The Regents of the University of California
Asset Allocation Plan

The Regents of the University of California
Investment Strategy Study

March 16, 2000

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Introduction

Wilshire Associates Inc. was retained by the UC Board of Regents to conduct an Asset Allocation Study for the UC Retirement Plan ("UCRP"), the General Endowment Pool ("GEP"), and the Equity Portfolio and Bond Portfolio investment options offered by the Defined Contribution (403b) Plan. The Study's purpose is to recommend investment strategies, policies, and guidelines consistent with the long-term fiscal requirements of the UC Retirement Plan and Endowments and the fiduciary responsibilities of The Regents.

A draft Wilshire report was presented to The Regents on January 19, 2000. The Regents referred the draft report to the UC Treasurer's Office, The UC President's Office and the Investment Commission for further comment. This report is the final product after discussions and concurrence with those groups.

Section 1: Summary of Recommendations

Wilshire recommends that the asset allocation policy for the University of California Retirement Plan and General Endowment Pool be changed to the target allocations and ranges presented below.

Exhibit 1 - UCRP & GEP Recommended Asset Allocation

	Recommended	Allowable Ranges		
	Target Allocation	Minimum	Maximum	Current Policy[1]
U.S Equity	53%	48%	58%	63%
Non-U.S. Equity	7	5	9	0
Fixed Income	35	30	40	35
Private Equity	5	3	7	2
	100%			100%

The current policy is shown in the last column. The recommendation, if adopted, would require a 10% reduction in U.S. equities and redeployment as follows: 7% to non-U.S. equities and 3% to private equity. The purpose for these changes is to increase return opportunity and broaden portfolio diversification.

Within U.S. equities, Wilshire recommends that the UC Treasurer's investment management responsibilities be complemented with an index fund allocation equal to 30% of U.S. equities or 15.9% of total fund assets. Wilshire recommends that 85% of the non-U.S. equity allocation be invested in an index fund and 15% managed by the external emerging market advisors currently used by the Treasurer. Wilshire recommends that the Treasurer retain management of all fixed income assets. Finally, Wilshire recommends

[1] The Treasurer's comparative index for the UCRP and GEP is 65% S&P 500 and 35% Lehman Aggregate and the equity portfolio can be adjusted within a range of 75-60% and the fixed income portion to 25-40% of market value depending upon market conditions and relative total return prospects of the various asset classes. The above asset allocation represents the private equity exposure as of June 30, 1999.

that an outside consultant be engaged by the Regents to assist the Treasurer with the management of the private equity portfolio, but report independently and directly to The Regents and to the Investment Advisory Committee. The following table summarizes these allocation recommendations together with performance benchmarks for each portfolio.

Exhibit 2 - UCRP & GEP Recommended Asset Allocation & Benchmarks

	Percent of Asset Class	**Percent of Total Assets**	**Benchmarks**
U.S. Equity:	**100%**	**53.0%**	**Russell 3000**
Index Fund	30	15.9	Russell 3000
UC Treasurer	70	37.1	Russell 3000
Non-U.S. Equity:	**100%**	**7.0%**	**MSCI ACWI xUS**
Index Fund	85	6.0	MSCI EAFE
External Managers	15	1.0	MSCI EMF
Fixed Income:	**100%**	**35.0%**	**Salomon LPF**
UC Treasurer	100	35.0	Salomon LPF
Private Equity:	**100%**	**5.0%**	**Russell 3000 +3%**
External GPs	100	5.0	Russell 3000 + 3%
Total		**100.0%**	**Weighted Index[2]**

Investment guidelines are recommended for each asset class portfolio to specify a performance benchmark and to control portfolio risk.

Wilshire further recommends that the two Defined Contribution (403b) portfolios, the Equity Portfolio and the Bond Portfolio, be managed in a less risky fashion and more consistent with other defined contribution retirement assets. Specifically, Wilshire recommends that the Equity Portfolio be managed in a fashion that is similar to the equity segments managed for the UCRP and GEP. Exhibit 3 summarizes Wilshire's recommendations for the Equity Portfolio option within the Defined Contribution Plan.

[2] Weighted average of 53% Russell 3000 Index, 7% MSCI ACWI x US Index, 35% Salomon LPF Index, and 5% Russell 3000 + 3%.

Exhibit 3 – Recommended 403(b) Equity Portfolio Asset Allocation & Benchmarks

	Percent of Asset Class	Percent of Total Assets	Benchmarks
U.S. Equity:	**100%**	**80.0%**	**Russell 3000**
Index Fund	30	24.0	Russell 3000
UC Treasurer	70	56.0	Russell 3000
Non-U.S. Equity:	**100%**	**15.0%**	**MSCI ACWI xUS**
Index Fund	85	12.8	MSCI EAFE
External Managers	15	2.2	MSCI EMF
Private Equity:	**100%**	**5.0%**	**Russell 3000 +3%**
External GPs	100	5.0	Russell 3000 + 3%
Total		**100.0%**	**Weighted Index[3]**

Wilshire recommends that the risk in the Bond Portfolio be significantly lessened by shortening the duration/maturity of the portfolio and by reducing holdings in non-U.S. and non-investment grade securities. The benchmark index for the Bond Portfolio should be the Lehman Aggregate Bond Index, the most common benchmark for defined contribution fixed income investment options.

The structural recommendations, including assets to be managed by the Treasurer and external managers and active versus passive management, are intended to facilitate the implementation of an appropriate and prudent asset allocation strategy and to control fund level risk. The new Investment Advisory Committee, in conjunction with The Regents, will have the ongoing opportunity to recommend further changes as appropriate.

Recommendations on reporting, in Section 7, streamline the type and amount of information going to The Regents and define the role of the Investment Advisory Committee in advising The Regents in fulfilling their fiduciary responsibilities.

Section 2: University of California Retirement Plan

The UCRP represents assets at market value of $38.1 billion as of June 30, 1999, held to fund current and future benefits (“the Plan”, “the UC Plan”, and "the UC Retirement Plan”). Wilshire’s analysis of the Plan is based upon the June 30, 1999 actuarial report prepared by Towers Perrin and Wilshire projections.

[3] Weighted average of 80% Russell 3000 Index, 15% MSCI ACWI x US Index, and 5% Russell 3000 + 3%.

Analysis of the UCRP Liabilities

The most striking characteristic of the UCRP is its exceedingly strong fiscal status with assets comfortably exceeding the Plan's benefit obligations or liability. The June 30, 1999 actuarial value of the Plan's liability was $22.2 billion. The $38.1 billion in market value of assets in the UCRP exceeds the $22.2 billion actuarial liability by $15.9 billion.

A second measure of fiscal strength is to compare the actuarial liability with the *actuarial value of assets*. The actuarial value is calculated by taking an average of past market values in order to smooth short-term asset fluctuations. As a result, the actuarial value of assets will change more slowly over time while the market value of assets can change rapidly. Towers Perrin uses the actuarial value of assets in determining if any contributions are required. For most pension plans today, the actuarial value is below the market value due to the strong bull market in stocks. That is also true for the UC Plan. The actuarial value of assets is $32.1 billion, $6 billion less than the market value of assets but still $9.9 billion above the actuarial liability of $22.2 billion. As a result, no cash contributions are being made to the Plan as it is currently self-funding.

Experts commonly look at the ratio of assets-to-liabilities as a measure of pension plan fiscal strength. The Plan's ratio of 1.71 ranks near the top as compared with other large defined benefit pension plans. (The ratio would decline to 1.45 if the actuarial value of assets were used instead of market value.) CalPERS, another large public retirement system for state and local employees, sponsors a large defined benefit retirement plan whose funding ratio by comparison is 1.21. The Plan's 1.71 funding ratio also far exceeds ratios reported by corporate and governmental retirement plans. The average funding ratio is 1.14 for corporate plans and 0.94 for governmental plans.

The $22.2 billion actuarial liability represents an obligation by the Plan to existing retirees and active members for past and current service, which the $38.1 billion in assets richly covers. However, the Plan will incur new benefit obligations each year as existing active members earn higher benefits until they retire. If these future benefit accruals were added to the current actuarial liability, the total would come to $28.8 billion. In other words, the Plan has a current sufficiency of assets to provide for its current *and future* obligations to members and have a reserve left over that exceeds $9 billion! ($38.1 billion minus $28.8 billion equals $9.3 billion.) Even the more conservative $32.1 billion actuarial value of assets is sufficient to cover the larger $28.8 billion liability.

The liability numbers presented here rely heavily upon the underlying actuarial assumptions used to calculate them. Small differences in assumptions are known to create quite different liability values. In particular, The Regents should be aware of the assumptions the actuary makes for the performance of assets because they can have a very heavy influence upon the selection of how much risk is appropriate in the investment portfolio.

The most important actuarial assumption is also the one that affects the investment portfolio – the interest rate assumption. The interest rate assumption is used as the rate of return the investment portfolio will earn in the future and is the rate of return used to

discount future benefit payments in the calculation of current actuarial liabilities. The Plan's actuary uses a 7.5% interest rate assumption. By comparison, most pension plans use interest rate assumptions between 8.0% and 8.5%. The CalPERS retirement system uses 8.25% as its interest rate assumption. The Plan's lower 7.5% interest assumption creates a more conservative (e.g. higher) calculation of liabilities and, as will be shown, a very achievable rate of return for the investment portfolio. The current actuarial assumptions were adopted by the Board of Regents in 1994 after a thorough study by Towers Perrin.

Referring back to the Plan's envious level of assets in relation to liabilities, it is worth noting that today's circumstances were created because a 15 year bull market in stocks and bonds, combined with the Treasurer's Office management, produced investment returns of 15% annually, double the 7.5% interest rate assumption. Looking ahead, Wilshire estimates that the $38.1 billion investment portfolio has to earn only a 6.1% annual return to fully provide for the higher $28.8 billion liability, the calculation that includes current and future benefits to active members and retirees in the Plan. At first glance, that might appear to be a goal that is easily achieved by investing the entire $38.1 billion in assets in Treasury bonds, since that is what bonds are currently yield.

There are several reasons for not declaring victory and selecting an asset allocation of 100% Treasury bonds. The first is future additional employees. The $28.8 billion liability provides for only the existing Plan participants over their existing working careers and retirement. However, benefits will begin to accrue for new employees as the existing active member population retires. And, unlike most defined benefit plans that are projecting no change or even a declining employee population, the UC system is forecasting the possibility of a 2.5% annual employment growth through 2011 and 1.5% annual employment growth thereafter. At a 6.1% return, new Plan contributions will be required sometime in the future under this high employment growth scenario.

Actuarial assumptions can be an important second reason to disfavor a bond-only strategy. Unexpected inflation can wreak havoc with defined benefit plans, as they did in the seventies. The UCRP may be especially vulnerable. Inflation increases the liability for active employees much more than for retirees. The UCRP has a relatively high ratio of active employees to retirees. There are 1.8 active employees for every inactive member. Most defined benefit plans average one active employee for every retiree.

The purpose of an asset allocation study is to find an asset mix that best fits the Plan's expected growth in employees and uncertain future economic events. Wilshire uses a pension model it pioneered 25 years ago to project a retirement plan's assets and liabilities into the future. The UCRP's unique liability parameters were used as inputs for Wilshire's pension model in order to provide projections of assets and liabilities over a 20-year forecasting period. Before presenting the model's results, it is appropriate to review the investment assumptions underlying the projections.

Investment Assumptions

Forecasting the long-term performance – periods exceeding 20 years – of different types of investments is a critical function of investment consulting firms like Wilshire Associates. Short-term market predictions can vary significantly and are almost always wrong. But, fortunately, there is a much better chance of forecasting the long-term return on financial markets. A number of academic studies examining the 200 year history of the U.S. financial markets have shown that equity and bond returns are more predictable over 20 year periods than any individual year. For example, while the one-year return on the U.S. stock market has ranged from –43% to +54%, the 20-year range in return is a much tighter +2% to 17%. Pension funds are one of the few institutions that can take a long-term perspective because their liabilities stretch over 70+ years.

Wilshire annually publishes its long-term return and risk forecasts for a number of investment types. In so doing, the past return history of the different markets is evaluated. But current market conditions are also weighed in the forecast. For example, current long-term bond yields have proven to be a better predictor of future bond returns than if past bond returns were used. Summarized below are Wilshire's long-term forecasts for major asset classes as of June 30, 1999.

Exhibit 4 - Long Term Expected Return Assumptions

	Annualized Expected Return
U.S. Equity	8.75%
Non-U.S. Equity	8.75
Fixed Income	6.25
Private Equity	11.75
Inflation	2.00

Please note that Wilshire's expected returns are similar to industry norms. Other consultants or academics doing the same type of studies use returns remarkably similar, a result not so much of professional conformity as it is the predictability of stock performance over 20-year time intervals.

Asset Allocation Policies

Wilshire selected three alternative asset policies of varying levels of risk to evaluate. They are:

Exhibit 5 - UCRP Asset Allocation Policies

	Alternative Asset Policies			Current Policy
	A	**B**	**C**	**D**
U.S. Equity	0%	48%	53%	63%
Non-U.S. Equity	0	7	7	0
Fixed Income	100	40	35	35
Private Equity	0	5	5	2
	100%	100%	100%	100%
Expected Return	6.3%	8.4%	8.5%	8.3%
Expected Risk	7.0%	11.7%	12.3%	12.4%
Return/Risk	0.89	0.72	0.71	0.66

Policy D is The Regents' current asset allocation policy, with 63% in U.S. equity, 35% in fixed income, and 2% in private equity, primarily venture capital partnerships. The first thing to note about alternative asset policies A through C is that they all have a lower risk level than Policy D. Wilshire believes The Regents should focus upon lower risk asset policies as alternatives because of the sizeable over-funding in the UCRP. Consequently, the U.S. equity allocations range from a high of 63%, the current policy, to a low of 0%.

Private equity is set at 5% of fund assets in all alternative policies except Policy A with 100% fixed income. Wilshire's analysis shows significant diversification benefits from private market investments in addition to its higher return. A 5% allocation is high enough to have a meaningful impact upon the total portfolio. Higher allocations were not considered due to possible challenges in investing and managing a multi-billion dollar private equity portfolio.

Two asset policies, B and C, show meaningful allocations to non-U.S. equities. Wilshire's analysis supports the conclusion of numerous studies showing diversification benefits from adding non-U.S. equities within a portfolio. This is illustrated by comparing The Regents current Policy D with Policy C. Policy C modifies the current Policy D by redirecting 7% of U.S. equity to non-U.S. equity and an additional 3% to private equity. The 7% non-U.S. equity allocation reduces overall risk slightly from 12.4% for the current Policy D to 12.3% for Policy C. (Risk is measured as the annualized standard deviation of return, a measure of return volatility.) The added 3% allocation to private markets explains much of the increase in return from 8.3% for current Policy D to 8.5% for Policy C. Overall, Policy C is superior to the current policy because it both increases future return and reduces risk.

A recommendation to pursue Policy C presumes that The Regents feel that approximately the same level of risk is appropriate for the Plan's assets. Policies A through C present three alternatives. None is clearly superior to the others; in each case a lower risk carries with it a lower return. However, Policies B and C carry expected returns that are comparable to current Policy D but at lower levels of risk.

As a point of reference, the following table compares The Regents current asset allocation policy with other large (assets exceeding $5 billion) corporate and public defined benefit pension plans. Statistics presented for corporate and public pension plans come from Greenwich Associates, a well known investment survey firm.

Exhibit 6 - UCRP Industry Comparisons

	UC Regents Current Policy	**Corporate Plans**	**Public Plans**
U.S. Equity	63%	49%	50%
Non-U.S. Equity	0	18	14
Fixed Income	35	28	34
Private Equity	2	5	2
	100%	100%	100%

The 0% policy allocation to non-U.S. equities for the UCRP is in sharp contrast with the asset allocation practices of other pension plan fiduciaries. The idea that non-U.S. stocks help diversify a portfolio and should be a permanent component of an asset mix policy is now almost universally accepted.

Private equity is also becoming increasingly accepted as an important equity asset class, both because of its potentially higher return versus publicly traded equities and its diversification benefits. The survey results report average allocations of 5% for corporate plans and 2% for public plans. The averages mask to some degree the larger role private equity plays in many asset allocation policies because many plans make no private equity allocations. For plans that make private market allocations, the percentage ranges from 5% to 15%.

Recommended Asset Allocation

Wilshire recommends that The Regents adopt Policy C for the UCRP with the following asset allocation targets and ranges:

Exhibit 7 - Wilshire Recommended UCRP Asset Allocation

		Allowable Ranges	
	Recommended Target Allocation	**Minimum**	**Maximum**
U.S. Equity	53%	48%	58%
Non-U.S. Equity	7	5	9
Fixed Income	35	30	40
Private Equity	5	3	7
	100%		

A primary goal for The Regents should be an asset allocation policy that provides for future UC Plan benefit payments at a satisfactory level of risk. The strong funding ratio, combined with the following liability projections, show that the benefit needs of the Plan are more than adequately provided for under either Policy B or Policy C. Policy C is

recommended over Policy B because it is more consistent with the level of risk that the portfolio has maintained in the past and Policy C is expected to produce a somewhat higher long term asset growth rate compared with Policy B.

It is important to recognize that Policy C, while recommended in this report, should not be viewed as the sole "right answer." The selection of Policy C best reflects the risk preferences expressed to Wilshire by the Offices of the President and Treasurer. Wilshire believes that the more conservative Policy B can meet the financial obligations of the Retirement Plan and should be given further consideration by The Regents through further analysis this year. Ongoing, Wilshire recommends that The Regents periodically – once every three years – review its asset allocation policy.

Market movements will regularly cause the Plan's actual asset allocation to deviate from the policy asset mix. Wilshire recommends that The Regents adopt the allowable ranges that are shown adjacent to the recommended target allocations. The Treasurer should use discretionary cash flow to keep the actual asset allocation as close to the policy allocation as possible. On rare occasions when the actual allocation falls outside the ranges, security purchases and sales should be managed to achieve compliance with the allowable ranges.

Plan Projections

The unusually strong funded status of the UCRP has been presented together with Wilshire's recommendation to change the current policy to one with a more diversified equity portfolio (international and private equity). The long term benefits from the recommended asset allocation become clearer by examining financial projections for the UCRP.

Exhibit 8 displays the potential range of returns for three asset mixes: the all bond Policy A, the recommended Policy C, and the current Policy D. (Policy B is not included in the projections. Policy A is included as a very conservative reference.) Table (I) in Exhibit 8 shows the distribution of potential returns over any single year. Table (II) reveals the distribution of potential returns over any ten year period of time. While the recommended and current policies have greater one year return distributions (e.g. risk) when compared to all bonds, the return pattern over ten years shows far less variability in both an absolute sense and compared to all bonds.

Exhibit 8 - UCRP Projected One and Ten Year Return Distributions

Table (I): Possible Range of Return over any *One* Year

	All Bond Policy A	**Recommended Policy C**	**Current Policy D**
Best Case*	18.4%	31.4%	30.7%
Expected	6.3	8.5	8.3
Worst Case	(4.7)	(9.7)	(10.3)

Table (II): Possible Range of Return over any *Ten* Year Period

	All Bond Policy A	Recommended Policy C	Current Policy D
Best Case*	10.0%	14.9%	14.9%
Expected	6.3	8.5	8.3
Worst Case	2.7	2.3	2.0

* Best case is defined as the 5th percentile outcome. Worst case is defined as the 95th percentile outcome.

The return and risk superiority of the recommended Policy C is evident in both the one year and ten year forecasts. Policy C's 8.5% expected return is higher than the 8.3% expected return for the current Policy D for one and ten year periods. Second, Policy C's worst case one year return of (9.7)% is better than the (10.3)% worst case return for the current Policy D. Finally, Policy C's worst case ten year return is higher than for the current Policy D.

Thirty year forecasts for assets, liabilities, and contributions are summarized in Exhibit 9. The forecasts assume that recommended Policy C is implemented, the UC workforce grows at a 2.5% annual rate through 2011 and 1.5% thereafter, and that current actuarial practices are continued. The workforce growth rate is among the most important assumptions in the projections and this information was derived from discussions with Towers Perrin and the President's Office.

Exhibit 9 - Projected Assets, Liabilities, & Contributions under Recommended Policy C (\$ billions)

	1 Accrued Liability	2 Assets at Market Value	3 Assets Divided by Accrued Liability	4 Contributions
1999	\$22.2	\$38.1	\$1.72	\$0.0
2000	23.9	40.7	1.70	0.0
2005	36.1	56.6	1.56	0.0
2010	55.5	78.8	1.40	0.0
2015	84.8	108.4	1.26	0.0
2020	126.6	150.4	1.18	2.7
2025	185.5	219.7	1.18	4.2
2029	250.0	296.1	1.18	5.5

Column 1 provides a projection of accrued liabilities over 30 years, growing at a 8.4% rate from \$22.2 billion to \$250.0 billion. Assets climb at a slower 7.1% rate from \$38.1 billion to \$296.1 billion. Assets grow slower than the 8.5% expected return due to benefit payments. Because assets exceed liabilities, no contributions to the Plan are expected for at least 20 years. The strong 1.72 funding ratio found in Column 3, built up

from the 15 year bull market, is slowly eroded over the next 30 years to 1.18. The 1.18 ratio is still better than current industry ratios.

Section 3: University of California General Endowment Pool

A common and important practice by endowment trustees is to select an investment policy which will allow for a high yet stable level of spending and preserve the real – inflation adjusted – value of the endowment over time. Wilshire recommends that the UC Regents follow this same practice in selecting an asset allocation for the GEP that had a market value of $4.6 billion as of June 30, 1999.

The Regents has adopted a long-term spending formula equal to 4.75% of assets. To help smooth short-term fluctuations, asset values are averaged over the prior 60 months. Additionally, a transitional time period to the 4.75% rate is planned from the current 4.35% rate currently approved for year 2000.

Policies B and C, and current Policy D are all consistent with The Regents' long-term spending formula of 4.75% and the preservation of the real value of current endowment assets. Policy A, with all assets in fixed income, is not and Exhibit 10 shows why.

Exhibit 10 - Alternative Asset Allocation Policies

	Alternative Asset Policies			**Current Policy**
	A	**B**	**C**	**D**
U.S. Equity	0%	48%	53%	63%
Non-U.S. Equity	0	7	7	0
Fixed Income	100	40	35	35
Private Equity	0	5	5	2
	100%	100%	100%	100%
Expected Return	6.3%	8.4%	8.5%	8.3%
Minus Expected Inflation	(2.0)	(2.0)	(2.0)	(2.0)
Minus Spending Rate	(4.75)	(4.75)	(4.75)	(4.75)
= Real Asset Growth*	(0.51)%	1.46%	1.55%	1.36%

* Real asset growth is a geometric rather than an arithmetic calculation.

Policy A, with the entire endowment in bonds, would not be able to sustain the 4.75% long-term spending formula and preserve the real value of the endowment. Exhibit 10 shows that once a 2% inflation rate and a 4.75% spending rate are deducted from a 6.3% expected investment return, the real value of assets declines by 0.51% per year. Over 20 years this rate of decline would reduce the real value of the GEP by 10%.

On the other hand, Policies B and C, and the current Policy D produce a high enough return to compensate for an erosion of value from inflation and spending and grow the real value of the endowment by over 1% per year.

Wilshire recommends that The Regents adopt Policy C as the target asset allocation for the GEP with the same ranges shown in Exhibit 7. Exhibit 11 compares the current investment policy and the recommended policy with the actual asset mix of other endowments as collected by Greenwich Associates.

Exhibit 11 - Industry Comparisons

	UC Regents Current Policy	Recommended Policy	Other Endowments
U.S. Equity	63%	53%	53%
Non-U.S. Equity	0	7	12
Fixed Income	35	35	25
Private Equity	2	5	10
	100%	100%	100%

Endowments are traditionally more aggressive than pension funds in their asset allocation. In particular, they are much more likely to invest in private equity. The average allocation to private equity is 10% of assets for endowments. Also, like pension plans, endowments invest significantly in non-U.S. equity, with an average allocation equal to 12% of assets. The higher allocations to private equity and non-U.S. equity on the part of endowments are consistent with Wilshire's recommended changes to the current UC investment policy.

Endowment Projections

Exhibit 12 provides Wilshire's projections for GEP assets and spending over a 15 year period. Both nominal and real 1999 values are given.

The projections assume:

- the recommended Policy C;
- An initial spending formula of 4.35%, growing by 0.05 percentage points per year to 4.75% in 2008[4];
- An annual gift rate equal to 0.5% of assets (from the UC President's Office); and,
- A 2% annual inflation rate.

[4] The Regents have not approved a stepped 0.05% growth rate per year. The assumption represents a reasonable method to achieving the 4.75% target and was derived after discussions with the President's Office.

Exhibit 12 - GEP Projections ($ billions)

	Nominal Values		**Real (1999) Values**	
July 1,	**Assets**	**Spending**	**Assets**	**Spending**
1999	$4.60	$0.16	$4.60	$0.16
2004	5.80	0.23	5.25	0.21
2009	7.25	0.30	5.95	0.25
2014	9.03	0.37	6.71	0.28
Growth	4.6%	5.7%	2.5%	3.8%

The Regents can expect GEP assets to grow at a 4.6% annual rate and spending to grow by 5.7% per year over the 15 year period. The growth in spending in the first five years is helped by the transition in spending from 4.35% to 4.75%. Long term, the growth in spending should match the growth in assets, 4.6%. The 0.5% annual gift rate and an investment policy return that exceeds the combination of spending and inflation rates produces an expected real growth in assets of 2.5% per year. Real spending is also projected to increase at a 3.8% rate; however, long-term real spending will match the 2.5% real asset growth.

The projections show that endowment spending will grow at a long-term average rate of 4.6% if all assumptions are met. Actual year-to-year spending will vary due to fluctuations in the performance of the investment portfolio, this despite the effort to smooth spending by using a 60-month average asset value in the spending formula. Also, the financial markets may not perform in line with expectations, which in turn would slow spending growth or cause a decline in spending.

Wilshire has simulated worst case investment outcomes for GEP assets and the resulting impact upon spending based upon the current formula. The results are shown in Exhibit 13.

Exhibit 13: GEP Spending Levels under Worst Case Investment Results* ($ billions)

	Nominal Values		**Real (1999) Values**	
July 1,	**Assets**	**Spending**	**Assets**	**Spending**
1999	$4.60	$0.16	$4.60	$0.16
2004	3.72	0.18	3.37	0.17
2009	3.81	0.18	3.12	0.15
2014	4.17	0.19	2.81	0.13
Growth	(0.7)%	1.1%	(3.2)%	(1.5)%

* Worst case is defined as the 95th percentile outcome.

GEP asset values could drop from their current $4.6 billion level to $3.72 billion by 2004. However, the worst case spending levels would actually increase slightly due to the averaging of prior asset values. Asset values from 1995 to 1999 embedded in the 1999 spending amount average less than the 1999 to 2004 asset values used to calculate 2004 spending. Therefore, spending is protected and even increases over the next five years despite an unfavorable investment scenario. Of course, this assumes the stepped spending rate assumption and no change in the rate of new gifts.

Over 15 years, assets could remain virtually unchanged. Spending shows a modest 1.1% growth but this comes entirely from the step up in the spending rate in the early years and the 60 month moving average formula which effectively overstates assets in the worst case scenario. The last two columns in Exhibit 13 show that real asset values and real spending fall despite new gifts. Real spending falls 1.5% per year and assets fall 3.2% per year.

Section 4: Policies for Individual Asset Classes

U.S. Equities

Wilshire recommends that The Regents adopt the Russell 3000 Index, a broad measure of the U.S. stock market that includes both large and small stocks, as the performance objective for the overall U.S. equity portfolio. Currently, the Treasurer's Office uses the S&P 500 Index as its benchmark. The change from the S&P 500 to the Russell 3000 will result in a broader and more diversified U.S. equity portfolio and will be more consistent with the Treasurer's opportunistic approach.

Second, Wilshire recommends that 30% of the 53% recommended allocation to U.S. equities be invested in an index fund that mirrors the characteristics and performance of the Russell 3000 Index. The performance objective should be to match the return of the Russell 3000 Index within a narrow tracking range.

Index funds are the single largest investment vehicle used by pension funds and endowments. Greenwich Associates reports that stock index funds represent 24% of corporate pension equity assets, 49% of public pension equity assets, and 18% of endowment equity assets. The attractiveness of index funds is their very low cost, low risk, and consistency in matching the return of the underlying index.

A recommended 30% allocation to an index fund is comparable to industry averages and is warranted given the size of the portfolio and that the remaining U.S. equity assets are managed solely by the Treasurer's Office and not a diversified group of external managers. Many large funds allocate virtually all their U.S. equity assets to index funds. For example, CalPERS allocates 85% of their U.S. equity assets to index funds.

Wilshire estimates the cost of a broad Russell 3000 Index fund to be 0.0075% or 75 one hundredths of 1 basis point, or $500,000 for a $6.8 billion portfolio.

Wilshire recommends that the Treasurer's Office continue to manage 70% of the U.S. equity segment of the portfolio, or approximately $15.8 billion, pending further review by the Investment Advisory Committee and Regents. The objective of the Treasurer's Office portfolio should be to achieve a return above the Russell 3000 Index. However, The Regents should also place limits on the risk that can be undertaken in the Treasurer's equity portfolio by adopting portfolio guidelines for the Treasurer's equity portfolio. Recommended guidelines, already agreed to by the Treasurer, are provided in the appendices.

Wilshire's recommended management for U.S. equities does not include any allocation to traditional outside active equity managers. This is intentional. Wilshire's experience is that very large pension funds are disadvantaged when investing with traditional equity managers. Generally, several managers of different styles would be required to diversify. Fees would be several millions of dollars and the likelihood of achieving a return above the Russell 3000 would not be high.

Fixed Income

Wilshire recommends that The Regents adopt the Salomon Long Pension Fund (LPF) Bond Index as the overall performance objective for its 35% allocation to fixed income. The Salomon LPF Bond Index is used by large pension funds, like CalPERS, that seek a longer duration for their bond portfolio to more closely match the longer duration of their benefit liabilities. The Salomon LPF Bond Index includes all corporate and U.S. government debt with a minimum maturity of seven years, and includes all mortgage issues.

The Treasurer's Office manages a very long maturity bond portfolio whose return is compared with both the Lehman Aggregate Bond Index (an intermediate 5.0 year duration) and the Lehman Long Treasury Index (a long 10.4 year duration). The recommended Salomon LPF Index has a 7.4 year duration and, in the minds of most plan fiduciaries, represents a good compromise. The Lehman Aggregate Bond Index's 5.0 year duration is often viewed as too short by those who want to better approximate the duration of plan liabilities. On the other hand, the Lehman Long Treasury Index's 10.4 year duration is viewed as having a negative effect upon return because higher yielding corporate and mortgage securities are excluded since they do not generally carry such a high duration.

Wilshire has calculated the duration of the Plan's liabilities to be approximately 16 years, 20 years for existing active employees and 10 years for retirees. Our view is that the 7.4 year duration provides a better return and risk profile for the UC Pension Plan but also is appropriate for the GEP.

Wilshire recommends that the Treasurer's Office continue to manage all of the fixed income allocation. Studies show that bond index funds do not perform as well as strong actively managed bond portfolios and their diversification benefits are not as great as found in equity portfolios. However, given the large 35% recommended allocation to fixed income, Wilshire recommends that The Regents adopt a set of portfolio guidelines

that limit the level of risk. Wilshire's recommended fixed income guidelines, already agreed to by the Treasurer, are contained in the appendices. The performance objective for the fixed income portfolio should be to achieve a return above the Salomon LPF Bond Index.

Non-U.S. Equities
Wilshire recommends that The Regents adopt the Morgan Stanley All Country World ex US Index ("MSCI ACWI ex US") as the performance objective for the 7% non-U.S. equity segment of its portfolio. The MSCI ACWI ex US Index includes all non-U.S. equity markets, including the emerging stock markets of Latin America and Southeast Asia.

Wilshire recommends that 85% of the 15% non-U.S. equity allocation, or 6% of total UCRP and GEP fund assets, be invested in an international index fund that tracks the Morgan Stanley Europe, Australia, and Far East (MSCI EAFE) Index of developed markets. The remaining 15% of the non-U.S. equity allocation, or 1% of total UCRP and GEP assets, should be invested in emerging stock markets. The 6%/1% split of the 7% non-U.S. equity allocation is based upon the relative market weightings between developed EAFE markets and emerging markets. Approximately 15% of the MSCI ACWI ex US Index is comprised of emerging markets and 85% is developed markets. Wilshire's recommendation is to utilize an index fund for the developed markets, with a performance objective to match the MSCI EAFE Index return. Wilshire estimates that the incremental cost for the non-U.S. index fund is estimated at 0.03%, or 3 basis points, or $768,000.

The Treasurer's Office currently uses three outside money management firms to manage approximately $0.4 billion in emerging market equities, part of the MSCI ACWI ex US Index. Wilshire recommends the continued use of the existing outside active managers (Capital Guardian, Genesis, and Templeton) for emerging markets investments with a performance objective to exceed MSCI Emerging Markets Free (MSCI EMF) Index, pending further Investment Advisory Committee and Regent review. The current $0.4 billion emerging markets portfolio coincidentally equals Wilshire's recommended 1% of assets target for emerging markets. There are no incremental costs associated with the three active emerging markets portfolios.

This combined 6% allocation to an MSCI EAFE Index fund and 1% allocation to the outside managers is consistent with an overall non-U.S. equity objective of the MSCI ACWI ex US Index.

Private Equity
Wilshire recommends that The Regents target 5% of UCRP and GEP total assets to private equity. Wilshire defines private equity as venture capital, buyouts, and non-U.S. private equity. Not included in private equity are publicly traded emerging market securities. Wilshire categorizes emerging markets as non-U.S. equity.

Wilshire recommends a performance objective for the private equity portfolio equal to the Russell 3000 Index return plus 3% (3 percentage points) per year. The primary purpose for this asset class is to earn higher returns than those found in the public markets. In addition, their higher risk warrants a premium in return. Studies by Wilshire and others have shown that a 3% return premium is achievable over market cycles.

Wilshire recommends that The Regents put in place a set of policies governing the private equity portfolio. The recommended policies are contained in the Appendix C and include a requirement to diversify the portfolio across venture capital, buyouts, and non-U.S. private equity, as provided in Exhibit 14. Please note that the Treasurer's Office has stated that non-US private equity currently represents 15% of the private equity portfolio but would fall to 10% of the portfolio after the private equity in total achieves the 5% of the total fund. Hence, no further commitments can be made to non-US private equity until the allocation falls within the band specified below.

Exhibit 14 - Recommended Category Allocations for Private Equity*

	Recommended Target Allocation	Allowable Ranges Minimum	Maximum
U.S. Buyouts	35%	25%	50%
Venture Capital	65	45	70
Non-U.S. Private Equity	0	0	10
	100%		

* The target allocations do not apply to assets in the stock distribution portfolio.

At June 30, 1999, the Treasurer's Office had approximately $0.7 billion, or 1.6% of assets, invested in private equity on behalf of the UCRP and GEP. Not included in this total is $0.3 billion invested in a portfolio of high risk stocks, managed by Warburg, that is comprised of stock distributions from the private equity partnerships. Warburg's management objective is the timely sale of stock distributions to maximize value. Wilshire recommends that the stock distribution portfolio be included in the U.S. equity allocation managed by the UC Treasurer and its performance be included as part of the Treasurer's U.S. equity portfolio performance.

Assets invested in private equity can be difficult to manage over the short-term. Retirement plans and endowments often find themselves with private equity assets below targeted amounts for two reasons: partnerships can take years to invest committed funds and unexpected distributions from successful investments lower private equity allocations. Wilshire recommends that assets not invested in private equity due to these circumstances be invested in U.S. equities because they are closest in return and risk characteristics to private equity.

Wilshire recommends that an outside consultant be hired by The Regents to assist in the selection of private equity investments. Wilshire recommends that this consultant report directly to the Investment Advisory Committee and to The Regents in recommending

overall strategy and individual private equity recommendations. The consultant, while independent, will work with the Treasurer's private equity staff. Wilshire recommends that only investments that have been recommended by both the consultant and the Treasurer be presented for consideration to the Investment Advisory Committee for approval by The Regents. Wilshire estimates that the cost of retaining an outside consultant for private equity services for UCRP, GEP, and the Equity Portfolio would be approximately $500,000 per year.

Section 5: Summary & Transition Plan

Exhibit 15 summarizes Wilshire's recommendations for the deployment of assets for both the UC Retirement Plan (UCRP) and the General Endowment Pool (GEP).

Exhibit 15 - UCRP & GEP Recommended Asset Allocation & Benchmarks

	Percent of Asset Class	Percent of Total Assets	Benchmarks
U.S. Equity:	**100%**	**53.0%**	**Russell 3000**
Index Fund	30	15.9	Russell 3000
UC Treasurer	70	37.1	Russell 3000
Non-U.S. Equity:	**100%**	**7.0%**	**MSCI ACWI xUS**
Index Fund	85	6.0	MSCI EAFE
External Managers	15	1.0	MSCI EMF
Fixed Income:	**100%**	**35.0%**	**Salomon LPF**
UC Treasurer	100	35.0	Salomon LPF
Private Equity:	**100%**	**5.0%**	**Russell 3000 +3%**
External GPs	100	5.0	Russell 3000 + 3%
Total		**100.0%**	**Weighted Index[5]**

The recommended investment structure in Exhibit 14 shows the following characteristics:

- The UC Treasurer's Office directly manages 72.1% of assets, down from 99.0% of assets;
- Index funds and other external funds – including emerging markets but excluding private equity -- managed by an external advisor(s), represent 22.9% of assets;
- Each asset class has a unique index benchmark to judge short-term and long-term performance, bringing full management accountability; and,
- Overall portfolio performance is measured against a custom index, constructed by a weighted average of the individual asset class benchmark indexes.

[5] Weighted average of 53% Russell 3000 Index, 7% MSCI ACWI x US Index, 35% Salomon LPF Index, and 5% Russell 3000 + 3%.

Importantly, these recommended portfolio changes have very little cost impact. Wilshire estimates that the U.S. and non-U.S. index portfolios will increase annual costs by less than $1.3 million, a tiny sum in comparison to the $8.7 billion in combined UCRP and GEP assets targeted for index funds. The externally managed private equity distribution portfolio and the emerging markets portfolios are already in place and do not represent an increase in fees. Fees will increase with an increase in the private equity allocation to 5% of assets and the hiring of a private equity consultant, with an estimated $0.5 million cost, to assist The Regents with the private equity allocation. However, unlike consultant and index fund fees, partnership fees are charged to the investment partnerships and are not a part of budget expenses.

The total increase in budget expenses from outside managers/consultants is estimated at approximately $2.5 million, or less than 0.005% (one half of one basis point) of total assets.

Implementation and Transition

Most of the Wilshire recommendations can be implemented in 2000. They would include:

1. The retention of a “general consultant”, reporting to the Investment Advisory Committee and The Regents, to provide ongoing advice on asset allocation, investment policy, manager selection/termination, performance measurement, and reporting. The general consultant would also assist in implementing the recommendations in this report. Wilshire estimates the annual cost for a general consultant to be $400,000.

2. The selection of a U.S. equity index fund manager by June 30, 2000. This would require an RFP, selection process, and approval by The Regents.

3. The selection of a non-U.S. equity index fund manager by June 30, 2000. This would require a Request for Proposal (RFP), selection process, and approval by The Regents.

4. Transfer of equity securities from the UC Treasurer’s stock portfolio to the U.S. index fund (15.9% of assets or $6.8 billion), the non-U.S. index fund (6% of assets or $2.6 billion). Wilshire believes these asset transfers could be completed in an orderly manner by December 31, 2000 despite their size.

5. The selection of a consultant for the private equity portfolio by June 30, 2000. This would require an RFP, selection process, and approval by The Regents.

6. The transfer of equity securities from the UC Treasurer’s stock portfolio to the private equity portfolio would be made opportunistically as partnership investments are selected and funded.

Section 6: Defined Contribution Funds

The UC Treasurer's Office manages an "Equity Portfolio" and a "Bond Portfolio" as separate investment elections in a 403(b) plan for University employees. These are two of many investment options available to plan participants.

The Treasurer's past practice has been to manage the equity and bond portfolios in a manner very similar to the equity and bond portfolios of the UCRP and GEP. Wilshire recommends that this practice change for the Fixed Income Portfolio and that a more conservative portfolio be implemented.

Equity Portfolio

Wilshire recommends that the Equity Portfolio have the same definition and diversification characteristics that are proposed for the equity segments of the UCRP and GEP portfolios. Exhibit 16 summarizes the target allocation policies Wilshire recommends for the Equity Portfolio.

Exhibit 16 – Recommended 403b Equity Portfolio Asset Allocation & Benchmarks

	Percent of Asset Class	**Percent of Total Assets**	**Benchmarks**
U.S. Equity:	**100%**	**80.0%**	**Russell 3000**
Index Fund	30	24.0	Russell 3000
UC Treasurer	70	56.0	Russell 3000
Non-U.S. Equity:	**100%**	**15.0%**	**MSCI ACWI xUS**
Index Fund	85	12.8	MSCI EAFE
External Managers	15	2.2	MSCI EMF
Private Equity:	**100%**	**5.0%**	**Russell 3000 +3%**
External GPs	100	5.0	Russell 3000 + 3%
Total		**100.0%**	**Weighted Index[6]**

The allocation targets recommended in Exhibit 16 approximate the recommended proportions allocated to U.S. equity, Non-U.S. equity, and Private Equity for the UCRP and GEP except that no allocation to fixed income is made for the Equity Portfolio.

The performance benchmark for the Equity Portfolio should be a weighted average benchmark, as specified in Exhibit 16, to be used to measure the performance of the fund. Wilshire also recommends that the equity investment guidelines in Appendix A be adopted for the equity assets managed by the Treasurer.

[6] Weighted average of 80% Russell 3000 Index, 15% MSCI ACWI x US Index, and 5% Russell 3000 + 3%.

Bond Portfolio
Wilshire recommends that the Bond Portfolio be 100% managed by the UC Treasurer's Office following the investment guidelines in Appendix B, with one modification. The performance benchmark would be the Lehman Aggregate Bond Index and guidelines would be expressed relative to the Lehman Aggregate Bond Index.

Section 7: Reporting and Oversight

Investment Report to The Regents
Wilshire recommends a quarterly reporting cycle to The Regents on the performance of the UCRP, GEP, and Defined Contribution portfolios. The quarterly "Investment Report to The Regents" should contain three basic elements:

1. Asset Allocation Compliance – Asset values and asset class percentages versus target allocations and ranges.

2. Investment Performance – Investment returns versus performance benchmarks.

3. Guideline Compliance – A statement that each portfolio conforms to guidelines or identification where variances occur.

Wilshire believes the Investment Report to The Regents can be approximately three pages in length.

The Investment Advisory Committee
The purpose of the Investment Advisory Committee ("the Committee") is to assist The Regents in their fiduciary obligation to oversee the investment program. The Investment Advisory Committee shall function in an oversight and evaluative role providing advice to The Regents with respect to all aspects of the investment program, including, but not limited to, investment strategies, policies and procedures; investment performance, investment personnel in the Office of the Treasurer; external investment advisors; and Office of the Treasurer budget. Committee members will be familiar/expert in managing large institutional investment funds and portfolios. Wilshire recommends that Committee's investment responsibilities include:

1. Investment strategy and policies - The Committee should recommend any changes to investment strategy and policies to The Regents.

2. Asset allocation– The Committee should recommend asset allocation policies to The Regents and recommend any reallocation of assets to comply with asset allocation targets and ranges.

3. Investment guidelines– The Committee should have responsibility for recommending to The Regents any changes to investment guidelines for the Treasurer's and external managers' portfolios.

4. Selection of outside consultants and investment managers – The Committee should recommend outside consultants and managers for approval by The Regents.

5. Oversight of UC Treasurer’s Office – The Committee should advise The Regents on staffing and budgets, consistent with the investment needs of the portfolios.

6. Monitoring outside investment managers – The Committee should monitor outside investment managers.

7. Review quarterly investment performance and portfolios – The Committee should conduct detailed performance reviews of the funds and portfolios.

8. Campus foundations - The Committee, with the assistance of the investment consultant, should prepare an annual performance report of the participating campus foundations and report its findings to The Regents.

9. Recommend hiring/termination of investment managers – The Committee should recommend to The Regents any changes to investment managers.

In executing all of its functions, the Investment Advisory Committee will seek input from the Treasurer’s Office.

Appendix A
U.S. Equity Guidelines for the UC Treasurer Portfolio

The purpose for portfolio guidelines is to clearly state the investment approach, define performance objectives and to control risk. Portfolio guidelines should be subject to ongoing review. Past performance, the UC Treasurer's investment resources, new financial instruments, or a change in the Regents' risk tolerance can be among the reasons for a guideline review.

Performance Objective:
The objective of the UC Treasurer's U.S. equity portfolio is to earn a return that exceeds the Russell 3000 Index return over a five year time period by investing primarily in U.S. domiciled publicly traded common stocks.

Portfolio Guidelines:
1. The portfolio must contain at least 60 different common stocks.

2. The portfolio market value weighting of any individual stock can not exceed three percentage points more than its weighting in the Russell 3000 Index.

3. The portfolio market value weighting of any individual industry can not exceed ten percentage points more than its weighting in the Russell 3000 Index.

4. Short-term fixed income securities can not exceed 5% of the portfolio market value.

5. Non-U.S. common stocks (including ADRs, GDRs, etc.) cannot exceed 10% of the portfolio market value.

6. SPDRs, and other similar exchange traded funds that replicate market indexes, are permitted.

7. Restricted stock is permitted, but can not exceed 1% of the portfolio market value.

8. The UC Treasurer may not:

    - Purchase lettered or legend stock
    - Purchase or sell options or futures
    - Purchase securities on margin
    - Purchase mutual funds or group trusts
    - Sell securities short
    - Employ leverage in the portfolio through borrowing

9. The portfolio should exhibit the following characteristics:

    - A weighted average stock capitalization within +/- $10 billion of the Russell 3000 Index

- A portfolio beta between 0.8 and 1.2, calculated from a 60 month regression against the Russell 3000 Index
- A portfolio dividend yield within +/- one percentage point of the Russell 3000 Index

Appendix B
Fixed Income Guidelines for the UC Treasurer Portfolio

The purpose for portfolio guidelines is to clearly state the investment approach, define performance objectives and to control risk. Portfolio guidelines should be subject to ongoing review. Past performance, the UC Treasurer's investment resources, new financial instruments, or a change in the Regents' risk tolerance can be among the reasons for a guideline review.

Performance Objective:
The objective of the UC Treasurer's fixed income portfolio is to earn a return that exceeds the Salomon LPF Index return, an index comprising all U.S. publicly traded fixed income securities with maturities exceeding seven years, over a five year time period by investing primarily in U.S. debt.

Portfolio Guidelines:
1. The fixed income portfolio should be invested primarily in marketable, publicly traded fixed income instruments, notes and debentures denominated in U.S. dollars.

2. Any of the following fixed income securities and their futures or options derivatives, subject to credit, diversification and marketability guidelines below, may be held outright and under resale agreement:

    - Obligations issued or guaranteed by the U.S. Federal Government, U.S. Federal agencies or U.S. government-sponsored corporations and agencies;

    - Obligations of U.S. corporations such as corporate bonds, convertible and non-convertible notes and debentures, preferred stocks, commercial paper, certificates of deposit and bankers acceptances issued by industrial, utility, finance, commercial banking or bank holding company organizations;

    - Mortgage-backed and asset-backed securities;

    - Obligations, including the securities of emerging market issuers, denominated in U.S. dollars or foreign currencies of international agencies, supranational entities, foreign governments (or their subdivisions or agencies) and foreign corporations, as well as foreign currency linked securities, warrants, preferred stocks and forward contracts. In addition, forward foreign currency exchange contracts up to 10% of the portfolio may only be used for the purpose of hedging the portfolio.

- Obligations issued or guaranteed by U.S. local, city and state governments and agencies.

- Private Placements or Rule 144A securities, issued with registration rights, are permissible, with limitation at a maximum of 20% of the portfolio's market value.

- Commercial Paper defined under Section 4(2) of the Securities Act of 1933 is permissible.

3. At least 90% of the portfolio should be of "investment grade", i.e. rated equal or higher than the following standards or their equivalent by one or more nationally recognized statistical rating organizations (NRSRO): Standard & Poor's (BBB- or A-2); Moody's (Baa3 or Prime-2); Duff & Phelps (BBB- or D-2); or Fitch (BBB- or F-2).

4. No more than 10% of the portfolio market value can be invested in issues rated below investment grade Baa3 or BBB- / A2 or P2.

5. The fixed income portfolio should exhibit an average credit quality of A (or equivalent) or better. Split-rated credits are considered to have the higher credit rating as long as the higher rating is given by a NRSRO rating, defined above

6. The average weighted duration of portfolio security holdings can not vary from that of the market as defined by the Salomon LPF Index by more +/-20%.

7. The portfolio should at all times be diversified among major market sectors, subject to the following limitations:

   - Up to 10% of the portfolio market value can be invested in non-dollar denominated securities;
   - Up to 10% of the portfolio market value can be invested in securities rated below investment grade;
   - Up to 10% of the portfolio market value can be invested in non-U.S. dollar denominated securities;
   - Up to 10% of the portfolio market value can be invested in the sovereign debt of any individual non-U.S. G-7 country;
   - Up to 5% of the portfolio market value can be invested in any individual non-G-7 country;
   - Emerging market securities can not exceed 5% of the portfolio market value;
   - In aggregate, the allocation to non-dollar denominated securities, non-U.S. securities, and non-investment grade debt can not exceed 25% of the portfolio market value.

8. Temporary cash balances may be invested with the custodian.

9. The portfolio may purchase securities on a when-issued basis or for forward delivery.

Appendix C
Private Equity Guidelines

The purpose for portfolio guidelines is to clearly define performance objectives and to control risk. Portfolio guidelines to control risk should be subject to ongoing review.

Performance Objective:
The objective of the private equity portfolio is to earn a return that exceeds the Russell 3000 Index return by 3% per year.

Portfolio Guidelines:
1. Permissible investments include partnerships that invest in venture capital, buyouts, and non-U.S. private equity.

2. Co-investment and direct investments are not permitted at this time.

3. Fund-of-funds investments are permitted.

4. The target allocation to U.S. buyouts is 35% of the private equity portfolio with a minimum allocation of 25% and maximum allocation of 50%. U.S. buyouts is narrowly defined as traditional finance-oriented buyouts and growth capital buyouts. Real estate and mezzanine debt funds are not included.

5. The target allocation to venture capital is 65% of the private equity portfolio with a minimum allocation of 45% and maximum allocation of 70%. Venture capital includes early, middle and late stage private investments in new high growth businesses.

6. The target allocation to non-U.S. private equity is 0% of the private equity portfolio with a maximum allocation of 10%. Non-U.S. private equity includes private equity and venture capital partnerships operating in Europe, Asia, and Latin America.

7. No single partnership investment can represent more than 5% of the private equity allocation.

8. Investment in multiple funds of the same general partner is permitted. However, the total commitment to partnerships with the same general partner can not exceed 15% of the private equity allocation.

9. The commitment to any individual partnership can not exceed 20% of the total capital raised by the partnership.

10. The private equity portfolio should be diversified across time as well. No more than 30% of the private equity allocation can be committed to partnerships in any one year.