

Managing Risk to Optimize Return

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Portfolio Management is Risk Management

- Risk is double-edged sword
 - Greater risk increases opportunity for higher returns
 - Greater risk also increases potential for higher volatility

- Risk and return have positive correlation



Identifying Risks

- Liquidity risk
- Market risk
- Credit risk
- Reinvestment risk
- Event risk
- Other—political, job, etc.

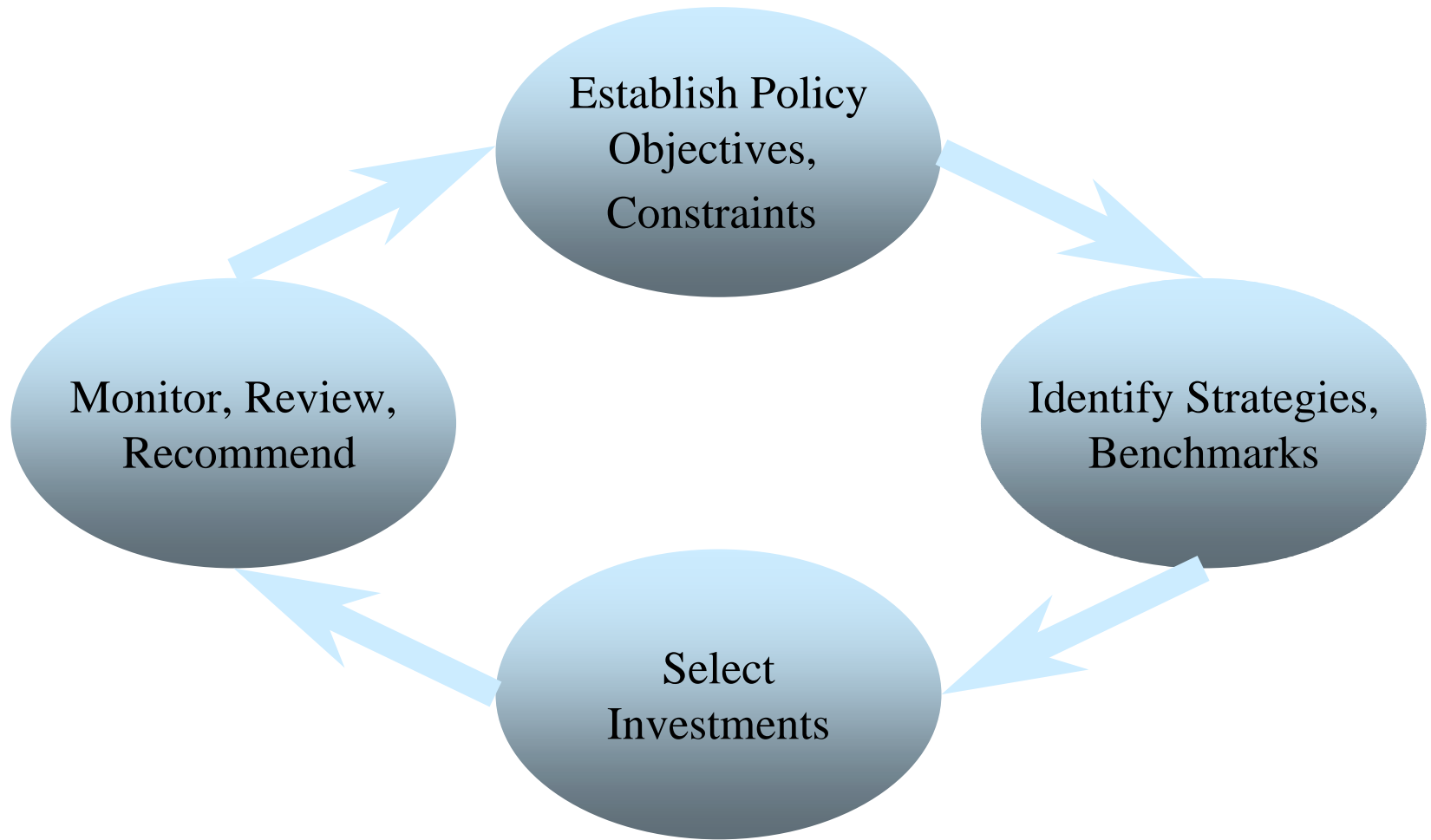


How do you view risk?





The Cycle of Portfolio Management





Establishing Objectives

1. Safety—maintain appropriate level of exposure to risk
2. Liquidity
 - Sufficient short-term investments
 - Marketable securities
 - Targeted maturities
 - Extra layer
3. Yield (Return,Growth)
 - Income
 - Long-term growth



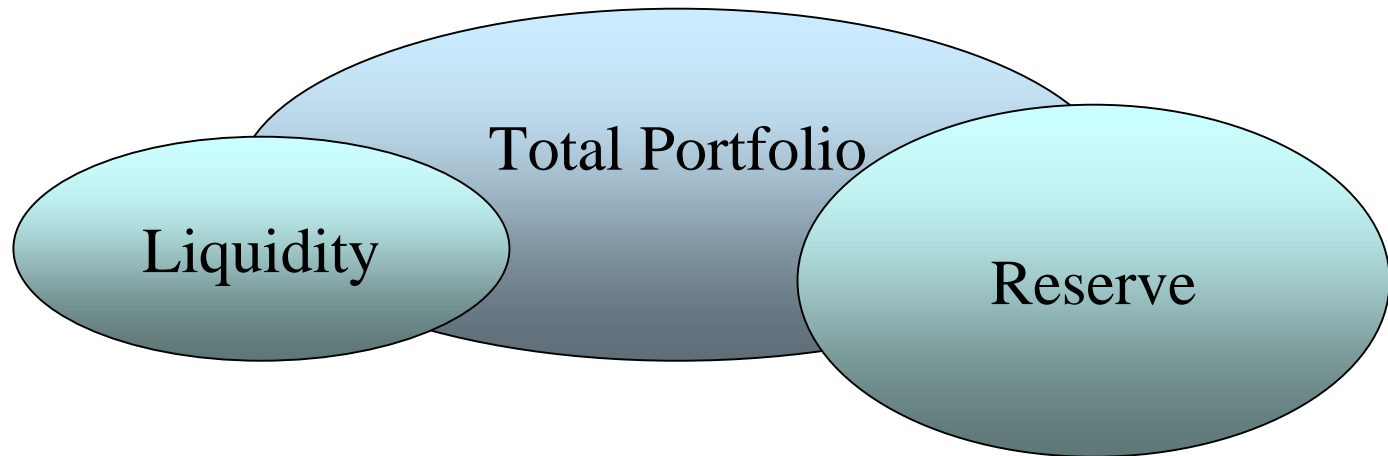
Portfolio Manager's Goal

Manage risk in portfolio in order to increase the value of the portfolio as much as possible, given the portfolio's risk parameters



- Normally greatest risk in public entity's portfolio
- Securities prices change *inversely* to interest rates change
- Market risk measured by price sensitivity to interest rate changes
- Price sensitivity is best measured as *modified duration*
 - Modified duration measures the % change in price of a security or portfolio for a 1.00% change in yields.
- With callable securities, use *effective duration*

CA | Distinguish Between Liquidity & Reserve Components



■ Liquidity Portfolio

- Designed to meet specific liquidity needs
- Invested in short-term securities (maximum maturity = one year), LAIF, MMF
- Average maturity fairly short

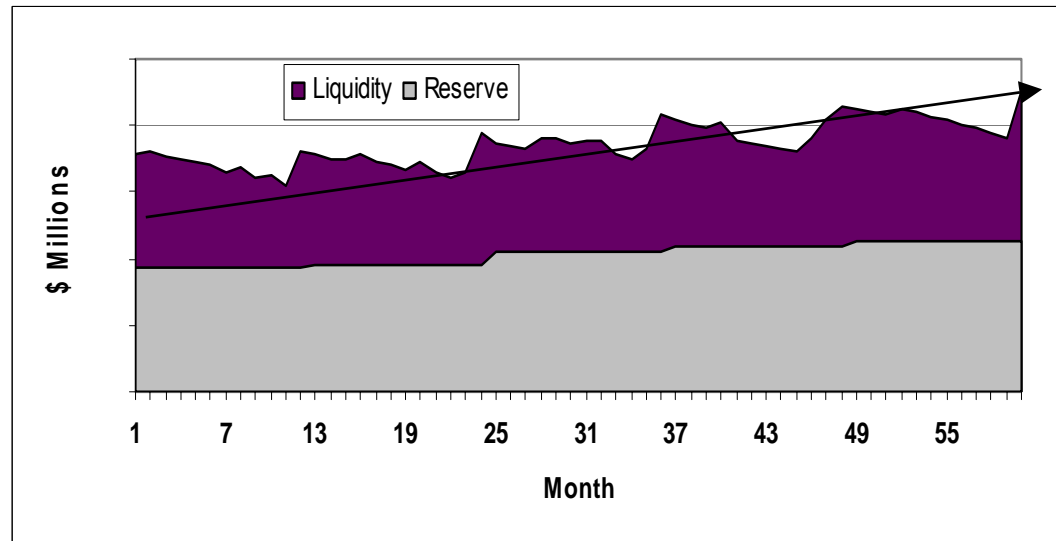
■ Reserve Portfolio

- Targeted to highest suitable duration
- Focused on longer-term securities
- Not normally used for liquidity, but invested in easily marketable securities, in case it's needed for cash



Size & Characteristics of Liquidity Component

- Based on
 - Six to twelve months projected net expenditures, or
 - One year's annual budgeted expenditures, or
 - Percent of total portfolio
 - With a "cushion" for the unknown



- Disbursement characteristics determine average maturity or duration of liquidity component, and allocation to different maturity points



Liquidity Risk – Consideration 1

- The risk that a security can't be sold, if necessary, at a good price
 - Often measured by the difference between the price at which you can buy (offer or ask) and the price at which you can sell (bid)
 - Treasuries, large agency issues, large corporate issues are most liquid
 - Control by avoiding low liquidity issues in Liquidity Component
 - Restrict low liquidity issues in Reserve Component



Liquidity Risk – Consideration 2

- The risk that the portfolio won't provide adequate cashflow for the agency
 - Control by having adequate Liquidity Component;
 - Securities in the Reserve Component should also be readily marketable



Market Risk – In Liquidity Component

- Avoid market value fluctuation - low volatility in Liquidity Component
- Relatively low duration
 - Money market instruments (e.g. LGIPs, T-Bills, Discos, CP)
- Maturities targeted to known future disbursements
 - Asset/liability matching
- An extra layer of liquidity – 10% - 20%



Characteristics of the Reserve Component

- The Reserve Component can be designed for long-term portfolio growth based on:
 - Highest suitable duration target
 - In most cases, 5-year maximum maturity mandated by State law
 - For some purposes, a maximum maturity greater than 5 years is valuable

- Expectation – Reserve Component will not be called upon to fund cashflow needs



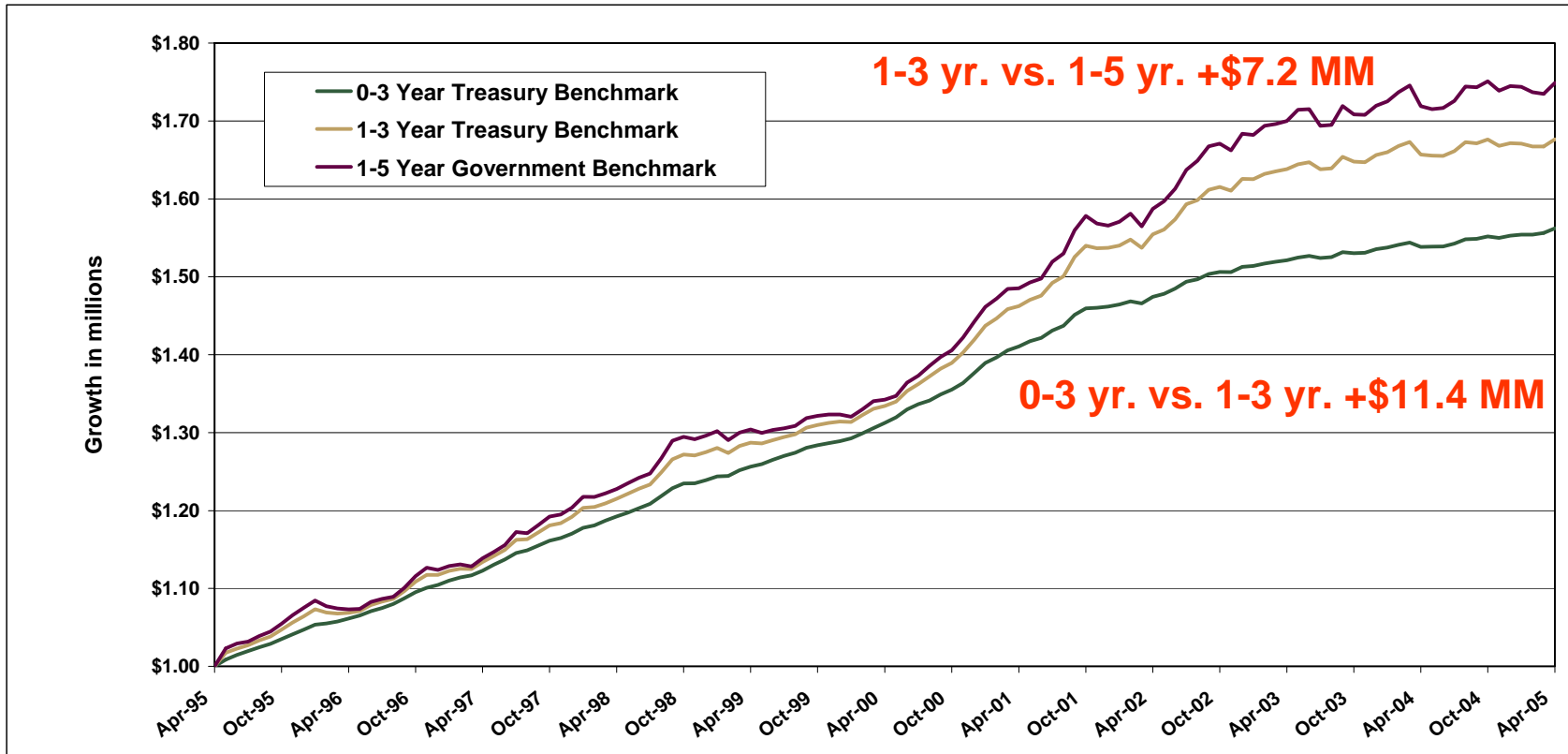
Market Risk - In the Reserve Component

- The higher the modified (effective) duration, the greater will be the return over time.
- Once cashflow needs are handled in the Liquidity Component, you can increase market risk in the Reserve Component, subject to:
 - State Code
 - Risk tolerances
 - Return objectives
 - Other constraints



Comparison of Benchmarks – Effects of Duration

0-3 Yr. Tsy. (0.878 dur); 1-3 Yr. Tsy. (1.628 dur) & 1-5 Govt. (2.323 dur)



Source: Index return information provided by Merrill Lynch

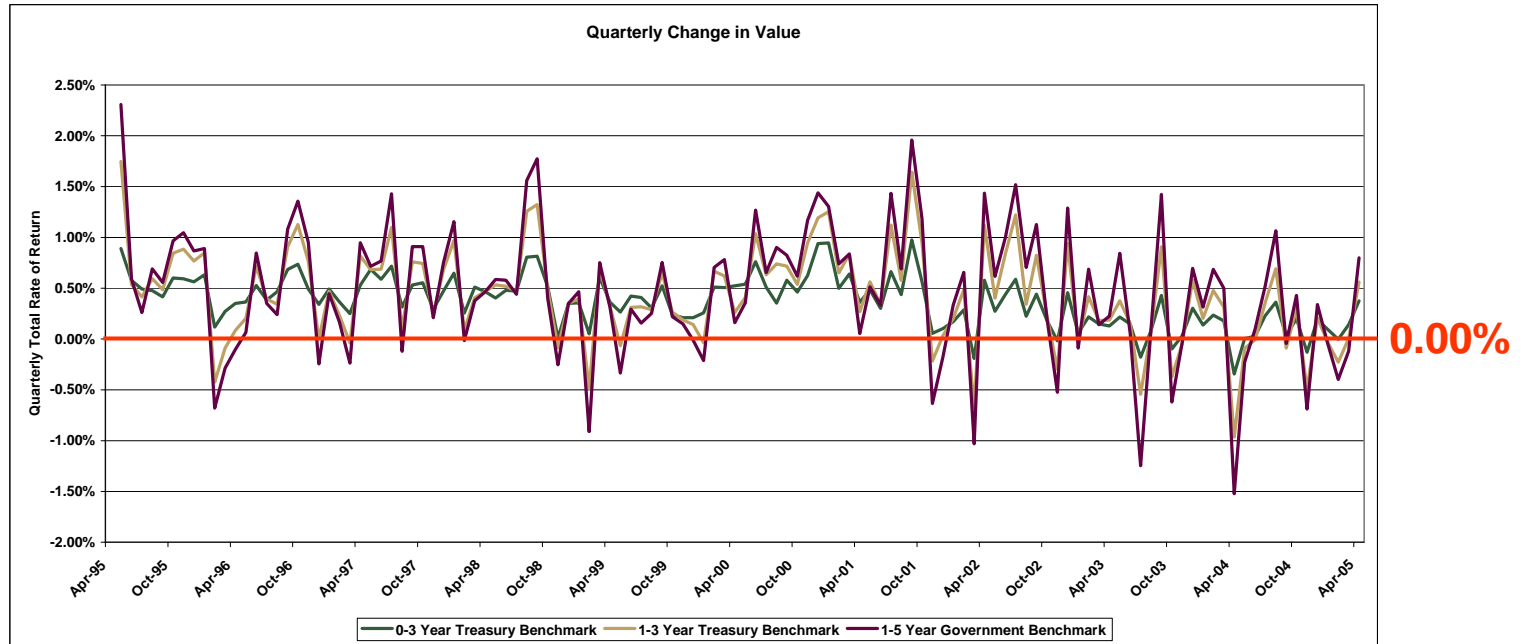
Value on 4/30/2005 of \$100 million invested 4/30/1995		
	4/30/2005	Annualized Return
0-3 Year Treasury Benchmark	\$156,212,958	4.56%
1-3 Year Treasury Benchmark	\$167,652,493	5.30%
1-5 Year Government Benchmark	\$174,865,952	5.75%

4/30/95 – 4/30/05
Beg. Value \$100 MM



Volatility of Benchmarks

0-3 Yr. Tsy. (0.878 dur); 1-3 Yr. Tsy. (1.628 dur) & 1-5 Govt. (2.323 dur)



Source: Index return information provided by Merrill Lynch

Annual Returns	0-3 Year Treasury Benchmark	1-3 Year Treasury Benchmark	1-5 Year Government Benchmark
1996	5.50%	4.98%	4.54%
1997	5.95%	6.66%	7.11%
1998	5.89%	7.00%	7.66%
1999	4.03%	3.06%	2.11%
2000	6.77%	7.99%	9.00%
2001	6.20%	8.30%	8.53%
2002	3.49%	5.76%	7.54%
2003	1.49%	1.90%	2.15%
2004	1.13%	0.91%	1.45%



Credit Risk/Opportunity

- Investors receive higher yields when they purchase securities from lower rated issuers
 - Agencies vs. Treasuries
 - Corporates vs. Agencies
 - “A” vs. AAA
- Credit ratings change over time
- Yield spreads among different quality sectors vary over time



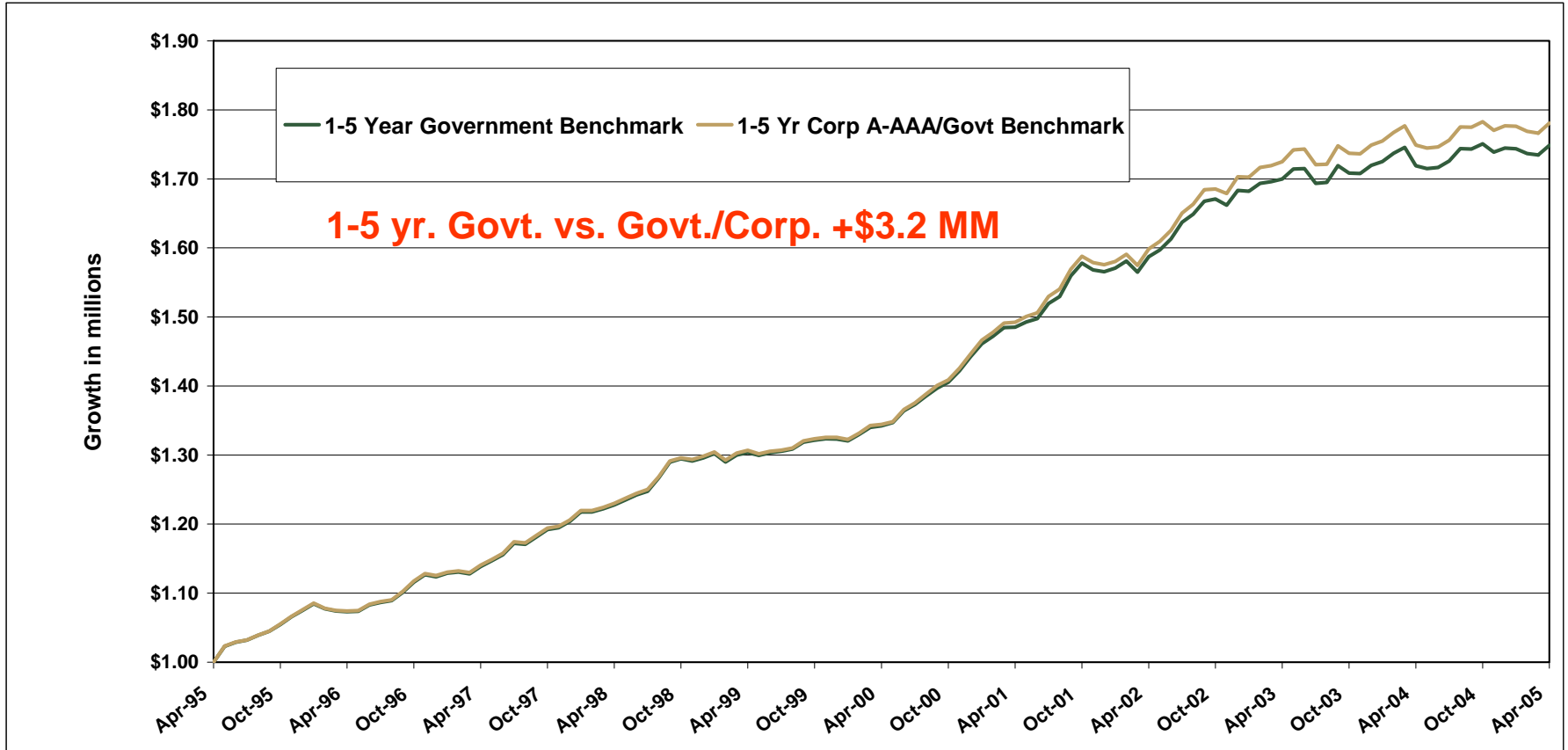
Managing Credit Risk/Opportunity

- Assuming credit risk requires that additional resources be devoted to the investment program
 - Moody's/S&P/Fitch ratings, watch lists, outlook
 - At time of purchase and
 - On a regular basis
 - Supplemented by
 - Third party sources
 - Internally generated credit research



Comparison of Benchmarks Adding Corporates

Comparison of 1-5 Year Government Benchmark and 1-5 Yr Corp A-AAA/Govt Benchmark



Source: Index return information provided by Merrill Lynch

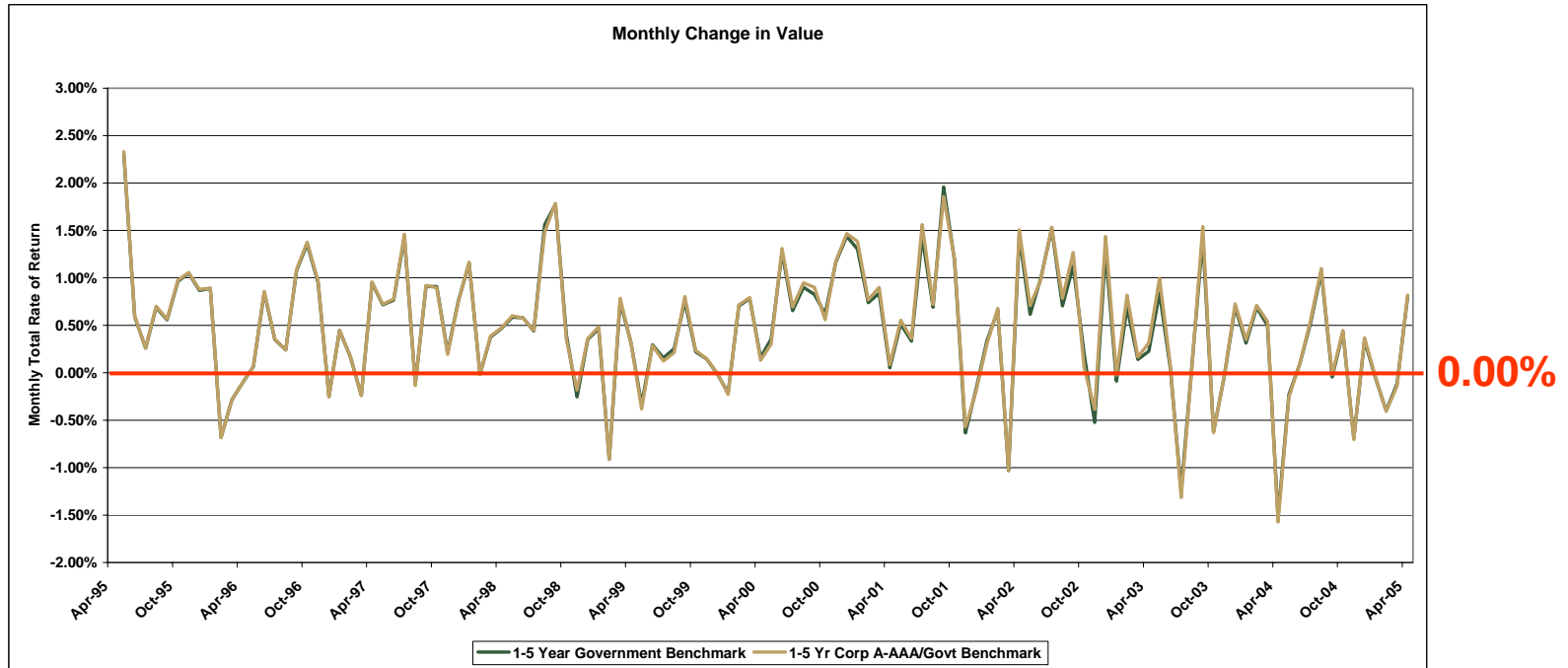
Value on 4/30/2005 of \$100 million invested 4/30/1995		
	4/30/2005	Annualized Return
1-5 Year Government Benchmark	\$174,865,952	5.75%
1-5 Yr Corp A-AAA/Govt Benchmark	\$178,098,253	5.94%

**4/30/95 – 4/30/05
Beg. Value \$100 MM**



Volatility Comparison with Corporates

Comparison of 1-5 Year Government Benchmark and 1-5 Yr Corp A-AAA/Govt Benchmark



Source: Index return information provided by Merrill Lynch

Annual Returns	1-5 Year Government Benchmark	1-5 Yr Corp A-AAA/Govt Benchmark
1996	4.54%	4.59%
1997	7.11%	7.13%
1998	7.66%	7.68%
1999	2.11%	2.11%
2000	9.00%	9.12%
2001	8.53%	8.93%
2002	7.54%	8.09%
2003	2.15%	2.69%
2004	1.45%	1.60%



Reinvestment Risk

- Reinvestment risk: cashflows from a bond must be reinvested at the market rate at the time the cashflow occurs
 - Interest payments
 - Principal payments
 - Paydowns from mortgage securities
 - Principal from called bonds
 - Negative convexity
 - Callables most valuable: when option way “in-the-money” or way “out-of-the-money”; duration easier to forecast
 - “At-the-money” callables – difficult to predict duration

CA | Prudent Portfolio Management Requires Good Habits



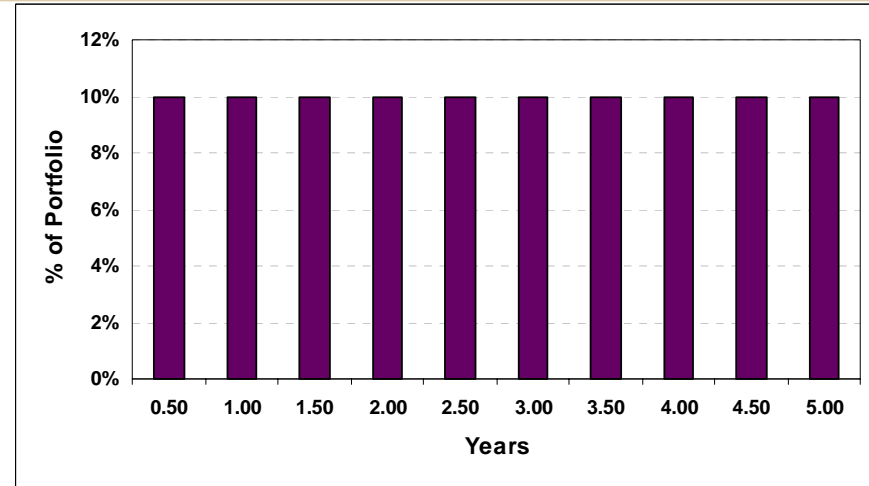
Mike McMahon / AP



Passive Management Strategies

Ladder: Maximum Maturity = Five Years

- Buy and Hold
- LGIP (e.g. LAIF)
- Matching Disbursements
- Maturity Ladder
- Benchmarking



- Portfolio matches the characteristics of a market index
- The portfolio manager actively executes trades to maintain the characteristics of the index in the portfolio
- Market risk, credit risk, and portfolio return are very similar to that of the benchmark index



Benchmarking - What You Are Doing

- Achieving objectives through proper portfolio diversification and policy compliance
- Maintaining desired portfolio structure over time
 - Risk profile – targetted duration & asset allocation
- Monitoring credit risk
- Striving to achieve a return that equals the market return consistently over time



Benchmarking - What You Are Not Doing

- Taking a market “view”
- Predicting interest rates
- Predicting future changes in relative credit quality
- Making “sidebets” on market moves
- Swapping as relative values change
- Trying to beat the market



Hybrid Active/Passive Portfolio Management

- Creating and maintaining a portfolio structure with acceptable exposure to risk **comparable** to benchmark risk profile
- Striving to achieve a return in excess of benchmark return using one or more of the following strategies:
 - Duration management
 - Yield curve placement
 - Sector weighting decisions
 - Individual security selection
 - Modified market timing



- Interest rate anticipation—pure bet on the direction of interest rate

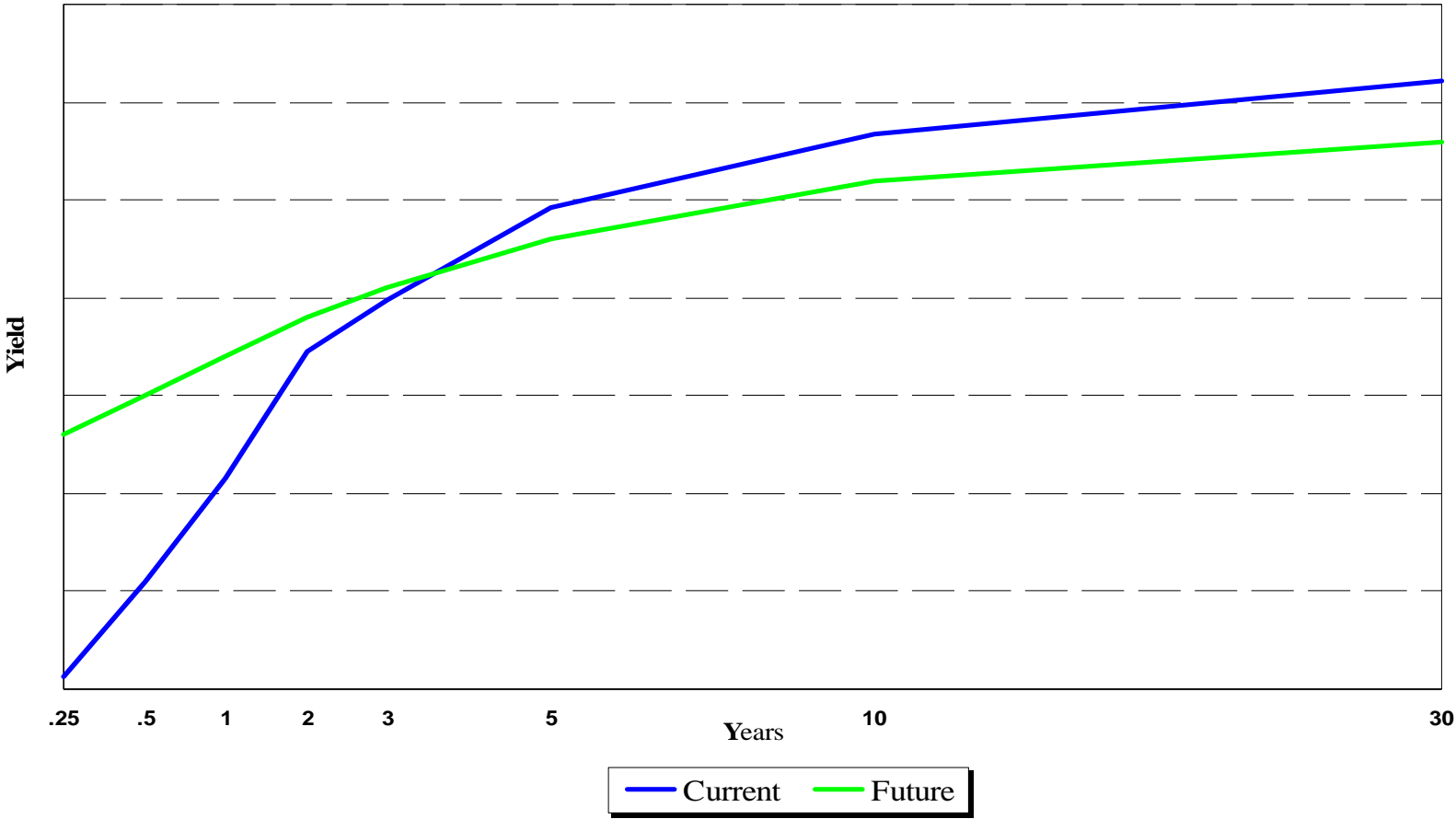
Versus

- Duration management within a range centered on the benchmark (e.g., $\pm 10\%$ of benchmark).



Managing Yield Curve Shape

Yield Curve Shift



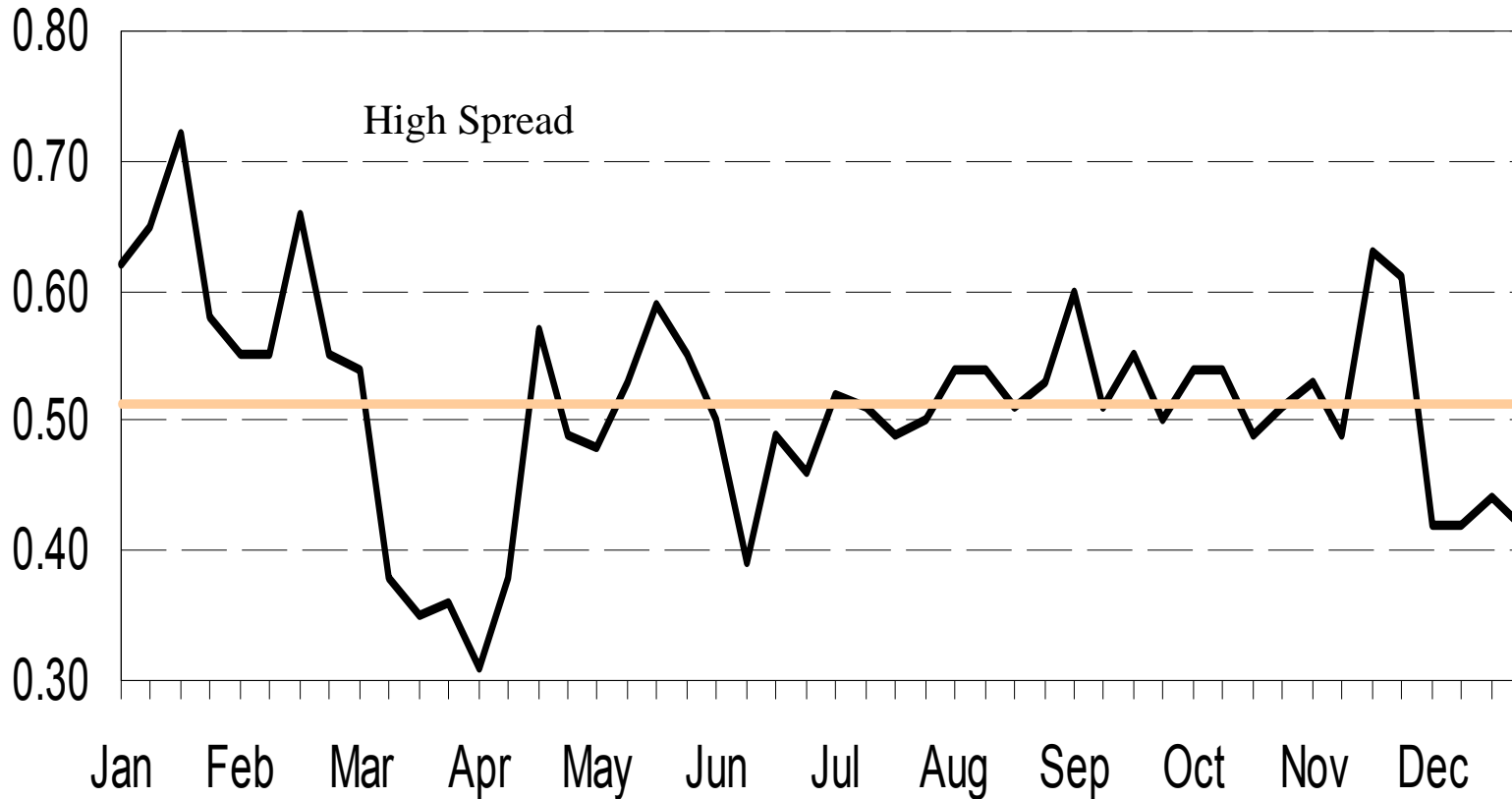


Managing Sector Allocation

	<i>Benchmark Index</i>	<i>Active Sector Allocation</i>
Treasuries	46%	11%
Agencies	36%	55%
Corporate MTN	18%	28%
Mortgage-backed	0%	0%
CMO	0%	0%
Asset-backed	0%	5%
Money Market Instruments	0%	1%



Managing Sector Allocation – Spread Analysis

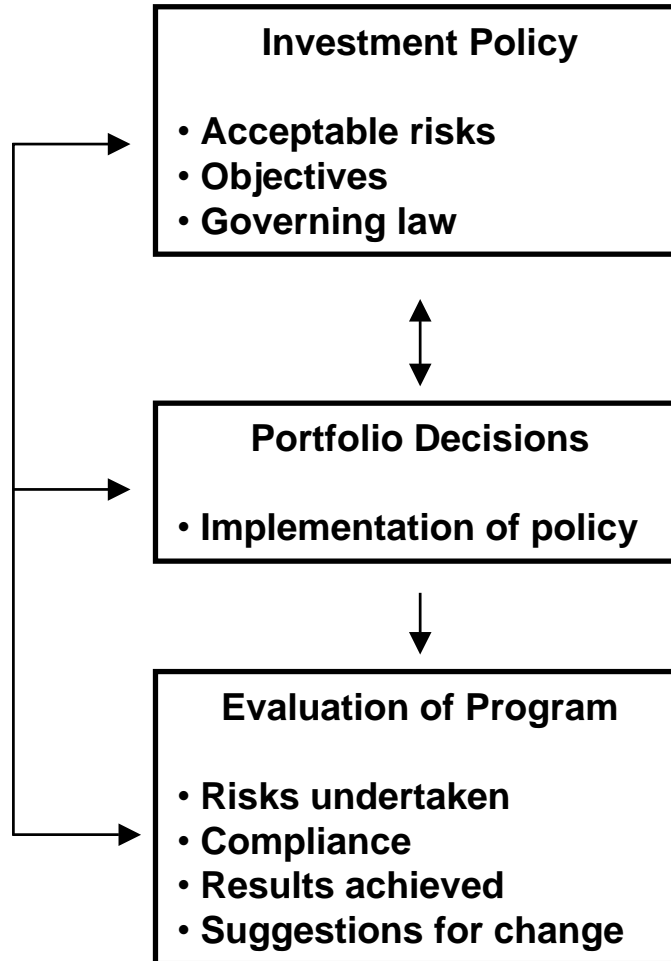


— Yield Spread

— Mean



Emphasize Whole Portfolio – Risk Profile



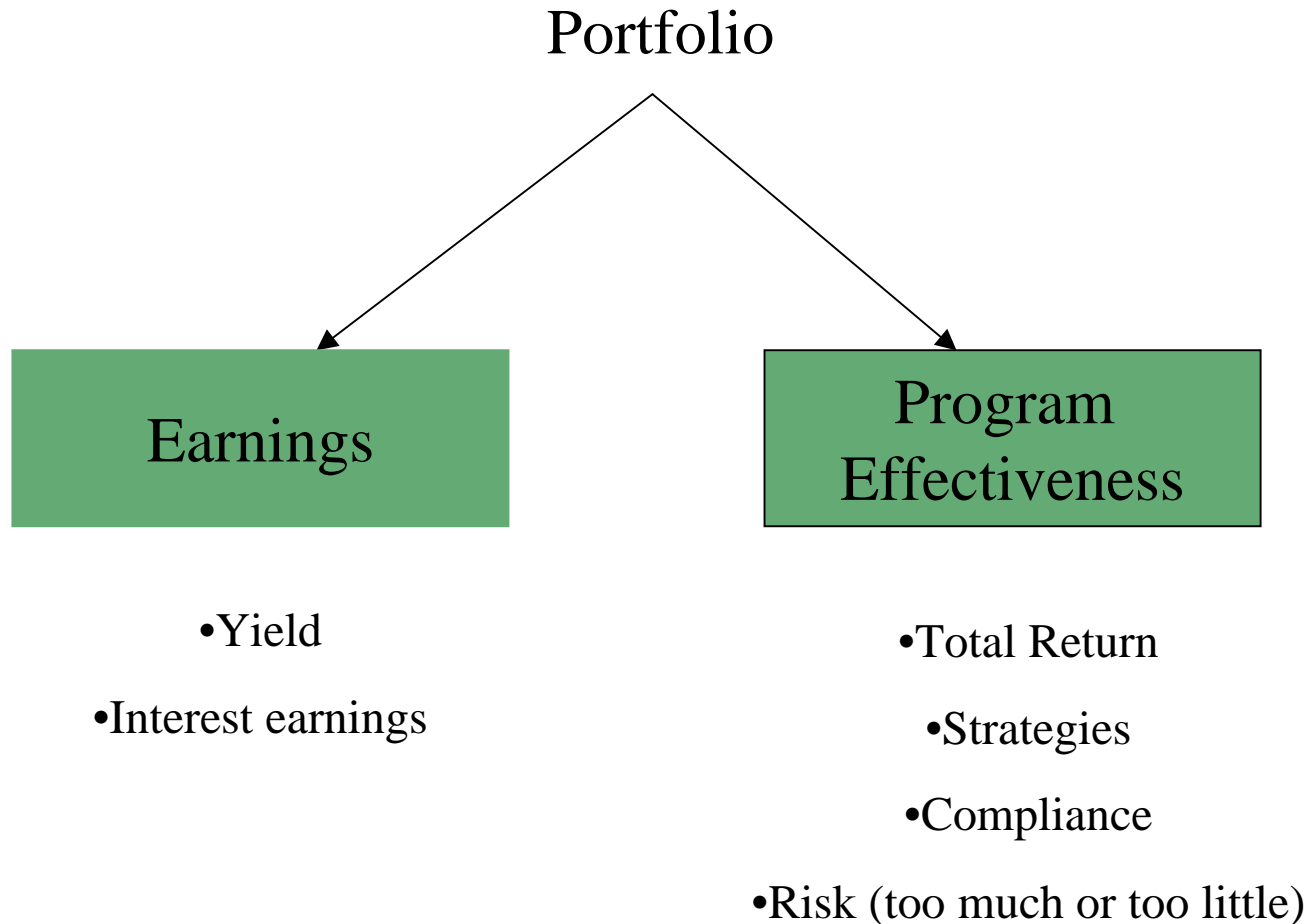


Discipline – Focus on Your Objectives





Evaluating the Investment Program





Is Your Benchmark Appropriate?





Interesting Numbers – And Their Significance

- 3.00 % *Fed Funds Rate*
- 200 *basis point increase in Fed Funds since 6/30/04*
- 71 *basis point spread Repo vs. 2-Yr.; was 183 bps. 6/16/04*
- 17 *basis point spread 2-Yr. vs. 5-Yr.; was 117 bps. 6/23/04*
- 2.1 *yrs. avg. maturity new Tsy. issuance Q4 '02; down from 7.3***
- 4.4 *yrs. avg. maturity Tsy. debt outstanding Q1 '05; down from 5.6***
- 13 % *bond share of Tsy. Debt outstanding currently; down from 21% Q3 '01***

**** Treasury discontinued 30-Yr. Bond auctions, Oct. 2001**



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