

C A M B R I D G E A S S O C I A T E S L L C

ENDOWMENT SPENDING IN A BEAR MARKET

2002

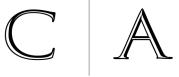
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C A M B R I D G E A S S O C I A T E S L L C

SUMMARY

Introduction

Several years ago, we started advising—pleading—that institutions should develop a spending crisis contingency plan that would determine what they would do come the day when their stated policy dictated spending cuts. For many institutions, that day has either arrived or is impending, and we fear that this discussion, too long deferred, will now take place under crisis conditions. The fundamental purpose of a rational spending policy is to mediate between the competing demands of present and future generations by enabling an endowed institution to spend as much today as is compatible with the preservation of purchasing power for tomorrow. If institutions with such policies simply ditch them in panic when faced with the prospect of spending cuts, what is the point of creating them in the first place?

Throughout the late 1990s, institutions became accustomed to double-digit growth in nominal spending for several years in a row. However, by the end of fiscal year 2002, most moving average spending rules dictated that spending should be reduced, or at best held constant, in fiscal year 2003. For a portfolio invested 70% in U.S. equities and 30% in U.S. bonds, paying out 5% of a 12-quarter moving average of endowment market value, nominal spending would have increased at an average annual rate of 15.8% between 1998 and 2001, before falling nearly 1% in 2002. For a more diversified portfolio (based on the average annual asset allocation of surveyed endowments¹), spending would have increased 13.0% annually between 1998 and 2001 and remained constant in 2002.²

While most institutions find spending cuts excruciating at any time, cutting back is particularly difficult after a period of unusually strong growth in spending. In reality, many endowed institutions find it virtually impossible to cut nominal dollar spending, and seek to maintain at least the nominal level of distributions, even at the expense of their funds' purchasing power. This was conspicuously true in the last secular bear market, in the early 1970s, when most institutions were unwilling to reduce the nominal value of their spending and overrode their own spending rules, severely impairing endowment market values that had already been hammered by the bear market.

Evaluation of Alternative Spending Rules

An institution with a spending rule that dictates a cut in spending has three options:

- Follow the spending rule and cut spending.

¹ Cambridge Associates LLC Member Investment Database.

² Here, as throughout, we assume index returns.

- Don't cut spending, but institute a spending floor of the prior year's nominal spending. Institutions choosing this option might also consider adopting a spending cap to rein in spending when market values increase at very high rates.
- Continue to increase nominal spending, although perhaps at a slower rate than experienced in the late 1990s.

We evaluate the first two options on an historical and a prospective basis. The historical analysis looks at how a portfolio invested 70% in U.S. equities and 30% in U.S. bonds would have fared between January 1, 1960 and June 30, 2002 under each scenario. The prospective analysis is based on a portfolio maintaining the average allocation of surveyed endowed institutions as of June 30, 2002, using our long-term risk, return, and correlation assumptions.³ In each instance, we assume a spending rule of 5% of a 12-quarter endowment market value average as the base case. For option three, only the prospective analysis is given, since it cannot be modeled effectively on an historical basis.

As shown in Exhibit 1, institutions choosing to stick to a moving average spending rule and those adopting a moving average rule with a floor or a ceiling would have experienced nearly identical spending streams and ending market values between 1960 and June 2002, even though the ceilings and floors were hit multiple times. However, the prospective analysis in Exhibit 2 indicates that at the end of a 20-year period, institutions with moving average spending rules would have had a very similar ending market values to institutions with a spending floor only if returns were above the 75th percentile of our assumed return distribution (see Exhibit 7). If performance over the 20-year period were in the 75th percentile or the 95th percentile, endowments with a moving average rule would have 5.7% or 20% more in assets than institutions with a spending floor, respectively. Institutions with a spending floor end the 20-year horizon spending approximately 8% more than institutions without a floor if they experience 95th percentile returns; however, the spending differential is insignificant for 75th percentile returns or higher.

The difference in expected ending market values for institutions with a spending ceiling and those with a straight moving average rule is less than 5% unless returns are extremely high. Ending market values would be expected to differ by only 3.8% assuming 25th percentile returns, compared to a difference of 12.1% assuming fifth percentile returns. At the end of the 20-year period, spending under a rule with a ceiling would have been approximately 15% lower than without a ceiling, assuming fifth percentile returns, and 5% lower assuming 25th percentile returns. In short, there is not much difference in the expected results for these three spending rules provided that returns are in the middle 50% of the performance distribution. However, when returns are at extremes, those institutions with spending floors show a preference for spending today relative to preserving purchasing power during the weakest market environments, while the reverse is true for institutions with spending ceilings during the strongest markets.

³ See Exhibit 7 for our long-term performance assumptions.

The third option, abandon the spending rule and increase spending, clearly puts the needs of the current generation ahead of those of future generations, although to varying degrees depending on the spending rate chosen. As shown in Exhibit 3, maintaining the nominal spending growth rate achieved in the late 1990s is not practical for institutions wanting to preserve purchasing power. The exhibit shows the historical nominal spending and ending market values of a portfolio based on the average annual asset allocation of surveyed endowments using index returns through June 30, 2002.⁴ Following that point, nominal spending is assumed to increase at 13.0% per year—the growth rate achieved when using a moving average spending rule between 1998 and 2001. An institution increasing spending by 13% a year and achieving median returns over the following ten years would see the nominal value of the endowment fall by 44.9% after spending. Even 25th percentile returns would result in a reduction in endowment assets of 10.4% and if performance were exceptionally poor over the next ten years, the endowment would be virtually bankrupt by 2012. These expected market values would look even worse on an inflation-adjusted basis.

However, smaller increases in nominal spending provide a way to mediate between current demand to support operations and the desire to preserve purchasing power. Exhibit 4 shows the expected nominal and real ending market values after spending that would be experienced in ten years under varying assumptions about increases in spending and performance. An institution increasing nominal spending by only 1% in nominal terms would be expected to preserve purchasing power at the end of ten years if it achieved 50th percentile returns. Higher increases in spending require ever more ambitious returns to maintain purchasing power, with a 3% increase in spending requiring 45th percentile returns, a 5% increase in spending requiring 35th percentile returns, a 7% increase in spending requiring 30th percentile returns, and so on.

Another way of looking at the tradeoffs between various increases in spending rates is to compare the increase in spending to the expected decrease in ending market values. Each incremental increase in spending growth results in a corresponding decrease in expected ending market values. For example, moving from a 1% increase in annual spending to a 3% increase in spending results in a 7.5% decrease in expected ending market value in ten years, assuming median returns, while moving from a 5% increase in spending to a 7% increase results in an 11.0% decrease in expected ending market value.

⁴ See Exhibit 8 for the asset allocations used and number of institutions surveyed.

Conclusion

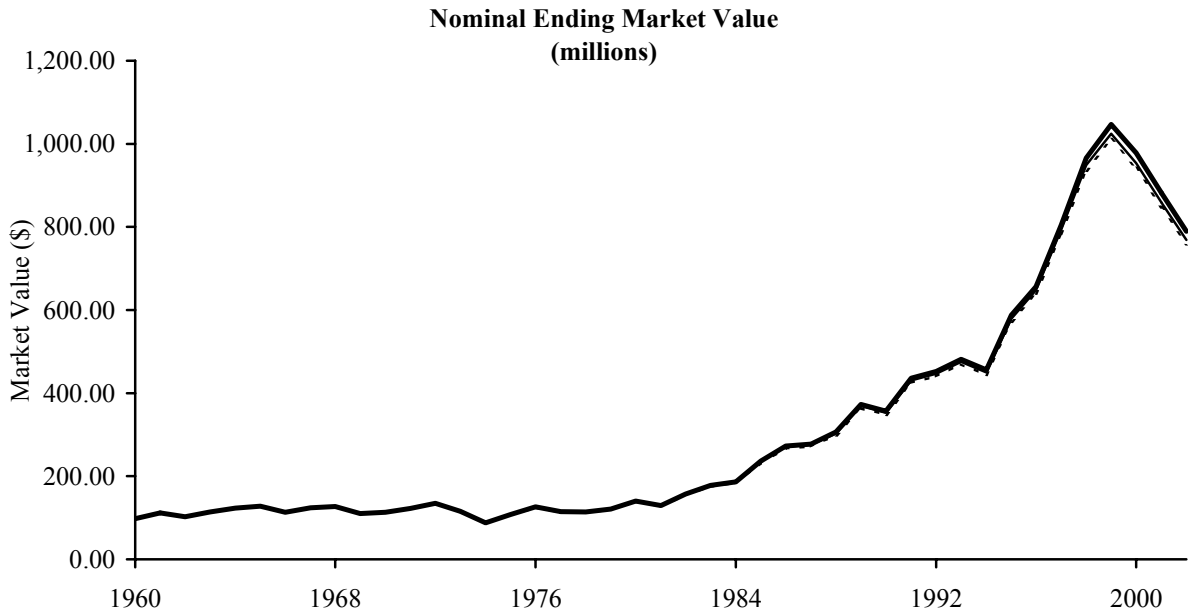
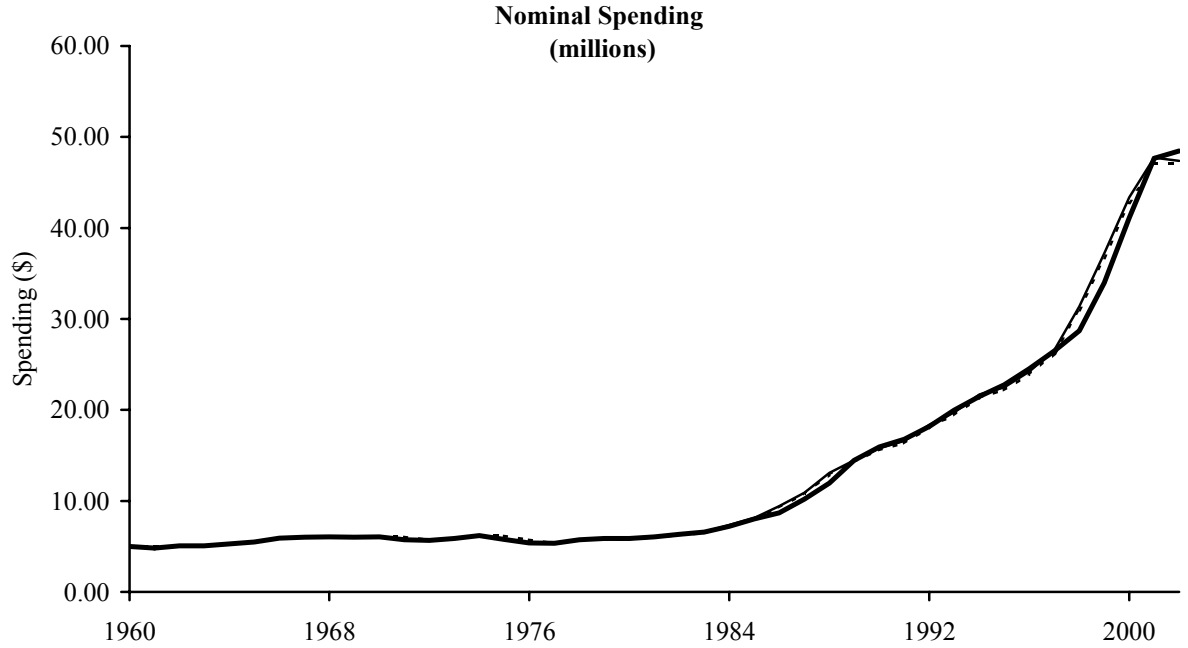
Following the strongest bull market in equities this century, those in search of justification for spending more today might argue that institutions accumulated tremendous wealth during the boom years of the 1980s and 1990s, only a small fraction of which was distributed. Indeed, a portfolio invested 70% in U.S. equities and 30% in U.S. bonds would have grown from \$100 at the start of 1980, to \$277.60 on June 30, 2002 in real terms after spending (see Exhibit 5), gains more than double the \$136.52 that would have been achieved had performance been consistent with our long-term estimates.

However, this type of analysis is highly sensitive to the time horizon covered. For example, if we push the starting date of this same analysis back to 1960, our hypothetical fund would not have recovered from the depredations of the 1970s until 1999, only to fall into deficit again over the next two years (see Exhibit 6). Seen in this light, the "excess" gains of 1990s are illusory, since they served only to repair the damage inflicted on portfolios in the 1970s.

The bottom line is that for many endowed institutions there is no "right" answer, only a choice between competing evils: cut spending at the expense of current programs, or maintain spending at the expense of future purchasing power. Among the delusions fostered by the bull market was that we could have our cake and eat it too; now we must choose one or the other.

EXHIBITS

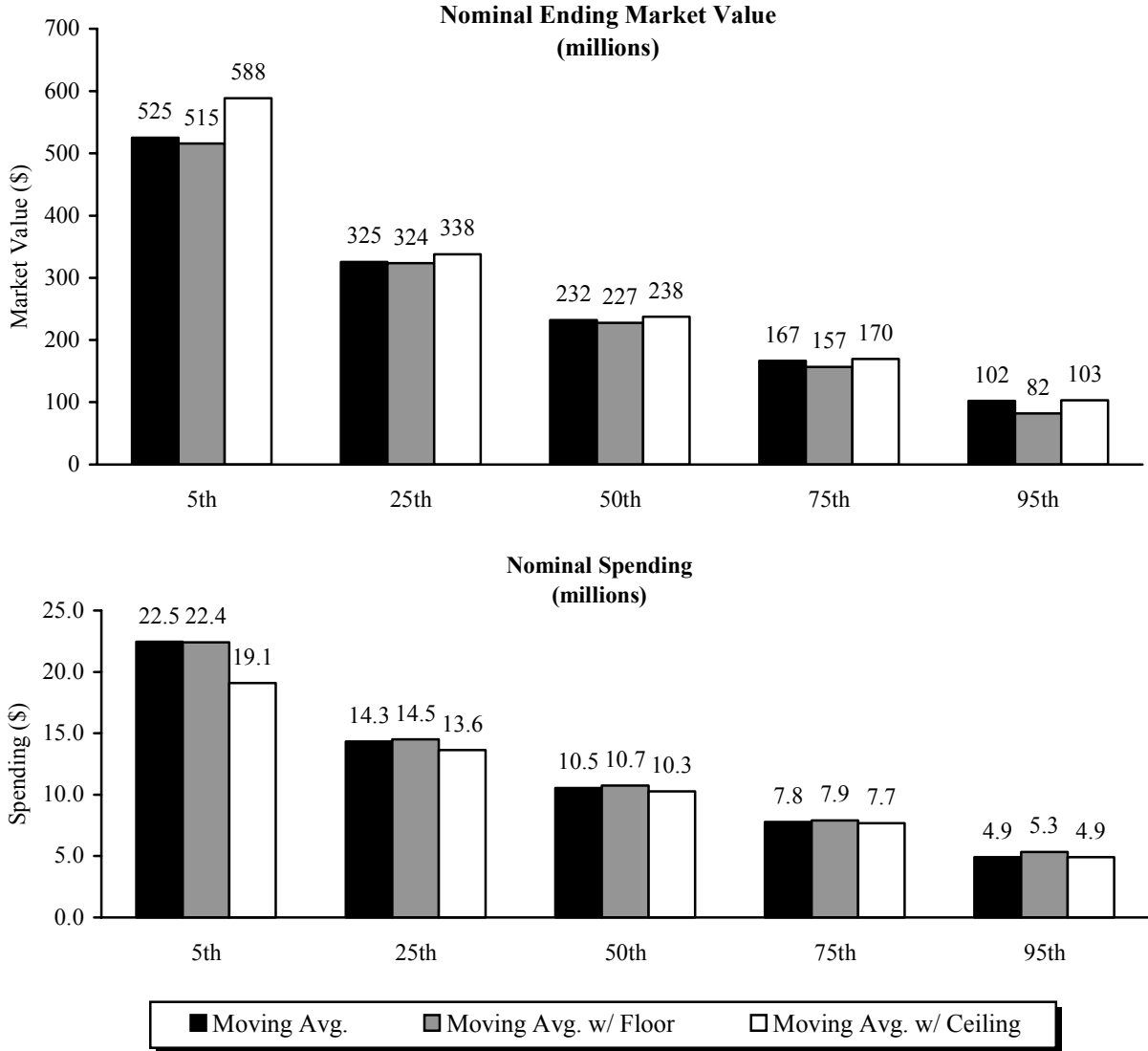
Exhibit 1
COMPARISON OF VARIOUS MOVING AVERAGE RULES
1960-2002



—	Moving Average Rule
.....	Moving Average Rule with Floor
—	Moving Average Rule with Ceiling

Exhibit 2

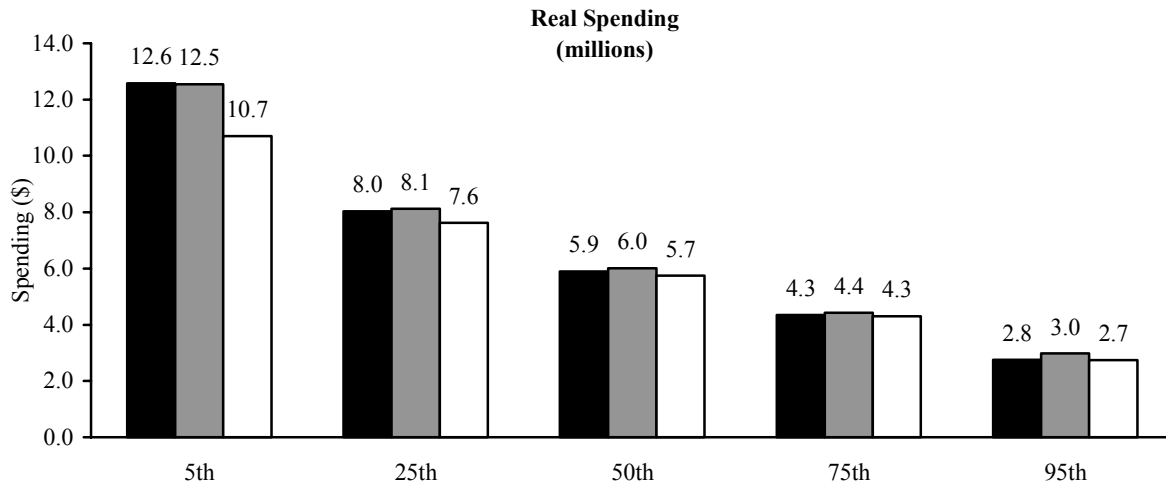
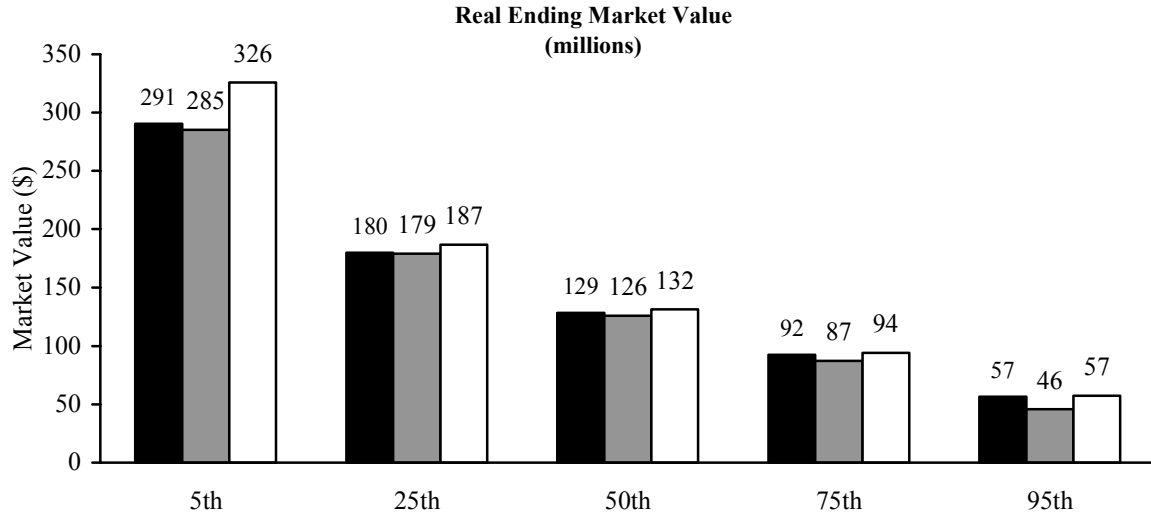
MARKET VALUE AND SPENDING AFTER 20 YEARS UNDER VARIOUS MOVING AVERAGE SPENDING RULES



Average	Moving Average	w/ Floor	w/ Ceiling
Nominal Ending Market Value	\$263	\$255	\$277
Nominal Spending	\$11.7	\$11.9	\$10.9

Exhibit 2 (continued)

MARKET VALUE AND SPENDING AFTER 20 YEARS UNDER VARIOUS MOVING AVERAGE SPENDING RULES



■ Moving Avg. ■ Moving Avg. w/ Floor □ Moving Avg. w/ Ceiling

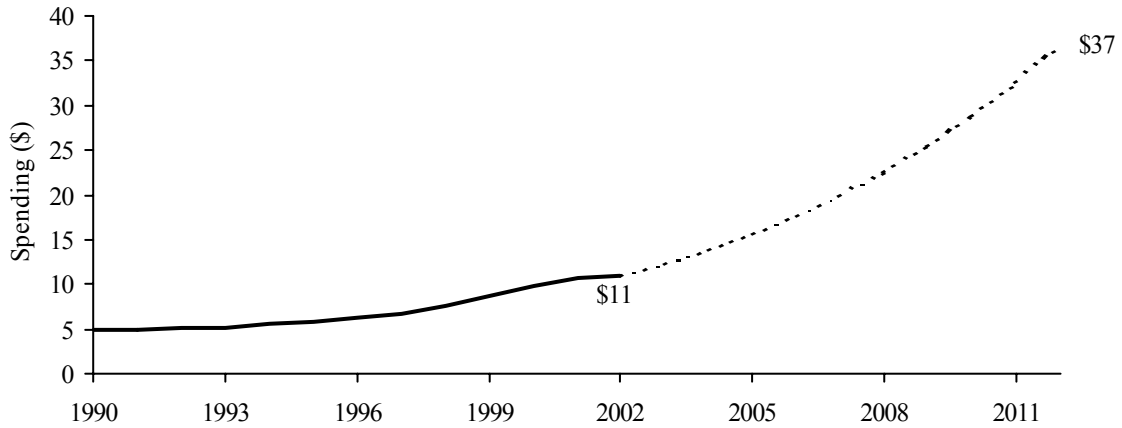
Average	Moving Average	w/ Floor	w/ Ceiling
Real Ending Market Value	\$146	\$141	\$153
Real Spending	\$6.6	\$6.7	\$6.1

Notes: The moving average rule sets spending at 5% of a 12-quarter moving average. The moving average with floor rule imposes a spending minimum equal to the previous year's nominal spending. The moving average with ceiling rule imposes a maximum on real spending of 5% over the previous year's real spending. Asset allocation is equal to the average allocation of the 373 endowed institutions surveyed as of June 30, 2002. Analysis reflects the long-term estimated returns of Cambridge Associates LLC used in asset allocation modeling.

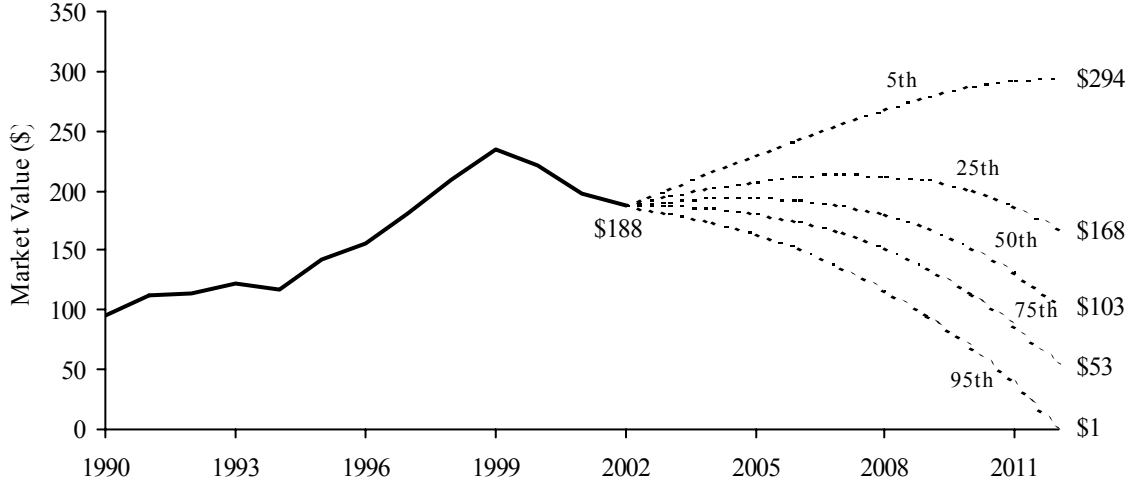
Exhibit 3

NOMINAL SPENDING AND ESTIMATED MARKET VALUES ASSUMING RECENT SPENDING GROWTH IS MAINTAINED

**Nominal Spending
(millions)**



**Nominal Ending Market Value Under Various Percentile Return Assumptions
(millions)**

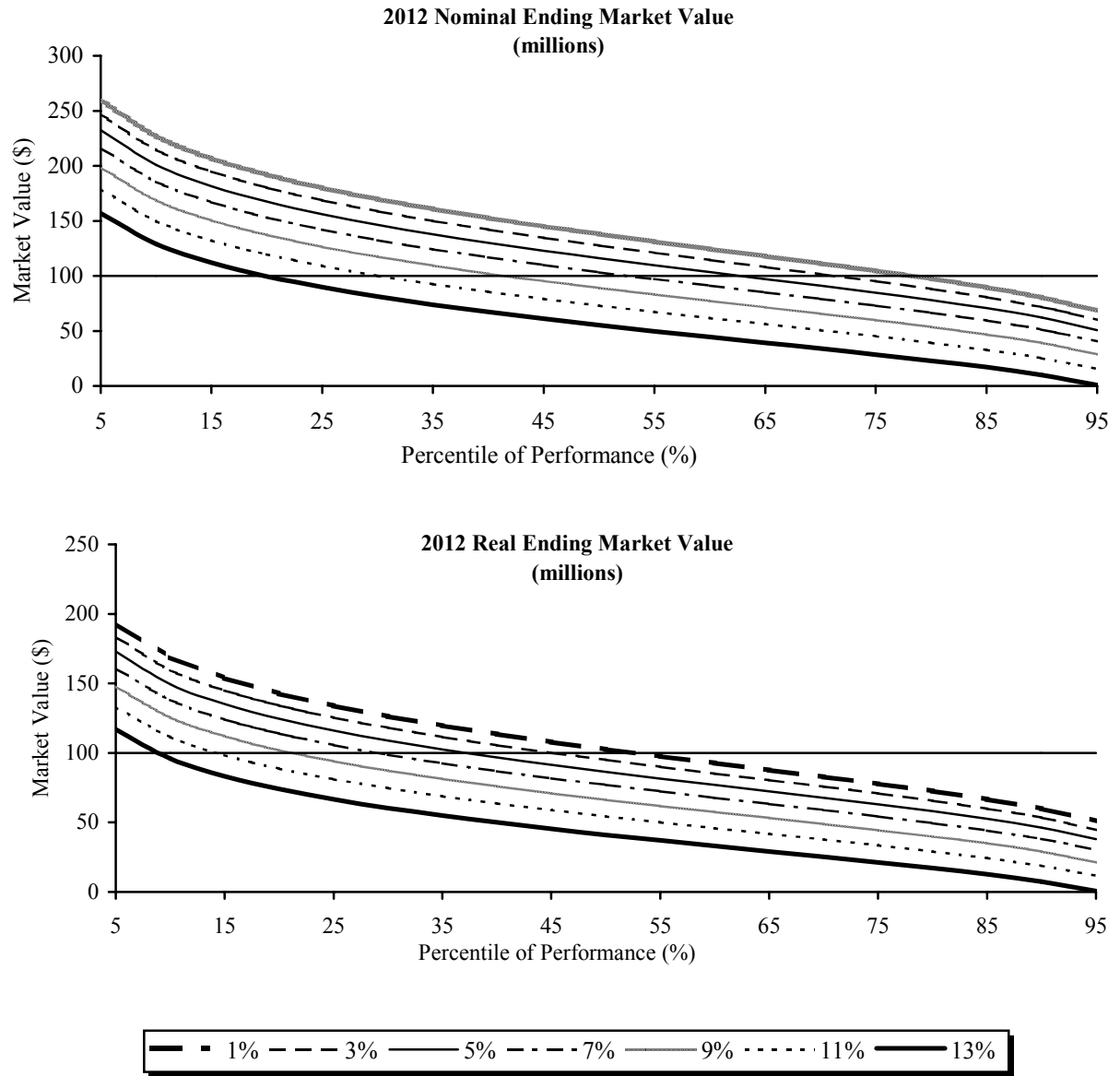


Sources: Calculated from data provided by Bureau of Labor Statistics, Cambridge Associates LLC Investment Manager Database®, Cambridge Associates LLC U.S. Private Equity Index®, Cambridge Associates LLC U.S. Venture Capital Index®, Lehman Brothers, Inc., National Association of Real Estate Investment Trusts, National Council of Real Estate Investment Fiduciaries, Oil & Gas Journal Energy Database, Standard & Poor's, Thomson Datastream, and *The Wall Street Journal*. MSCI data are copyrighted by and proprietary to Morgan Stanley Capital International, Inc.

Notes: Historical spending represents 5% of a 12-quarter average. Starting in 2003, spending is assumed to increase 13% a year, the average annual increase experienced from 1998-2001. Historical asset allocation is rebalanced quarterly and changed annually to reflect the average asset allocation of surveyed institutions. Index returns are used. Percentile of performance is calculated over a ten-year horizon (2003-12) based on Cambridge Associates LLC's estimated returns used in asset allocation modeling.

Exhibit 4

**TRADEOFFS BETWEEN INCREMENTAL SPENDING INCREASES
AND ESTIMATED ENDING MARKET VALUE**

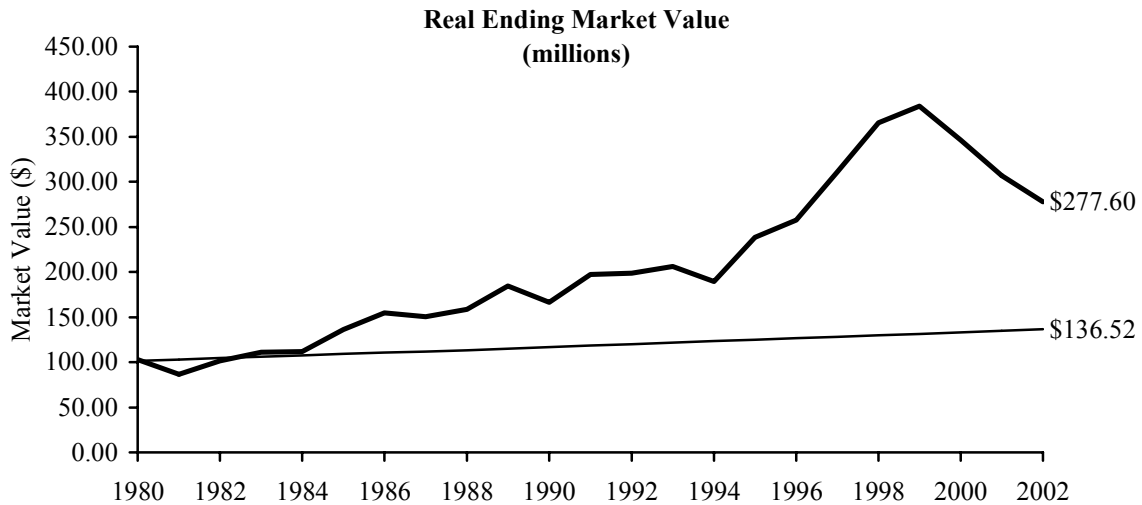
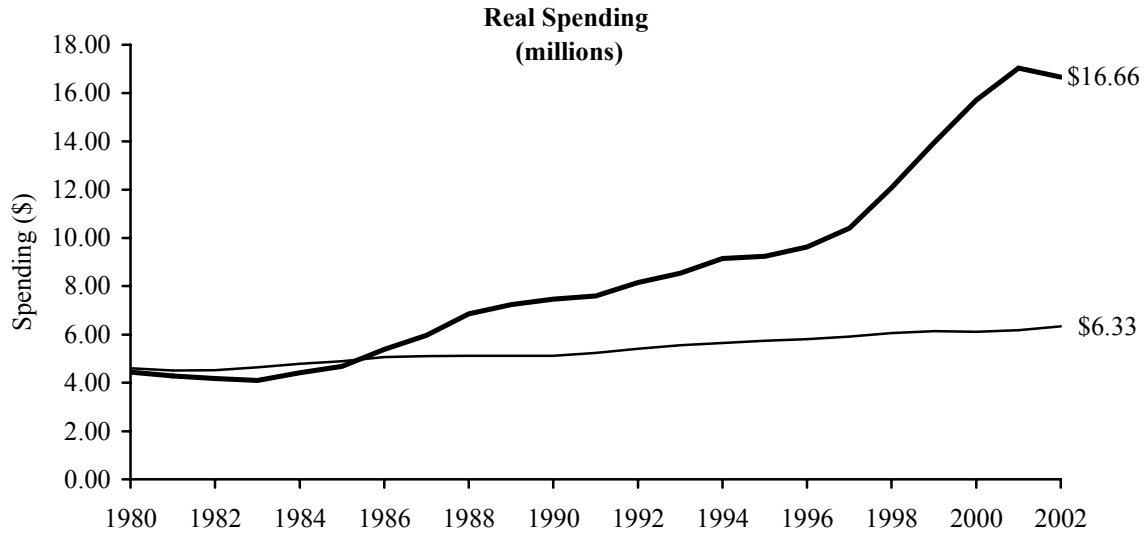


Notes: The ending market value for 2002 is assumed to be \$100 million. Nominal spending grown annually at specified percentages (1, 3, 5, 7, 9, 11, and 13). Percentile of performance is calculated over a ten-year horizon (2003-12) based on Cambridge Associates LLC's estimated returns used in asset allocation modeling.

Exhibit 5

WHERE ARE WE IN THE SPENDING CYCLE?

1980-2002



— Actual Index Returns — Long-term Estimated Returns

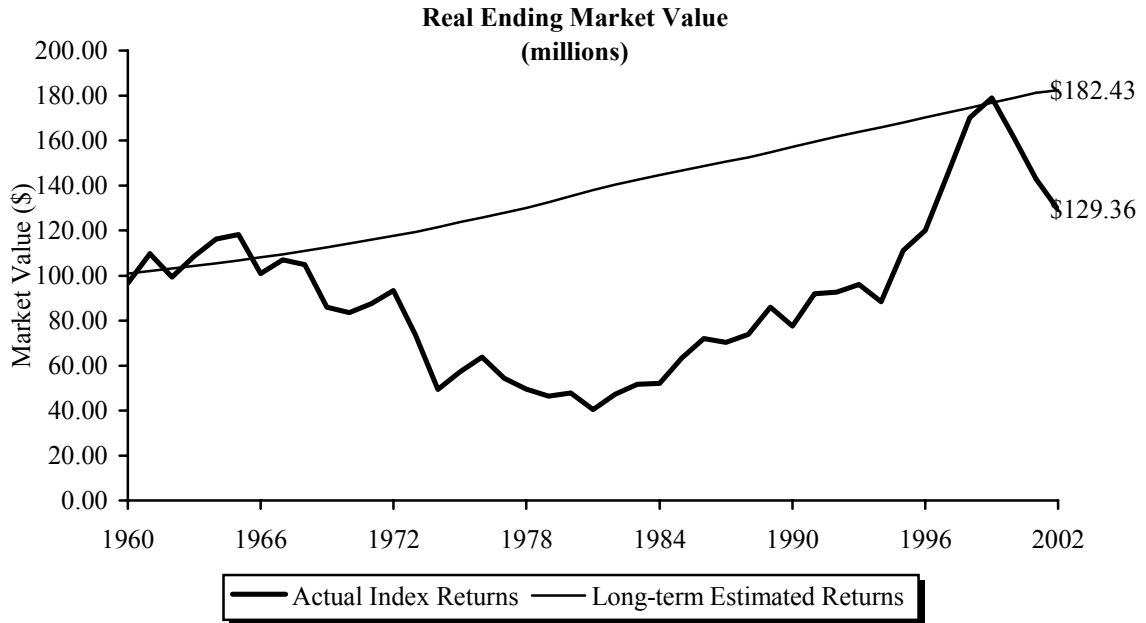
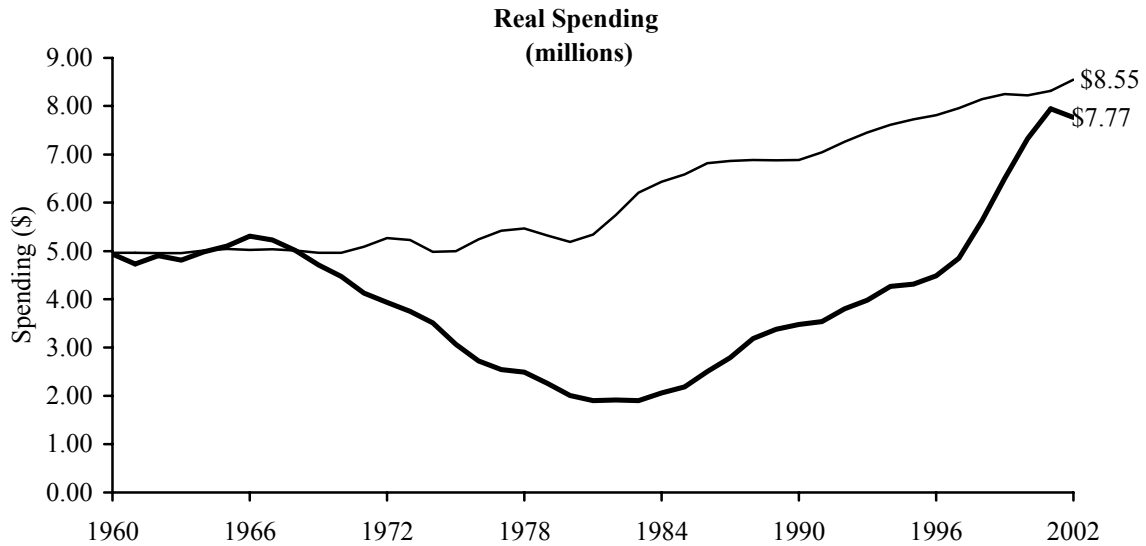
Sources: Bureau of Labor Statistics, Standard and Poor's, and Thomson Datastream.

Notes: Actual index returns represent S&P 500 and Salomon Smith Barney High Grade Index performance data. Long-term estimated returns are Cambridge Associates LLC's estimated returns used in asset allocation modeling. This analysis assumes a beginning market value of \$100 million on January 1, 1980 and applies a policy allocation of 70% U.S. Equity and 30% U.S. Bonds, rebalanced quarterly. The data for 2002 show spending for the full year and ending market value through June 30. Spending is equal to 55% of the 12-quarter moving average endowment market value.

Exhibit 6

WHERE ARE WE IN THE SPENDING CYCLE?

1960-2002



Sources: Bureau of Labor Statistics, Standard and Poor's, and Thomson Datastream.

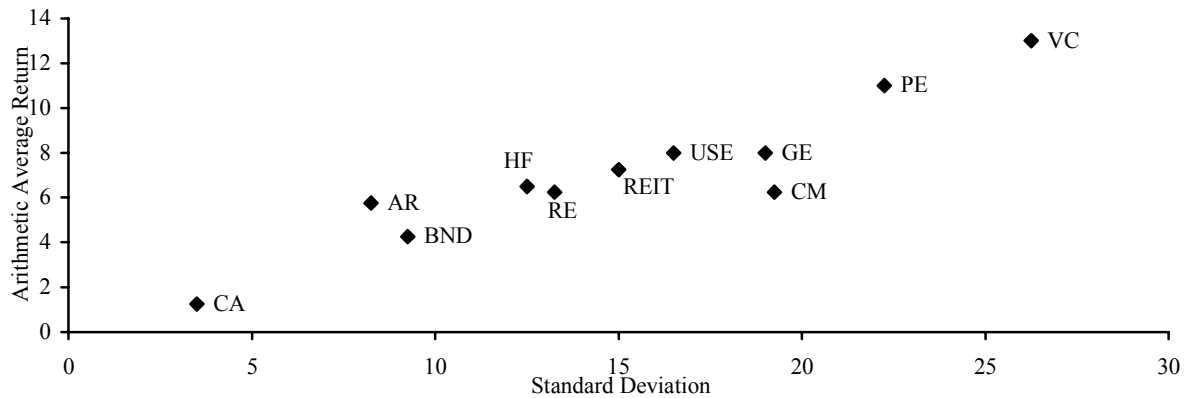
Notes: Actual index returns represent S&P 500 and Salomon Smith Barney High Grade Index performance data. Long-term estimated returns are Cambridge Associates LLC's estimated returns used in asset allocation modeling. This analysis assumes a beginning market value of \$100 million on January 1, 1960 and applies a policy allocation of 70% U.S. Equity and 30% U.S. Bonds, rebalanced quarterly. The data for 2002 show spending for the full year and ending market value through June 30. Spending is equal to 5% of the 12-quarter moving average endowment market value.

Exhibit 7

LONG-TERM ASSUMPTIONS FOR ASSET CLASSES AND THE "AVERAGE" ENDOWMENT PORTFOLIO

<u>Asset Class</u>	<u>Symbol</u>	June 30, 2002			
		<u>Endowment Mean Allocation</u>	<u>Real Arithmetic Return</u>	<u>Real Compound Return</u>	<u>Standard Deviation</u>
U.S. Equity	USE	40.0	8.00	6.75	16.50
Global ex U.S. Equity	GE	13.0	8.00	6.25	19.00
Emerging Markets Equity	EM	0.0	11.00	7.75	27.00
Absolute Return	AR	3.5	5.75	5.50	8.25
Equity Hedge Funds	HF	6.2	6.50	5.75	12.50
Venture Capital	VC	1.5	13.00	10.00	26.25
Non-Venture Private Equity	PE	1.8	11.00	8.75	22.25
REITs	REIT	1.8	7.25	6.25	15.00
Real Estate	RE	1.4	6.25	5.50	13.25
Commodities	CM	0.0	6.25	4.50	19.25
U.S. Bonds	BND	26.4	4.25	3.75	9.25
Cash	CA	4.5	1.25	1.25	3.50
Endowment Mean Allocation			6.63	6.08	10.88

	USE	GE	AR	HF	VC	PE	REIT	RE	CM	BND	CA
USE	1.00										
GE	0.52	1.00									
AR	0.55	0.28	1.00								
HF	0.57	0.27	0.64	1.00							
VC	0.54	-0.03	0.27	0.37	1.00						
PE	0.40	0.10	0.69	0.57	0.84	1.00					
REIT	0.59	0.35	0.63	0.75	0.52	0.72	1.00				
RE	0.29	0.33	0.06	0.07	-0.02	0.19	0.10	1.00			
CM	-0.35	-0.22	-0.11	-0.31	0.12	-0.02	-0.32	-0.17	1.00		
BND	0.57	0.22	0.61	0.27	0.02	0.23	0.27	-0.01	-0.20	1.00	
CA	0.12	0.25	0.54	0.02	-0.31	-0.04	0.27	0.38	-0.30	0.67	1.00



Note: Asset allocation is equal to the average allocation of 373 endowed institutions surveyed as of June 30, 2002.

Exhibit 8

AVERAGE ASSET ALLOCATIONS OF SURVEYED ENDOWMENTS (%)

1989-2002

	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>
U.S. Equity	50.6	49.4	48.9	48.2	47.5	44.6	46.4	46.9	46.4	46.4	46.8	42.6	43.2	40.0
Global ex U.S. Equity	3.4	4.0	4.5	4.6	6.9	11.8	12.0	13.0	12.8	12.9	14.2	12.7	11.8	13.0
Marketable Alternatives	0.0	0.1	0.4	1.2	1.9	4.4	4.6	5.2	6.3	7.0	6.8	7.5	8.9	9.7
Venture Capital	1.3	1.3	1.6	1.2	1.2	1.7	1.5	1.4	1.4	1.5	2.6	3.3	1.7	1.5
Non-Venture Private Equity	0.5	0.6	0.7	0.6	0.7	0.9	0.7	1.0	1.1	1.4	1.7	2.1	1.8	1.8
REITs	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	1.0	1.0	1.3	1.7	1.8
Private Real Estate	2.9	3.0	3.7	2.9	2.5	2.7	2.5	2.5	2.8	1.8	1.4	1.4	1.4	1.3
Commodities	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0
U.S. Bonds	29.4	32.0	31.9	33.1	32.9	28.1	27.0	26.0	24.8	24.4	21.8	24.9	26.0	26.4
U.S. Cash	11.9	9.6	8.3	8.2	6.4	5.8	5.3	4.0	4.3	3.6	3.6	4.1	3.5	4.5
Number of Institutions	122	136	130	193	206	125	159	208	235	255	279	300	373	373

Source: Cambridge Associates LLC Member Investment Database.

Notes: The marketable alternatives asset class consists of hedge funds, distressed securities, event arbitrage, general arbitrage, and managed futures. Allocations for 2002 are as of June 30.