

Asset Allocation

C15.0042

Lesson 1

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Asset Allocation – *Styles*

- ◆ Active vs Passive
- ◆ Structural (goal driven);
doesn't change over time unless goals change (e.g., aging)
- ◆ Strategic (valuation driven)
- ◆ Tactical (market timing)

Note: Tactical Asset Allocation and Strategic Asset Allocation have often been used interchangeably to describe a fundamental/valuation approach. The literature of the 1980s often referred to TAA when describing what has evolved as SAA.

Asset Allocation

- ◆ “Tactical asset allocation broadly refers to active strategies which seek to enhance performance by opportunistically shifting the asset mix of a portfolio in response to the changing patterns of reward available in the capital markets. Notably, tactical asset allocation tends to refer to disciplined processes for evaluating prospective rates of return on various asset classes and establishing an asset allocation response intended to capture higher rewards. In the various implementations of tactical asset allocation, there are different investment horizons and different mechanisms for evaluating the asset allocation decision.”

“Advanced Theory and Methodology of Tactical Asset Allocation” (Lee)

Asset Allocation

- ◆ “A TAA manager's investment objective is to obtain better-than-benchmark returns with (possibly) lower-than-benchmark volatility by forecasting the returns of two or more asset classes, and varying asset class exposure accordingly, in a systematic manner.”

Asset Allocation

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Asset Allocation – *50's/60's Academia*

- ◆ In 1952, Harry Markowitz revolutionized portfolio theory with his seminal work “Portfolio Selection” (Journal of Finance, March 1952). In this paper, and later in his 1959 book, “Portfolio Selection: Efficient Diversification of Investments,” Markowitz laid out a series of propositions that quantitatively addressed the issue of optimal asset allocation. These basic tenets were later built upon by Sharpe, Fama and others to become what we know today as Modern Portfolio Theory (MPT).
- ◆ Classical modern portfolio theory begins with Markowitz’s premise that investing is the function of balancing risk and return. By definition, increasing risk would increase return. Investors establish their utility function, or preference, for how much more risk they will take to increment return.

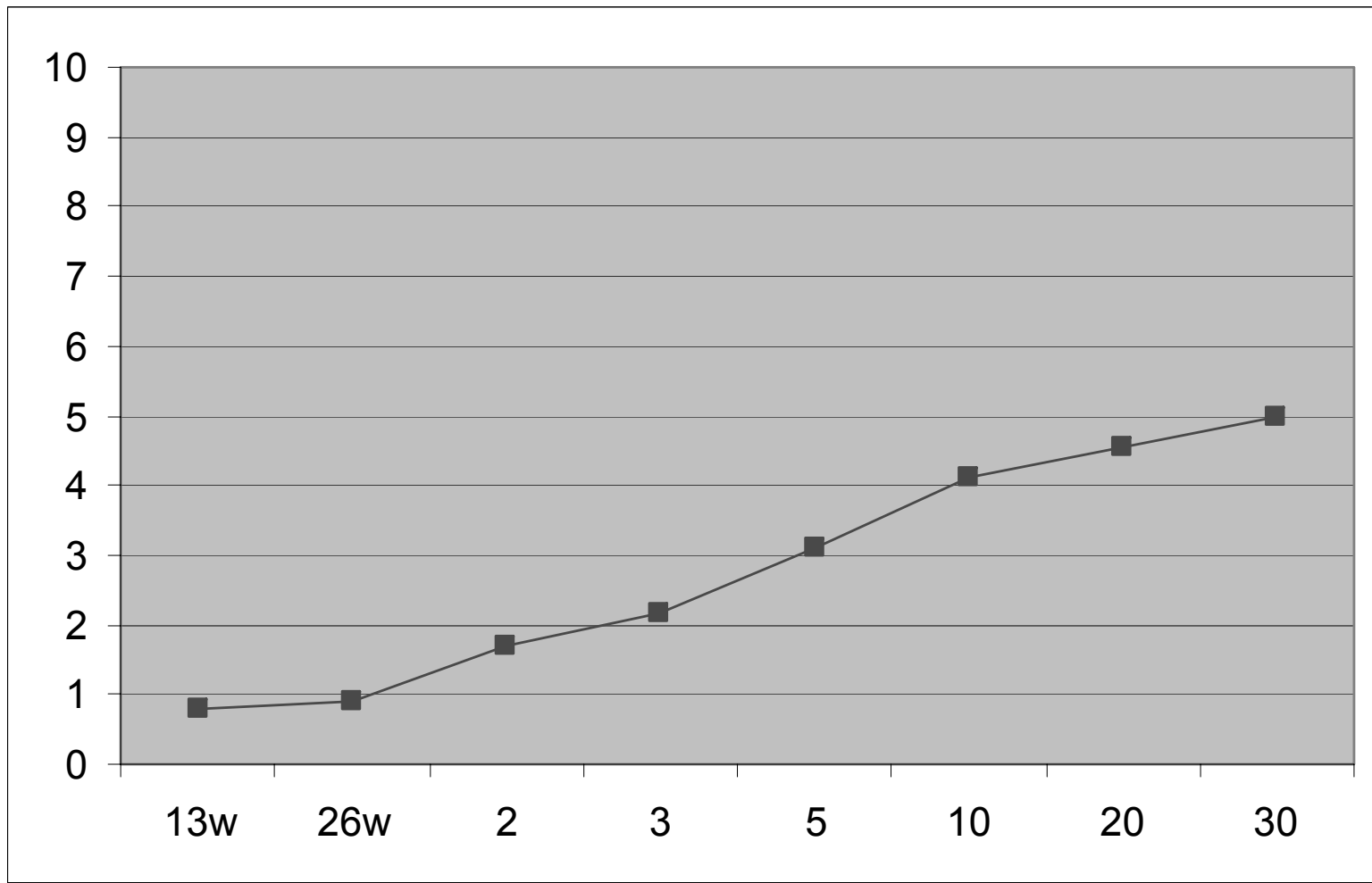
Asset Allocation – *50's/60's Academia*

- ◆ Two basic assumptions underlie the work done by Markowitz:
 - 1. Security returns are normally distributed (or can be approximated reasonably well by such a distribution). Rational investors therefore should only be concerned with mean and variance of expected returns.
 - 2. Investors are risk averse.

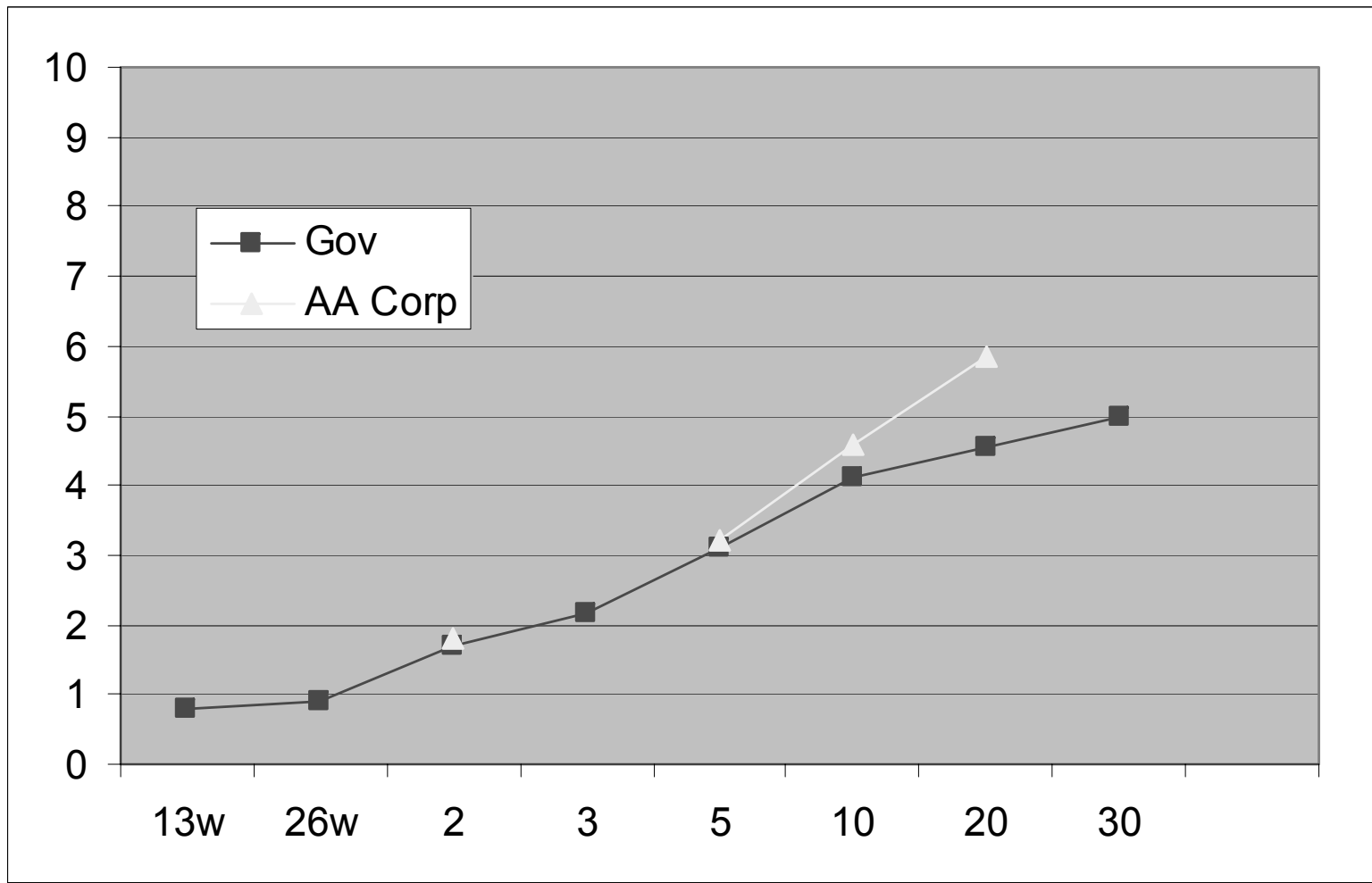
Asset Allocation – *70's Wall Street Implementation*

- ◆ After experiencing severe erosion of assets during the 1973-74 market decline, some institutional investors were searching for better asset allocation strategies rather than ad hoc shifts among different asset classes. Several Wall Street Research Teams as well as buy-side money managers began to introduce AA products. Wells Fargo Investment Advisors introduced an approach to implement asset allocation shifts between stock and bond. In this system, when the expected risk premium of stocks, calculated based on projected dividends from current earnings estimates, over bonds was higher than the predetermined figure, which was about 3.5%, allocation to stocks would be increased from the normal mix, and vice versa.

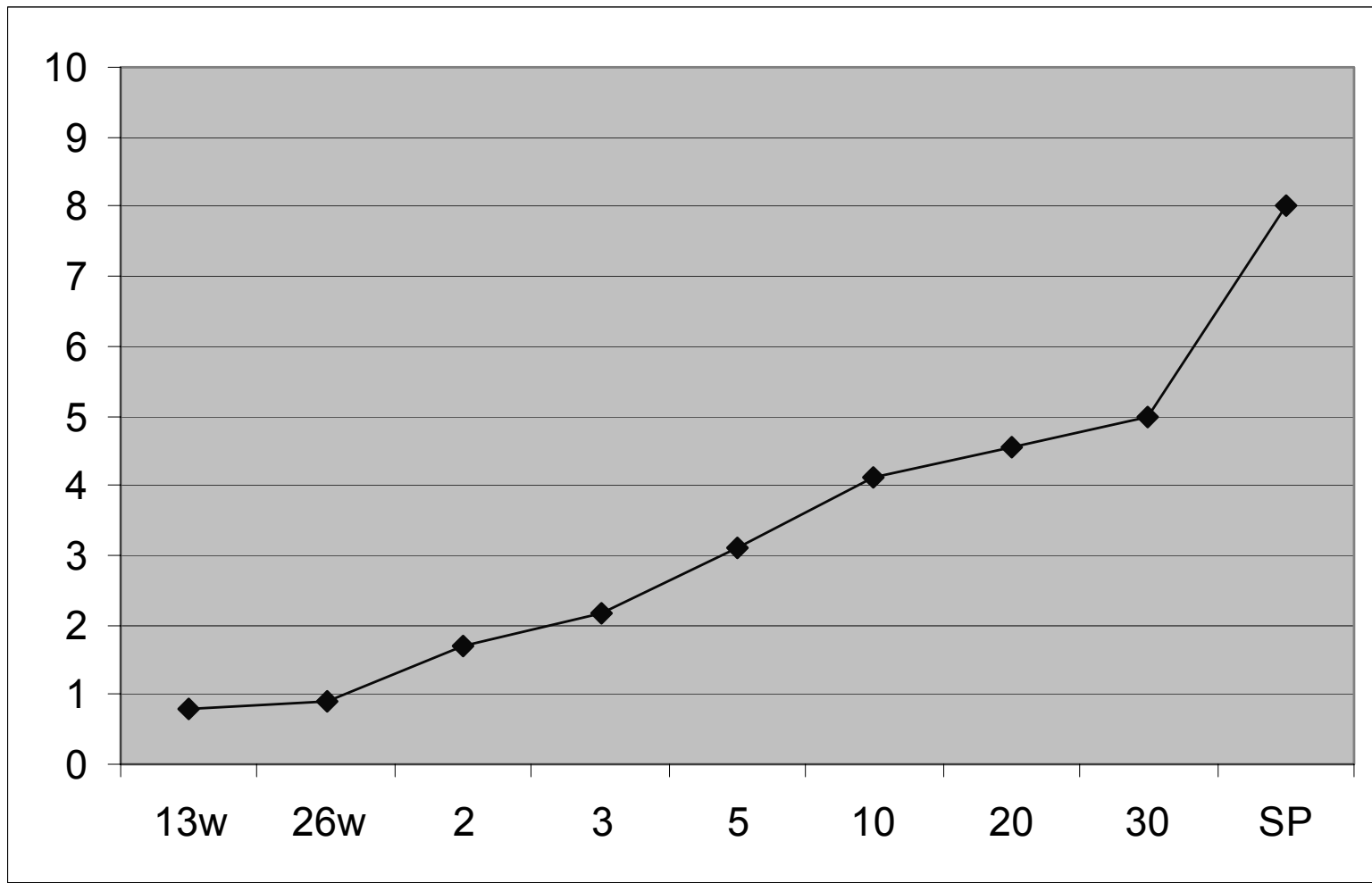
Treasury Yield Curve (1/04)



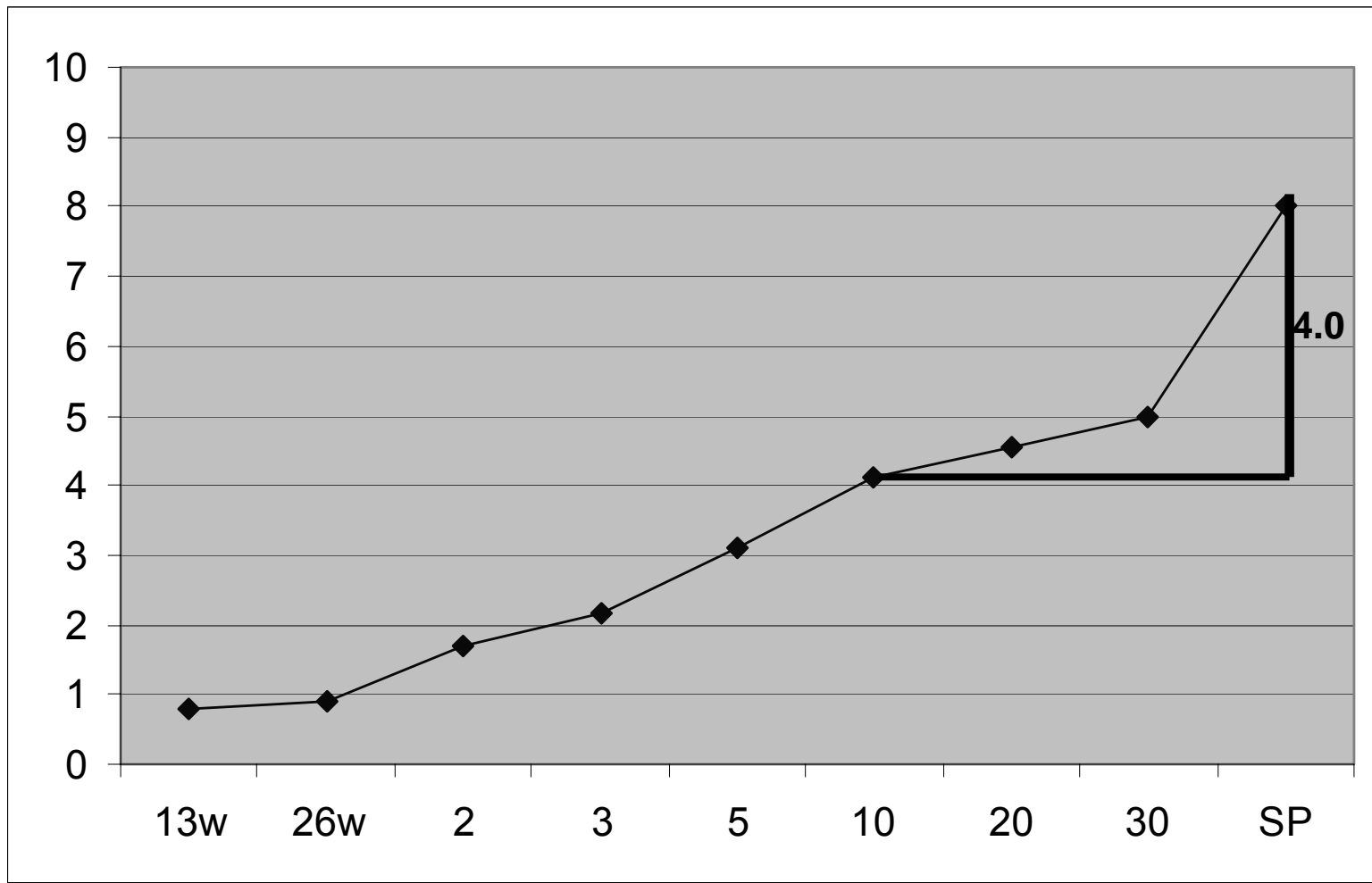
Yield Curve (1/04)



Yield Curve and S&P 500 (1/04)



Yield Curve and S&P 500 (1/04)



Asset Allocation

Expected Rate of Return for Cash Equivalents (T-bills)

Coupon equivalent yield of discount rates on new three-month bills.

Expected Rate of Return for Fixed Income (Government Bonds)

Yield on Treasury securities at a constant maturity.

Expected Rate of Return for Equity (S&P 500)

Based upon forecasts of expected normalized earnings, dividend and earnings growth rate. Expected Rate of Return is R , given that P = current price, D = current normalized dividend, and g = secular long-term growth rate.

$$P = \sum \frac{D (1 + g)^t}{(1 + R)^t}$$

Dividend Discount Model

$$P = \sum \frac{D (1 + g)^t}{(1 + R)^t}$$

$$P = \frac{D}{(R - g)}$$

$$R = D/P + g$$

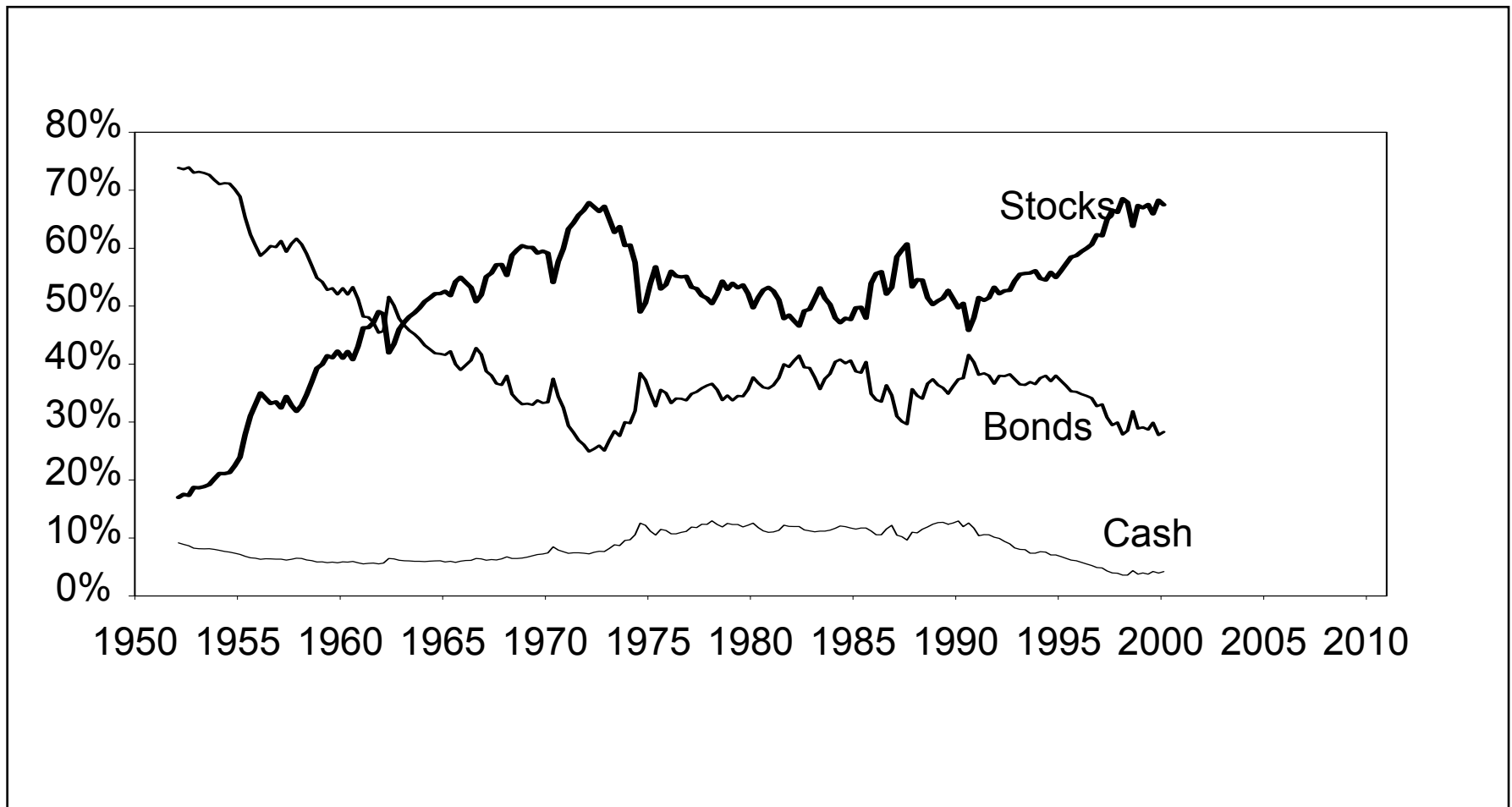
$$R = \text{Dividend Yield} + \text{growth rate}$$

Asset Allocation – *The rise*

- ◆ Development of Modern Portfolio Theory in 1950s and 1960s. But, real world implementation requires flow between asset classes. And Bonds and Stocks were viewed as “very different.”
- ◆ 1973-74 bear market, which particularly hurt poorly diversified portfolios. In 1972, just before the onset of the bear market, over two-thirds of the assets of private pension funds were invested in stocks. In many instances, the equity portion of a company’s pension fund consisted solely of that company’s own stock.

Asset Allocation

Mix of Private Pension Funds



Asset Allocation – *The rise*

- ◆ Employee Retirement Income Security Act (ERISA) of 1974, which encouraged a more prudent and more disciplined approach to investment management. Corporate executives responsible for retirement funds needed to be a “prudent man.” Development of more sophisticated financial markets and, in particular, introduction of derivatives.
- ◆ Growing awareness among institutional investors of benefits of tactical asset allocation. 1986 Brinson, Hood, Beebower study showed that, on average, the asset allocation investment policy decisions explain more than 90% of the variation in quarterly plan total returns.

Asset Allocation – *The rise*

- ◆ Since the early 1980s, portfolio insurance, which was developed based on the option pricing theory of Black and Scholes (1973) and Merton (1973), was widely implemented by many institutional investors in attempt to produce a floor or guaranteed minimum portfolio return. This dynamic asset allocation strategy became even more popular when its implementation was greatly simplified by the introduction of Constant Proportion Portfolio Insurance (CPPI) by Perold (1986) and Black and Jones (1987). At around the same time, there was a major concern about TAA strategies as most of them had substantial hedge against stock when the stock market was rising.

Asset Allocation – *The rise*

- ◆ Before the crash of '87, most AA models viewed stock as significantly overvalued. However, the stock market continued to advance while bond yields headed higher, leading to a period of major underperformance for AA managers. Stocks were now purported to be “no riskier than bonds,” supported by the idea that “portfolio insurance” would eliminate the downside risk in stocks.
- ◆ Many AA managers were substantially underweighting stock before the crash, and some were even hedged entirely out of stock into bond, these strategies had an excellent performance when stock underperformed bond by 30% in October 1987. About two weeks after the crash, many tactical managers restored their positions back to the normal mix.
- ◆ Portfolio insurance strategies largely failed to deliver a guaranteed floor value. Since '87, there was growth of interest in AA strategies. while portfolio insurance gradually faded away in the investment industry.

Asset Allocation – *The fall*

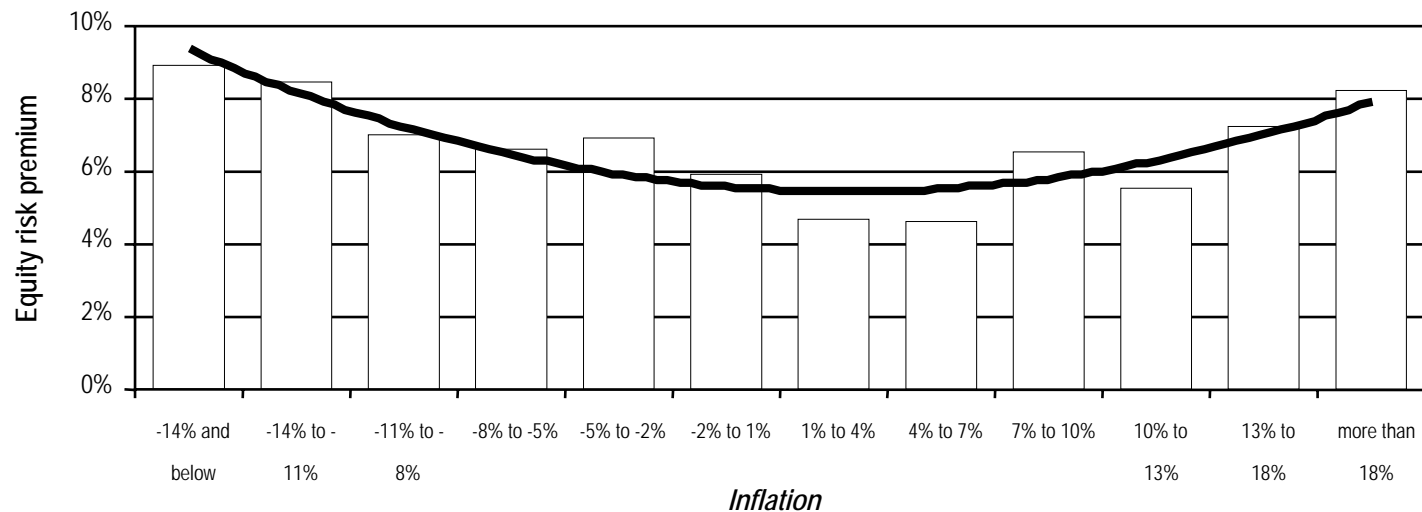
- ◆ The Federal funds rate was increased from 6.5% in April of 1988 to 10% in March of 1989. Most AA strategies viewed stocks as relatively unattractive, thus leading to substantial hedging of stock exposure from mid-1988 until mid-1989.
- ◆ Partly due to the gradual manner of the Federal Reserve's interest rates policy and strong commitment to avoid a recession induced by high interest rates,
- ◆ together with corporate restructuring, leveraged buy-outs, and foreign capital inflow,
- ◆ the stock market continued to rise strongly throughout the whole period of higher interest rates. This led to the significant underperformance of many AA managers.

Asset Allocation – *The fall*

- ◆ After the recession in 1990, there was a secular decline of volatility of stock return in excess of bond. Since performance of AA depends on volatility, it became more and more difficult for AA managers to add value for their clients. After 1995, volatility appeared to return towards more normal levels. In August 1998, stock underperformed bond by 20%. Not only did volatility significantly bounce back, many AA managers were said to have added value as many of them were underweighting stock.
- ◆ Two decades of history suggest that returns of AA strategies can be episodic.

Asset Allocation – *The fall*

But, while risk premiums are normally distributed about the mean, they are not constant. Risk Premiums rise during both high inflation and very low inflation/deflation. This may be one reason that history suggest that returns of AA strategies can be episodic.



1914-2002

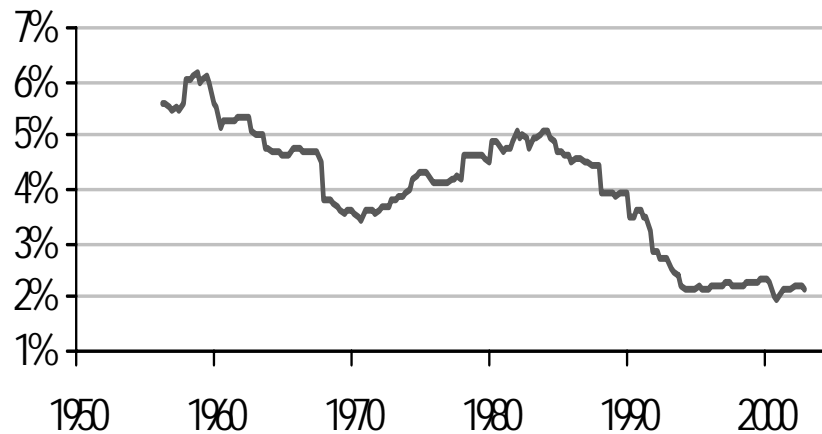
Asset Allocation – *The fall*

- ◆ **Changing variance of returns (risk premiums).** Financial and economic environment in new millennium—muted business cycle, low inflation—is markedly different to that of 1980s, 1990s. Germany post-unification; Japan after the bubble burst.

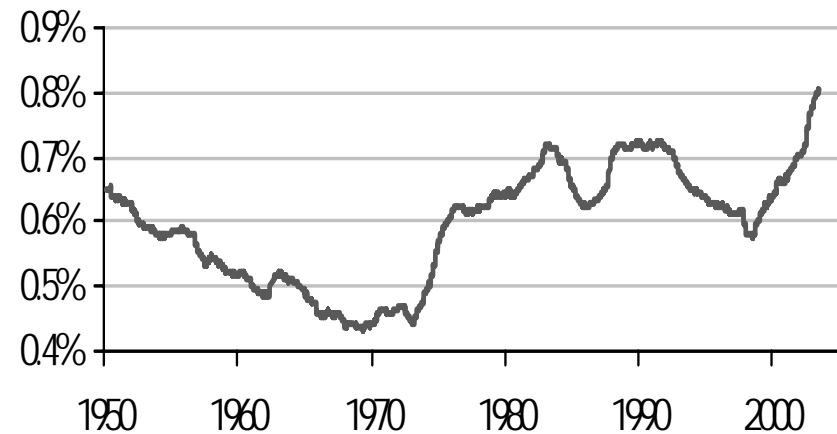
Economic & Market Volatility

Economic volatility has declined markedly. This led to the expectation that stock market volatility would also decline. But . . .

Standard Deviation of GDP Growth
Rolling 10-year



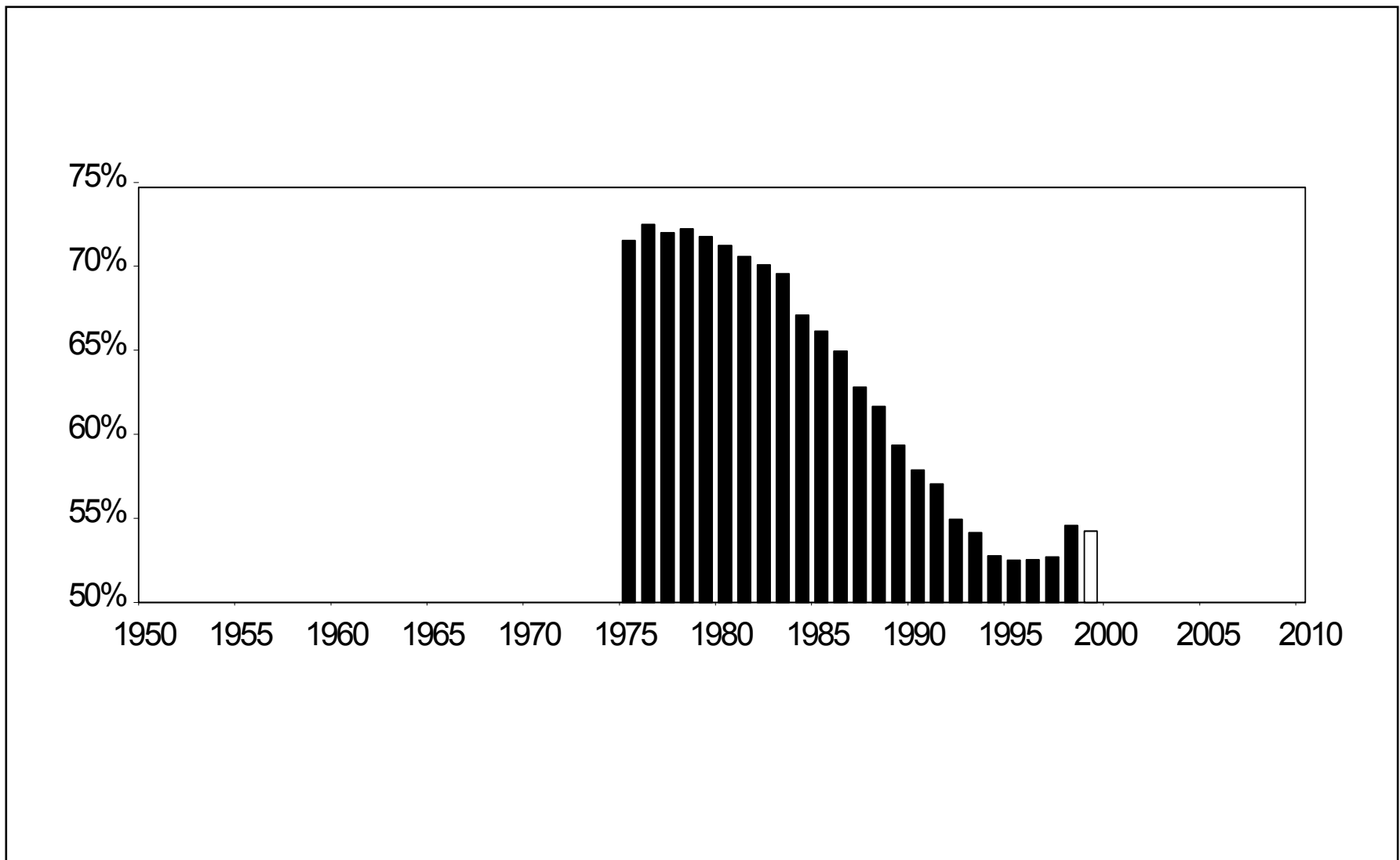
Market Volatility - S&P 500
Rolling 10-year Avg Absolute Daily % Chg



Asset Allocation – *The fall*

- ◆ **Changing risk preferences.** Risk for defined benefit pension plan managers is that they fail to generate a sufficient flow in any year. Risk for participants in defined contribution pension plans is that they fail to accumulate a sufficient stock over course of a lifetime of contributions.

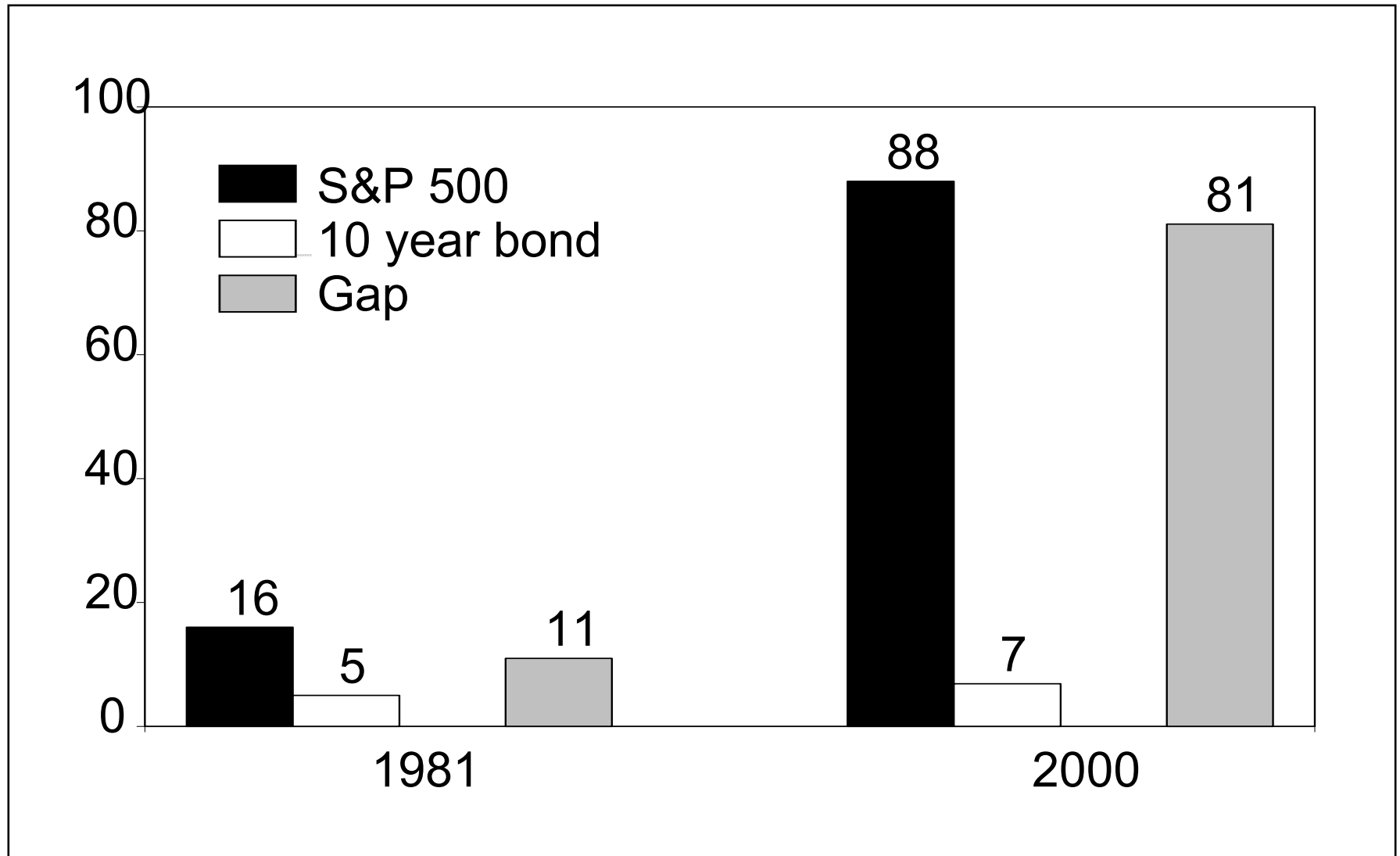
Assets in Defined Benefit Plans



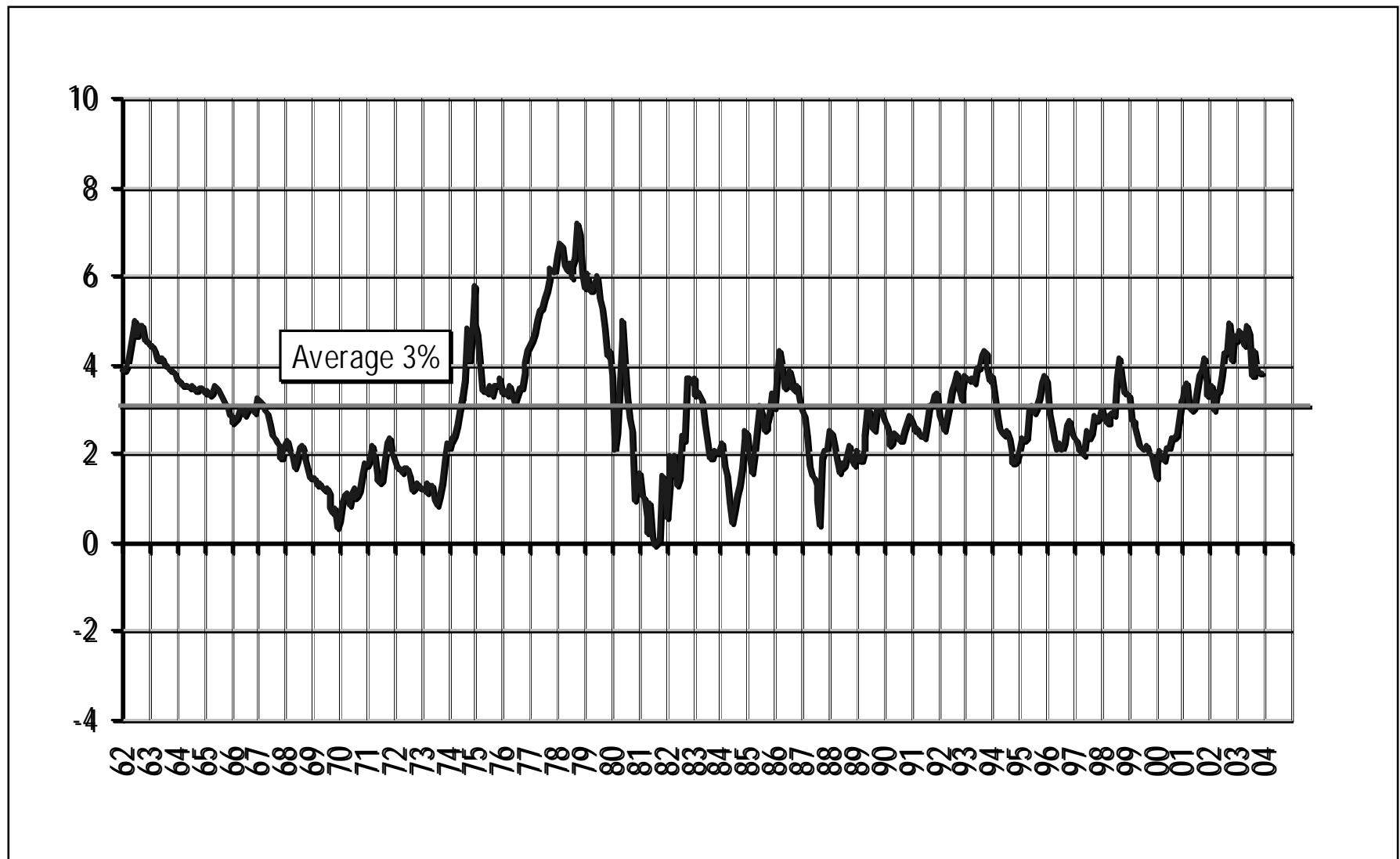
Asset Allocation – *The fall*

- ◆ **Changing expected returns.** Secular decline in interest rates means that heavy bond weighting not a viable long-term strategy. As interest rates declined throughout the 1990s, *reinvestment risk*, is likely to emerge as the single-greatest threat to the total return prospects for fixed-income investors. Quite simply, a bond only “yields” 6% as long as investors can reinvest the bond’s coupons at 6%. In a declining rate environment, that may not be so easy to do. The “duration gap” between stocks and benchmark bond has risen from 11 years in 1981 to 81 years in 2000.

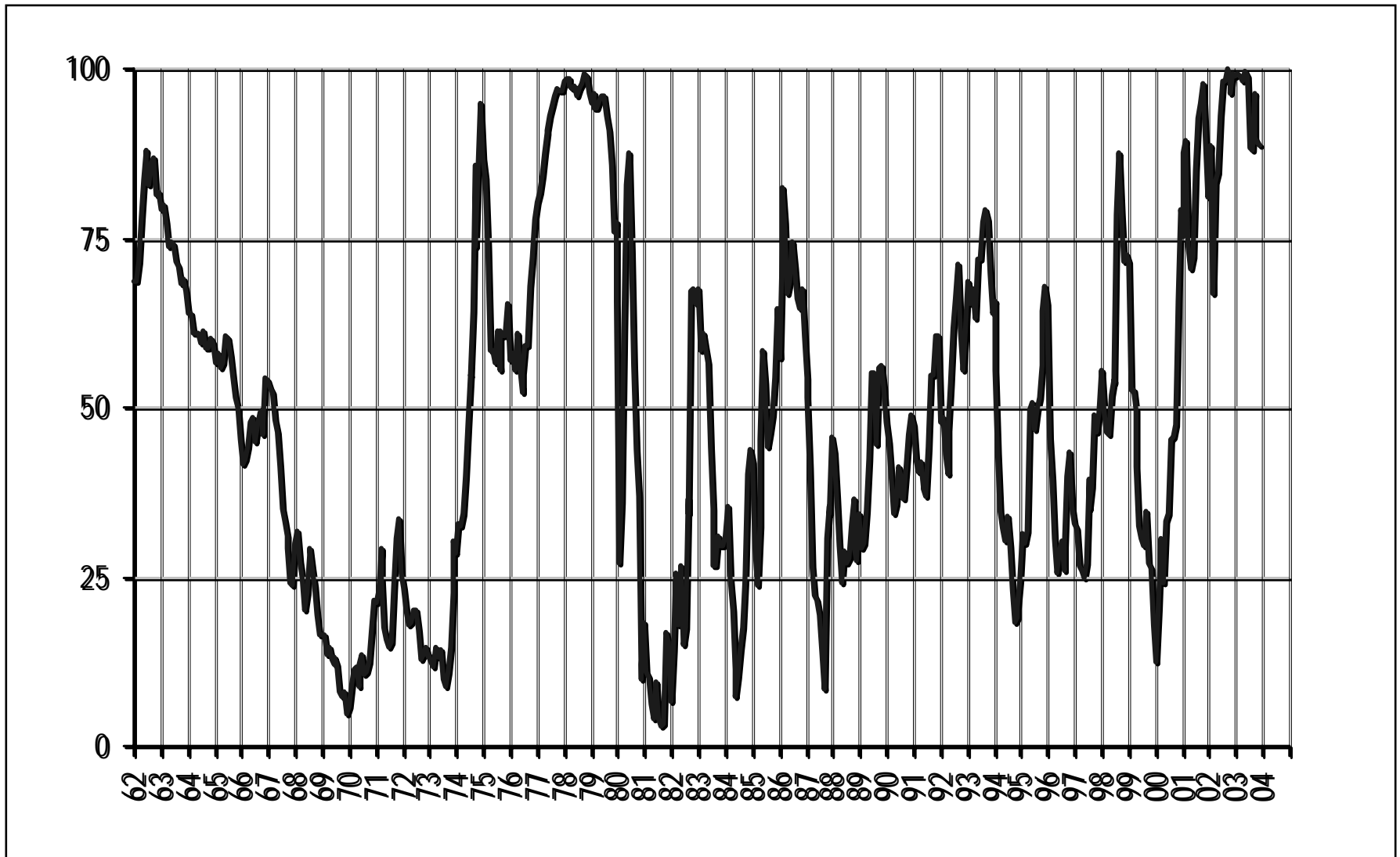
Duration Gap: Stocks vs. Bonds



Risk Premium: Stocks vs. Bonds



Probability: Stocks vs. Bonds



Asset Allocation

- ◆ By examining these respective measures of investor expected return rates, the premium expected return (risk premium) from one instrument versus another is determined.
- ◆ Comparing current relationships with normal average levels and the range about an average, the relative attraction of a given instrument versus another is determined.
- ◆ The probability that any deviation from average is meaningful can then be established by examining the distribution of risk premiums historically. The greater the actual deviation from average (relative to historical standard deviation), the greater the probability.
- ◆ Asset weightings can then be assigned in direct proportion to the probability of one asset outperforming another.
- ◆ More than two assets can be addressed in a similar manner.