring a lowering of assumed rates of return and a potentially disastrous accounting result. In addition, those of us who remember the 1970s know that a return of inflation could threaten the

implicit assumption that liabilities for retirees are fixed – many sponsors voluntarily raised benefits for retirees in that era, and it could happen again. In fact, GE’s recent round of labor negotiations produced just such a result.

It seems much more likely that plans will instead focus on ways to take increased risks in order to increase expected returns. If they want to do so, we offer the following six ideas that may be of help. Some of these are products or investment strategies, others are just ways of thinking about these issues that may help clarify the options. Some are new, some are older ideas whose time has come, and some are a combination of the two. Hopefully, all of them are helpful in stimulating thinking about how to escape from the box.

Add a Tactical Dimension to Strategic Asset Allocation

We know that the long term is predictable in a way that the short term is not. Almost every pension fund office displays a copy of Ibbotson’s famous chart showing the long-term returns from stocks, bonds and bills relative to inflation since 1926. The long-term return assumptions that are used in most mean variance optimizer models assume that these long-term trends are the right way to model future behavior. In fact, there is a logic to this, since financial markets tend to arbitrage major asset class returns into a stable long-term relationship with each other. For example, equity has to return more than debt over long periods, or it will be repriced.

At the same time, short-term trends in returns from the various asset classes are inherently unpredictable. The shorter the period, the greater the unpredictability – one may have a better than even chance of predicting performance of stocks or bonds over a five-year time horizon, but certainly not over a day, a month or even a year. There are simply too many unpredictable variables.

But the analysis that began this piece is an example of a way to have an informed opinion about the medium term. While the long term may be certain and the short term unknowable, it is possible to take a view of the medium term and add some value. The starting point of any investment period has a unique configuration of relative values that may not make realization of the long-term patterns plausible over the medium term. Today’s values are a good example of this – even if only because all the likely outcomes are below long-term trend lines.

This kind of tactical thinking is entirely compatible with a strategic approach to asset allocation. If a fund has a range of target allocations for each asset class, a focus on today’s valuations relative to historical ranges is a good way to determine where in the range the fund should aim, or whether the fund should revisit the ranges. Ignoring these issues by running an asset allocation study that uses only long-term expected returns is unlikely to ever suggest the kinds of policy changes that specific market conditions may dictate.

Rethink Managing Risk

The system of risk controls that has become widespread in connection with the triumph of Modern Portfolio Theory (MPT) needs revisiting in light of today's need for return.¹ That system calls for each manager to play a carefully defined role in an overall asset allocation. Because the role is to try to outperform market benchmarks that the fund has used in modeling overall asset allocation, performance evaluation techniques measure tracking error for each portfolio manager. Tracking error, a measure of deviation from a benchmark, has thus evolved from a tool to evaluate index fund managers into a risk control tool that also constrains the ability of active managers to add value.

The result has been a little too much risk control of one kind and not enough of others. After all, there are many different kinds of risk, including the risk that returns will be too low. The kind of risk control that has evolved in tandem with MPT is designed to control for volatility of results, but it is of little help in protecting against risk of loss. If market benchmarks go down, managers constrained by tracking error limits are certain to go down with them.

It is this risk, of course, that informs the thinking of advocates of matching assets to liabilities whenever possible. And while it is unlikely that this idea will gain wide acceptance for the reasons already discussed, there is an important insight from this school of thought that even a risk-seeking plan should consider. That idea is to consider lengthening the average duration of whatever fixed-income strategy is employed, at least to the extent that cash flows for certain of the plan's liabilities are predictable.

On the equity front, what needs consideration is a strategy of bar-belling the risk and return approach in two steps. First, to obtain market exposure, make a generous allocation to index or enhanced index strategies with fees as low as possible. Second, to obtain alpha, hire active managers with much broader mandates and a greater tolerance for tracking error in execution. Consider issuing an RFP asking for strategies that will be measured by returns, not benchmarks. Or, if that is a bridge too far, measure all equity managers by their success in outperforming a broad benchmark, but make the measurement period a full market cycle rather than a fixed number of years, so as to assure that each one's style has an opportunity to be fairly measured against a passive alternative.

Most of these ideas are less comfortable than the relatively simple approach of measurement versus specialized benchmarks that is the norm today. But the events of the past few years clearly illustrate the perils of focusing on that risk to the exclusion of all others. Minimizing the risk of repeating that mistake is likely to require some experimentation and some greater judgment as to what is attractive performance by managers.

¹Readers interested in a more complete discussion of the issues surrounding the use of Modern Portfolio Theory may also wish to read *Hamlet and Modern Portfolio Theory*, Bernard Winograd, July 2002, available at www.prudential.com/pim.

Create Asset Classes Generously

The key insight of Modern Portfolio Theory is that risk-adjusted returns improve by adding uncorrelated assets into the mix of a portfolio. In practice, however, many practitioners limit the number of asset classes to which they have an explicit allocation. In the extreme, one can argue that all assets are either debt or equity in nature, and that every available investment choice can be fit into one of these two categories.

In biological taxonomy, this is a familiar debate, and people tend to fit into one of two categories, referred to as “lumpers” and “splitters.” The lumpers prefer to “lump together” as many living things as possible into every species, whereas the “splitters” argue for recognizing many more different living things as distinct species. If we borrow these terms, in portfolio construction lumping seems less useful than splitting, because splitting allows for greater room to introduce new ideas that may have useful degrees of non-correlation. TIPS, the US Treasury’s inflation-indexed bonds, can certainly be considered part of the fixed-income universe. But will a portfolio be better off if a decision as to how much to put in TIPS is made by the fixed-income manager, or if the CIO instead creates an asset class for TIPS and establishes a target allocation? Often, these decisions are driven by organizational thinking – do I want to do this, or does my head of fixed income? – rather than by an analysis of whether it will make a difference to the plan’s expected returns.

If the bias is to establish a separate asset class, at least as an experiment, then the chances of discovering useful new sources of uncorrelated return will improve. REITs are a good example of this phenomenon. In the mid-1990s, when they were first available in size, there was a largely unproductive debate as to whether they were real estate or stocks. Historical data at the beginning of the 1990s suggested that they were highly correlated with small cap stocks – unsurprising, since that’s what they all had been. Yet their widespread use was an innovation in the capital markets that made their future behavior less predictable. Funds that adopted an explicit allocation for REITs (albeit often as a subset of their real estate allocation) have been well rewarded for doing so.

To take full advantage of this way of thinking requires looking for ideas that do not quite fit the mainstream categories and then creating a dedicated allocation to them. Mezzanine funds – of all types – are another good example of products that often have trouble getting a hearing in the market because they are neither fish nor fowl. Yet their very unpopularity suggests that they may be a source of uncorrelated alpha if taken seriously on their own, rather than being dismissed as an idea that does not quite fit.

Intensify the Approach to Each Asset Class, Especially the Large and Efficient Ones

One way to take more risk is to do so within each asset class or each strategy. The biggest payback from doing this is in the larger, more efficiently priced assets where small amounts of incremental return make a potentially large contribution to the total fund’s return. If a fund is a heavy user of equity index strategies, enhanced indexing is an obvious way to potentially increase returns – even by a small amount – on a very large slice of the portfolio.

The insurance industry is a role model for how to increase expected return from a fixed-income portfolio. In the US, regulatory constraints have limited the ability of insurers to seek incremental returns through equities. The industry has responded by searching out every reasonable opportunity to add value within the constraints of a fixed-income mandate. They do not follow the pension fund industry approach of hiring fixed-income managers with broad mandates to outperform a broad fixed-income market benchmark.

Instead, they diversify their portfolios with specific allocations to less liquid fixed-income investments. Private placements are one example. Privately originated mortgages are another. While private corporate borrowing by substantial companies has been squeezed by the competitiveness of public-market alternatives, the mortgage market is as large as the market for Treasuries. Some of the larger insurance portfolios carry this approach even a step further, looking for even more illiquid subsectors for added yield, such as agricultural mortgages, project finance or leveraged leases.

It is certainly correct that taking advantage of these kinds of specialized fixed-income products requires different skills than those typically found in a more traditional fixed-income manager, who is more likely to emphasize market pricing and trading disciplines. But the process of getting exposure to these value-added intensifiers can easily be reduced to manager selection, because these skills are available for hire, not just sequestered in-house in the firms who practice them.

Increase Absolute Return Allocations

The most common reaction among plan sponsors to today's markets has been to look for sources of absolute return, alpha that is available regardless of overall market conditions. Typically, this has meant considering increased allocations to hedge funds. In order to discuss the issues clearly, it is important to acknowledge the enormous semantic ambiguity in these terms. Hedge funds today are considered to encompass a wider range of investment strategies than the traditional meaning of the term.

Likewise, absolute return strategies are sometime confused with investments that have absolute return benchmarks, regardless of whether they are correlated with other asset classes. Examples of this kind of confusion are buyout funds and venture capital, which are more akin to asset classes than to absolute return strategies. They finance a part of the capital structure of the economy, just like equity and debt, and can be expected to have long-term returns that will fall into a predictable pattern of correlation with other similar asset classes. They can and should be evaluated accordingly, not like an absolute return strategy. Absolute return strategies should not have a long-term return that is predictable relative to asset classes that arise from the financing of the economy. Instead, they should have an expected return greater than the cost of the borrowing that is often used to finance investment in them.

The basis for many absolute return strategies used by hedge funds is at bottom quite straightforward, and is built on arbitrage of one kind or another, with a weather eye on the cost of

carry. Financial markets are not born efficient, they are *made* efficient by arbitrage trading – in general, the greater the trading volume or liquidity in any market, the greater the efficiency of pricing. For the arbitrageur, there is a continuously available source of returns from accurately pricing the correlation of two markets.

Merger arbitrage is a good example. Once a takeover is announced, the stock of a target company trends toward the offer price, which is usually a premium to prior trading levels. From that time forward, the price of the stock is driven by the likelihood of a deal going through and the cost of carry to the likely closing date, rather than the fundamentals of the company. Hence, investors whose skill is pricing ongoing concerns usually find themselves inclined to sell out to investors who specialize in gauging the risks of deal completion. These investors in turn are constantly pricing stocks based on the premium to the cost of carry that they need to earn. Expected returns to a skilled practitioner of merger arbitrage over multiple deals tend to be quite high relative to long-term equity investment returns.

If a fund can invest in such an arbitrage opportunity, regardless of whether the investment strategy is grounded in the equity or the fixed-income markets, it is likely to find itself with a high return investment with a low correlation to broad markets. Unfortunately, there are two serious problems of implementation.

One is the question of scale. As the example of merger arbitrage illustrates, these strategies are inherently limited to the size of the markets that one is arbitraging. These can be reassuringly big, but that is not the same as infinitely big. As many investors in such strategies have learned to their dismay, “becoming the market” is a dangerous state. Being caught in adverse trends without adequate liquidity to escape is a good way to lose a lot of money.

The second issue is the amount of work needed to assure that one is truly investing in a market-neutral arbitrage strategy, rather than one that just looks like it is market-neutral. For example, an equity fund that can be both long and short does not necessarily have a square position, one that will be unaffected by the direction of the markets. It may instead have some long and some short positions, both of which could lose money in certain market conditions. In effect, such a fund is “long” both long and short positions, rather than holding offsetting exposures designed to capture an arbitrage. It meets the definition of a hedge fund in common use and may be an attractive investment, but it is not an absolute return strategy.

Knowing how to tell the difference between such hedge funds and a true arbitrage play takes skill and understanding of often complex market tactics, and may be beyond the due diligence capabilities of many plan sponsors. Fund-of-hedge-fund managers dedicated only to investing in market-neutral hedge funds may be an alternative technique for getting exposure to such opportunities, although evaluating such a manager can also be a bit of a due diligence challenge. But this is what consultants are for.

It is also important to say that hedge funds that are not market neutral can also represent an opportunity. As the argument is often made, any investor who has the skills to determine what is cheap (to go long) must almost certainly have the skills to determine what is expensive, and could, therefore, go short. The point is as applicable to fixed income as it is to equity markets.

Priced appropriately, such investment skills can be an interesting way to diversify an actively managed portion of an investment portfolio. But they are also not the same thing as an allocation to absolute return strategies.

Increase the Real Estate Allocation

This is not the place to fully discuss the role of real estate in addressing today's market conditions.² However, those who have used real estate consistently in their portfolios can generally testify that it has fulfilled its promise as a diversifier of returns. It also continues to generate a high rate of current income, which makes it attractive in a low-yield environment. Perhaps more importantly, the nature of real estate capital markets has changed significantly in the last ten years, becoming considerably more transparent as a result of increasing public market ownership of both debt and equity.

This transparency and the attendant increase in the complexity of real estate capital markets has created many new investment vehicles that can be used to tailor a program to achieve a wide range of investment return objectives from the asset class. Like private equity, it is an asset class with a good deal of serial correlation, where finding a manager with a good track record is a likely path to future above-average returns. As **Exhibit 8** makes clear, the degree of difference between top and bottom quartile performance has been less than in other private asset classes, but the reward of serial correlation is present.

Exhibit 8: Asset Returns by Quartile (10 years ending 12/31/02)

	1 st Quartile (%)	Median (%)	3 rd Quartile (%)	Range (%)
US Fixed Income	8.1	7.7	7.5	0.5
US Equity	11.0	10.2	9.1	1.8
International Equity	9.2	6.3	5.0	4.2
Real Estate	11.9	10.0	8.7	3.2
Leveraged Buyouts	35.7	4.3	2.0	33.7
Venture Capital	51.9	26.2	-5.2	57.1

Source: Frank Russell Co. (FRC); FRC Active Core Fixed Income Universe; FRC Market-Oriented Accounts Universe; FRC Non-US Equity Portfolio Universe; Venture Economics Buyouts Universe;* FRC Real Estate Open-End Commingled Funds Universe

Note: Universe returns calculated using time-weighted returns, gross of manager fees. *Denotes cumulative vintage-year composites performance. Returns calculated using internal rate of return, net of manager/partnership fees. Median is overall universe internal rate of return.

Because it has been through a three-year period of outperformance relative to the other major asset classes, real estate looks unusually attractive in **Exhibit 8**, having ten-year performance numbers that are in excess of US equities. But, even in periods where the effect is not as

²A more complete treatment of these issues is available in another recent piece on asset allocation, *Connecting the Disconnect*, Bernard Winograd, May 2003, available at www.prudential.com/pim.

extreme, real estate has been a predictable, major asset class with performance that increases risk-adjusted returns of portfolios. As the return projections in **Exhibit 7** make clear, its strategic value to portfolio investing remains compelling in today's return environment, and very few plans have as much of an allocation to it as modeling would suggest is appropriate.

A Concluding Note

We hope that these six ideas are helpful. In many ways, the job of the CIO is much more interesting now than it was in the 1990s. A single decision in that period, to put a lot of money into equities, the largest asset class, was the key to success. In today's return environment, it will take more effort and more thinking to succeed. If we can help in thinking through the challenges or in following up on any of these ideas, we are happy to do so.

Prudential Investment Management, Inc.
Gateway Center 3, 15th Floor
Newark, NJ 07102

Tel 973.367.5550
Fax 973.367.8888
Web www.prudential.com/pim

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