UNDERSTANDING
INVESTMENTS

PUBLIC EMPLOYEE RETIREMENT
ADMINISTRATION COMMISSION

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WHAT ARE STOCKS?

When a company wants to raise money to invest in something they think will be profitable, such as a new manufacturing process, more productive capacity, or a new product, they can do it in a number of ways. They can simply borrow the money or they can sell part of the company. The latter is done by selling "stock"in the company. Owners of this stock have voting rights in the company's management. Stocks are also called "equity" since the owners have equity, or part ownership in the company, allowing them to share in a split of the profits from the company. A share of company profits is regularly distributed to shareholders in the form of dividends.

Original owners of a new company will sell stock to friends, associates, or venture capitalists. When a company becomes large enough to need additional funding of usually several hundred million dollars, stock is offered in the public market in an "initial public offering." Subsequently, its value is determined on the open market, on a stock exchange, by whatever one is willing to pay for it. The price of a stock can be affected by exogenous factors or temporary trends but it is typically determined by expectations of profits (or dividends) and by expectations of future growth.

Unlike a bond, which typically represents a legal commitment to repay interest and principal, there is no downside limit to what a stock can be worth if the company's prospects plummet. Dividends could decrease or cease entirely during periods of corporate unprofitability. Thus, stocks have been seen as riskier investments than bonds, but with these greater risks come higher expected returns. According to Ibbotson Associates, blue-chip stocks appreciated an average of 11.2% from 1926-98 while US government bonds returned an average of 5.3% over the same 73-year period. In general, stocks are seen as a wealth building tool due to their capital appreciation potential while bonds are seen as income producing instruments. Stocks, offering the prospects of both capital growth as well as steady and possibly growing income, are seen as the investment vehicle most likely to successfully offer a long-term edge over inflation.

VALUE VS. GROWTH

In the equity market, there are two major styles of investing. Value stocks are those that, considering a company's assets and earnings history, are attractively priced relative to current market standards of price-to-earnings ratios, price-to-book ratios, et al. These companies typically pay regular dividends to shareholders. Growth stocks derive from companies that, due to their strong earnings and revenue potential, offer above average

prospects for capital growth, with less emphasis on dividend income. Over long periods, value and growth stocks have provided similar historical returns, although each has periods when it may dramatically outperform the other. Traditionally, growth funds appeal to investors who will accept more volatility in hopes of greater appreciation or who prefer a higher proportion of the returns to derive from capital gains, which are typically taxed at lower rates than dividend income.

A value investor may be compared to the consumer who patiently waits for a sale before buying, or who thrills at the prospect of discovering a designer original on the clearance rack at Filene's. The skillful manager will not just focus on price for, like holiday fruitcake after Christmas, many companies with low price multiples deserve to be discounted. Successful value managers know how to distinguish the perpetually ugly ducklings from those likely to become swans. Value managers are not averse to companies that are growing; they simply prefer those whose stocks are marked "clearance".

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On the other hand, growth managers are like those shoppers who make a beeline for trendy full-price merchandise, betting that their price will continue to rise. These managers must address the question of "how high is high"? At some point, stocks with high price tags could suddenly plummet if individual companies miss their earnings projections or if investors suddenly conclude that such stocks are too highly valued relative to cheaper alternatives.

In practice, stocks are not always easily categorized as growth or value and there will usually be some overlap in the portfolios of the two styles. What the two styles have in common is that they both seek great companies. Growth managers are not afraid to pay a Tiffany-like price tag for a company they consider a diamond, and they are willing to take a risk that it could turn out to be flawed. Value investors also search for diamonds, but typically cheaper ones where, through patience, their eventual higher values will be realized.

As noted, performance of value and growth stocks typically converge over long periods but growth has dramatically outperformed over the past four years and this trend continued through the first quarter of 1999. For the twelve months ending March 31, 1999, the Growth component of the S&P Index outperformed the Value component by an astonishing margin of 30.7% to 5.7%. There are no universally agreed upon explanations for this, but one plausible one states that growth outperforms value when the overall corporate profits cycle slows. Profits growth peaked in 1995 after companies reaped the benefits of several years of corporate restructuring and an improved economy. As overall earnings growth has become scarcer,

investors have bid up the price and expanded the multiples on those relatively few companies and sectors (such as technology) that are maintaining their growth rates or are expected to demonstrate healthy growth. When overall corporate profits begin to accelerate, growth will become increasingly abundant and value will tend to outperform as investors become comparison shoppers. This is what happened during the second quarter of 1999 as the economic fears that spooked the market during the summer of 1998 faded into memory.

Growth stocks typically do well during periods of low inflation and declining interest rates such as we have enjoyed over the past few years. Reduced costs arising from these trends help companies achieve better earnings and to grow and expand. Also, the present value of future earnings is greater when inflation and interest rates are low. Value stocks are typically concentrated in such cyclical sectors as industrial, basic materials, energy, and financial services and will tend to outperform growth stocks during periods of rapid expansion.

SIZE

Stocks are also categorized in terms of the total value of their outstanding stock, also known as capitalization. Large capitalization stocks are currently loosely defined as those with total market value exceeding $10 billion, mid-caps are between $1.5-10 billion, and small-caps are less than $1.5 billion. Historically, large caps have exhibited lower volatility than mid or small caps.

Over time, small caps have actually outperformed large caps by 1-2% per year, but they have badly lagged in recent years. For the ten years ending 1998, the large-cap oriented S&P 500 Index outperformed the major small cap index 19.2% vs 12.9% in terms of compound annualized return. In terms of comparison versus large caps, 1998 was actually the worst year ever for small caps as indices for this sector actually declined versus robust gains for large cap indices; the differential in return was a startling 31%. Indeed, without the 250 companies with the largest market valuation, stocks overall would have been negative last year. While small cap stock indices showed negative returns for the year, the fifty largest stocks rose 39%. The 415 largest stocks now represent about 77% of the total stock market capitalization at year-end, up from 55% in the early 1980s.

US STOCKS GROUPED BY CAPITALIZATION	1998 TOTAL RETURN
50 Largest Stocks by Capitalization	39.1%
Stocks Ranked 51-200	26.0%
Stocks Ranked 201-500	14.2%
Stocks Ranked 501-1000	3.3%
Stocks Ranked 1001-3000 (Russell 2000)	-2.5%

Large caps benefited last year from the world-wide flight to quality arising from the crises in Asia and Russia. Since they're much more widely followed and actively traded, large caps are much more liquid than small caps. The dominant performance of large caps in recent years is also attributable to the phenomenal growth in index investing, which has

seen billions of dollars chasing the large stocks emphasized by the S&P 500. Also, larger companies are perceived as better able to offer higher and more stable earnings growth than before as a result of corporate restructuring and globalization.

Historically, periods of small cap outperformance tend to coincide with troughs of major recessions. The fact that the economy has not experienced a serious downturn in many years is perhaps one of the reasons for the mediocre performance of small cap stocks this decade. With the recovery in Asia and the apparent bottoming out of the Japanese economy, indications of stronger worldwide growth contributed to small caps (as well as mid-caps) significantly outperforming large caps during the second quarter of 1999.

INDUSTRY SECTORS

Many small investors as well as experienced investment managers have been shaking their heads over the past few years when considering the extent to which large stocks have outperformed small stocks and growth stocks have outperformed value stocks. What is somewhat more easily explained is why different industry groups perform differently. In the economy, there are always some industries or sectors that are doing better than others, or are perceived to have much better prospects. Nevertheless, the differential between top and bottom performers can be huge, perhaps more than seems justified. There is little doubt that we are in an historic era of technological change, but when newly-created Internet-related companies that are years away from even turning a profit are awarded greater market valuations than some of the economy's most established blue-chip companies that have long histories of consistent profitability, one has to wonder to what extent speculative fever is obscuring true value.

Here are some of the best and worst performing sectors in 1998 among industry groups, according to Dow Jones:

Communications Technology	102.3%
Entertainment	90.3%
Computers	80.4%
Software	79.0%
Drug Retailers	68.3%
Aerospace & Defense	-18.5%
Lodging	-24.3%
Real Estate	-26.2%
Heavy Machinery	-31.3%
Oil Drilling	-58.9%

With the changed economic scenario with regard to economic growth, the second quarter of 1999 saw a dramatically different list of winners and losers:

Aluminum	+45.2%
Industrial Technology	+38.2%
Heavy Construction	+26.6%
Heavy Machinery	+25.8%
Drug Retailers	-8.1%
Restaurants	-8.7%
Savings & Loan	-9.0%
Consumer Services	-17.3%
Cosmetics	-21.9%

VALUATION

In many ways, the valuation of a stock is an art not a science. As noted above, shares are worth whatever someone is willing to pay for them, whether or not that price conforms with what professional investors perceive its intrinsic value to be. In theory, a share of stock is supposed to be worth the present value of all future cash flows expected from the investment. Yet, there are a number of widely accepted methods that are also used in the valuation of stock.

The most common way to value a company is to use its earnings. The Price/Earnings ratio, sometimes referred to as the multiple, is the stock price divided by the company's net income or profit per share over the past twelve months. For example, if the stock of the Martin Corporation was selling at $30 and it had earned $2 per share over the past year, its P/E would be 15.

Other yardsticks employed include:

Price/Sales Ratio - A measure of the company's ability to generate revenue.

Cash Flow - A way to focus on the operating business and exclude secondary items like interest, taxes, depreciation, and amortization

Price to Book Ratio - Comparing the stock price to the company's actual, liquidation value, using both its tangible and intangible assets

Return on Equity - Assessing a company's earning power relative to shareholder's equity (liquid assets and retained earnings)

Dividend Yield - Comparing a company's dividend payout to its stock price is a criteria used by income-oriented investors

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Overall, however, the Price to Earnings ratio is the most accepted criteria for stock valuation. P/E ratios have never been higher than they are now, although they are far from uniform. P/Es are extraordinarily high for high-flying technology and Internet-related companies but they are at or below historical averages for a number of out-of-favor sectors such as machinery or commodity (i.e., oil) based industries. The fifty largest stocks in the S&P 500 had price-to-earnings ratios of 43 at year-end while the 50 smallest stocks in the index had P/Es averaging 25. Not only are valuations higher for large cap stocks, such as those represented by the S&P 500, than for small cap stocks, but , even among small caps, the larger companies in this category are more highly valued than the smaller ones. By a breathtaking margin, valuations for growth stocks far exceed those of value stocks.

Price to earnings ratios on the S&P 500, which averaged 10 in the late 1980s and were less than 15 as late as 1995, have recently been above 30, an unprecedented level. Over the

four years ending in 1998, the rise in the S&P 500 was over four times greater than the rise in corporate earnings over that period. The doubling of P/E ratios over this period explained almost 80% of the surge in equity values.

Thus, while many argue from historical perspectives that many sectors of the market, if not the market itself, are substantially overvalued and due for a correction, others argue that the old yardsticks of valuation no longer apply in the current environment where the traditional business cycle no longer seems relevant, the world is more interdependent than ever, inflation and interest rates are historically low, corporate managers are more aggressive than ever at controlling costs, and technological changes of historic proportions are radically improving productivity and efficiency.

The beauty and challenge of stock investing is that it is an art not a science. The same stock may be simultaneously deemed overvalued, fairly valued, or undervalued according to criteria employed by different analysts. One thing is for sure. Market trends will change as will the conventional valuation levels. But a stock will always be worth whatever someone is willing to pay for it

PERFORMANCE MEASUREMENT

1998 was another banner year for stock market returns. Or was it? The fact is that if one wasn't invested in the right size stocks, the right type, or the right sector, then 1998 may not have been a happy year at all for stock investors. Beyond the flashy returns heralded by certain widely-followed indices, the fact is that the majority of US stocks actually lost value in 1998. Losers outnumbered winners on the New York Stock Exchange. More than 40% of the S&P 500's stocks fell. Even on the high flying technology-laden NASDAQ, twice as many stocks declined as rose.

Indicating the extent to which last year's gains were highly concentrated in large technology growth stocks, about one fifth of last year's 28% gain in the S&P 500 was accounted for by four such stocks: Microsoft, Intel, Cisco, and Dell. 85% of the index's return was accounted for by only 50 of the 500 stocks in the index.

These trends continued with a vengeance as 1999 began. The 4.98% gain in the S&P 500 during the first quarter can be attributed to just 18 of the 500 stocks, and two stocks (Microsoft and America Online) represented one third of the gain. More than half the stocks in the Index actually declined during the quarter. Three of the thirty stocks in the Dow Jones Industrial Average constituted more than half that index's 7.04% advance. Even more telling, two thirds of the stocks on the NASDAQ exchange were down during the quarter despite the composite index's 12.3% gain.

Although the second quarter of 1999 showed at least a temporary reversal of this trend, the fact that stock returns have been so dispersed and gains have been so narrowly concentrated in recent years makes it exceedingly important that the mandate of equity investment managers is clear and unambiguous. It is equally clear that returns must be monitored relative to appropriate benchmarks and that the subtleties and quirks of each benchmark are well understood.

Here are a number of major benchmark indices and their returns for 1998 and the first half of 1999.

INDEX	1998	1H99
Dow Jones Industrial Average	16.1%	20.5%
Standard & Poor's 500	28.6%	12.4%
NASDAQ Composite	39.6%	22.5%
Russell 2000 (Small Caps)	-2.5%	+9.3%
Russell Mid-Cap	10.1%	10.3%
Wilshire 5000 (Total Market Proxy)	23.5%	11.9%

The above numbers vividly illustrate the challenges of accurately gauging equity performance today. Struggling to retain its credibility in the market is the Dow Jones Industrial Average, which tracks thirty large industrial companies chosen according to no specific criteria by the editors of *The Wall Street Journal*. By contrast, the Standard & Poor's 500 is a broad-based market index comprising about 75% of the total market value of publicly traded US equities. It is appropriate for portfolios consisting of a combination of large growth and value stocks. According to S&P, the Index strives to reflect the US stock market by including "leading companies in leading industries".The NASDAQ composite is also a broad-based index tracking performance of the more than five thousand companies, including many of today's leading growth companies, that trade on this electronic exchange for over-the-counter trading.

The Dow is a price-weighted index, where a stock priced at $100 has twice the weight of one priced at $50, even if the latter has a much larger total market capitalization. The S&P's weighting by market cap is more consistent with how many important economic indices are calculated. The NASDAQ composite is also market-weighted.

From 1926 through about 1965, the Dow and the S&P tracked each other closely since industrial companies used to be the bellweather stocks in the economy. The Dow began to lose its relevance in the 1960s when service-based companies began to dominate the economy. Now in the 90s, the Dow more than ever seems to represent the "old economy" while the S&P tracks the real economy and the technology-laden NASDAQ tracks the most dynamic companies of the "new economy". The S&P is itself becoming increasingly reflective of the "new economy"; stocks in the health care, technology, telecommunications, financial services, and consumer services industries now constitute about three quarters of the index, up from 60% in 1994, while "old economy" industries such as energy, basic materials, transportation, utilities, and industrials now account for 16% of the index, down from almost 30% in 1994.

If the Dow had continued to track the S&P in the same ratio it did from 1926-65, it would have been around 15,100 instead of the 10,971 it was on July 1.

THE STOCK MARKET: LOOKING AHEAD

What is the greatest threat to America's

economic health? Is it Asia? Latin America? Russia? Y2K problems? Tighter money? Uncertainty over the 2000 elections?All these are factors that cannot and should not be overlooked, but in the view of many, the greatest threat to the economy is the US stock market, which has risen to such an extent over the past several years that it represents a "bubble" ready to burst. Our economy has been the best performing among the major nations of the world in terms of its impressive growth and low inflation, but much of the growth has been consumer driven, aided in part by the "wealth effect" of sharply rising equity values. If and when the market declines significantly over an extended period of time, the downward effect on consumer spending could be significant enough to cause a meaningful economic downturn.

After an unprecedented fourth consecutive year of returns on the Standard & Poor's 500 in excess of 20%, it's not difficult to argue that stocks are now overvalued and, at the least, are due for a period of more modest returns.

After an unprecedented fourth consecutive year of returns on the Standard & Poor's 500 in excess of 20%, it's not difficult to argue that stocks are now overvalued and, at the least, are due for a period of more modest returns. First of all, if one considers the overall capitalization of the stock market compared to Gross Domestic Product, stocks now represent an unprecedented 140% of GDP. This ratio was only 80% as recently as 1995 and was in the range of 40% from 1975-85.

There are four distinct economic or market trends that have propelled the market to its impressive bull run of recent years and all these trends may have run their course:

1. Disinflation. Inflation, as high as 5-6% during 1991, fell to about 1% and seems to have bottomed

2. Interest rates. Long Treasury yields fell from 8% in 1995 to 5% at the end of 1998 and have risen back to 6%. In the absence of a clear economic slowdown, we are unlikely to see 1998's lows again.

3. Profitability. US corporations have become "lean and mean" and corporate profit margins have risen from around 4% to about 6%. The expansion of margins and of overall profits has stalled in recent years, however.

4. Valuations. Price to earnings ratios on the S&P 500 have never been higher. As one pundit noted, at these lofty valuations, investors are discounting not only future earnings but those of the hereafter as well.

If today's high P/E ratios persist but don't increase, future stock market returns will approximate the rate of earnings growth, which has been at single digits at best in recent years. The great risk to the market is what would happen if investors suddenly determine that future profit growth has been vastly over-estimated and P/Es suffer a sharp decline to more typical historical levels.

There are also a number of quantitative

models that assess the valuation of the stock market. Morgan Stanley Dean Witter has a dividend discount model that recently portrayed the S&P 500 as more than 30% overvalued. Fed Chairman Greenspan is known to employ a model that shows a strong correlation between the expected operating earnings yield on the S&P 500 and the yield on the 10-year US Treasury bond. As of early July, this model also showed the market to be more than 30% overvalued. When overvaluations persist, the possible remedies are 1) interest rates falling, 2) earnings expectations increasing, or 3) stock prices falling. Prior to last summer's market decline, the model had indicated a 25% overvaluation.

Chairman Greenspan explicitly raised the spectre of risk in today's market when he asserted in his February 23, 1999, economic report to Congress that "Equity prices are high enough to raise questions about whether shares are overvalued. Investors appear to have incorporated into equity prices both robust profit expectations and low compensation for risk". He added that disappointments on either score could 'damp appetites for equities", which he warned could have a negative effect on the economy when the "wealth effect" has a reverse pull.

Noted market historian Prof. Jeremy Siegel of the Wharton School has compiled data on equity returns spanning the last two centuries. He displays a strong trend line over almost 200 years showing equity returns averaging 6.8% per year after inflation. Returns had been below trend for almost 20 years through the early 1990s but are now seen well above trend.

On the other hand, despite these compelling historic and academic arguments for overvaluation, there is the unmistakable law of supply and demand to be considered. Very simply, the baby boomers and other investors have seized upon the stock market as the source of their retirement security. The ratio of equities to household portfolios, as low as 25% in 1985 and 40% as late as 1995, is now a record high 55%. Mutual fund investors have allocated 56% of their assets to equities, up from 25% in 1990.

Economist John Maynard Keynes once said that the critical determinant of the stock market is not the business cycle but the psychological cycle. If investors continue to ignore valuations and treat stocks like commodities, then a continued upward bias cannot be ruled out. With the proliferation of financial market information in print, on the Internet, and on cable television, the market has captured the public's imagination as never before and the business of investing has entered a brave new world, fraught with opportunity and risk.

Furthermore, there are those who say that the old yardsticks of valuation simply no longer apply. The economic expansion has already confounded expectations by going on longer than any previous one. World economies are more interdependent than ever before. Inflation is historically low and shows scant sign of any upward pressure. US corporate managers have become increasingly skillful at controlling costs and managing inventories and productive capacity. We are in the midst of an historic era of technological change that is

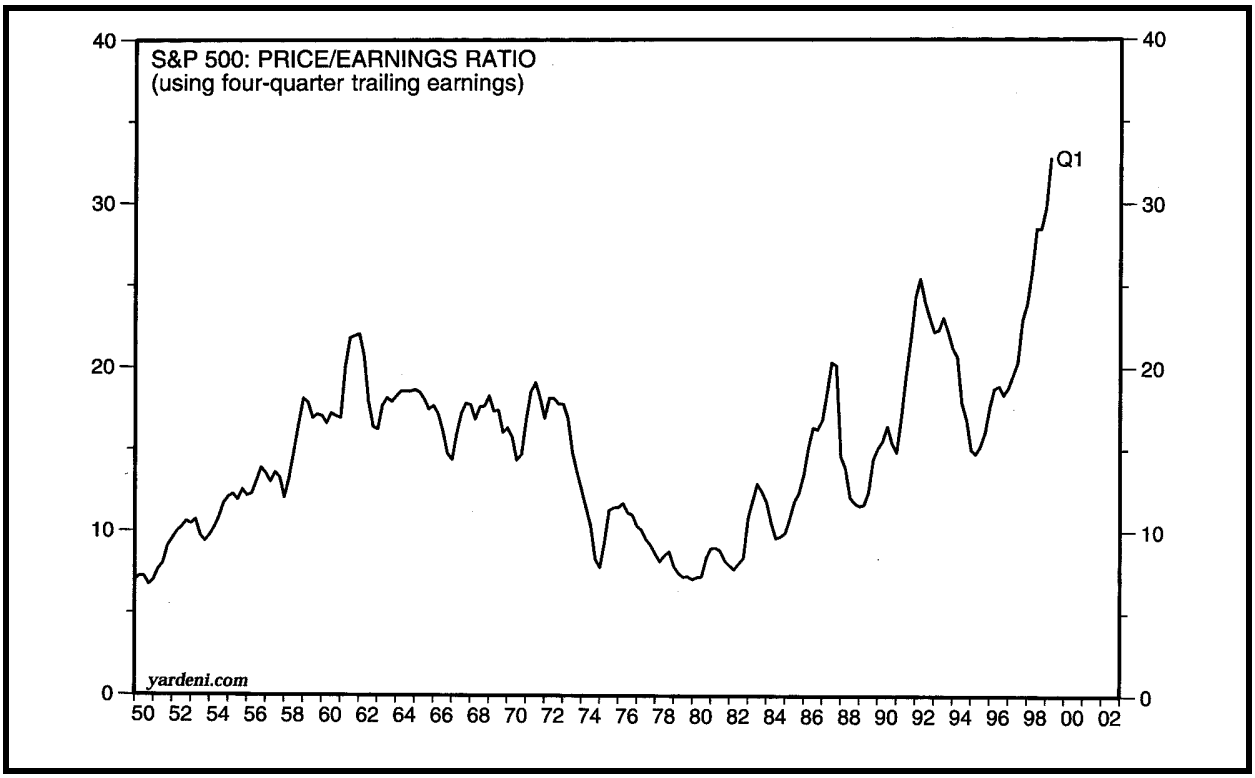
radically improving productivity and efficiency. In light of these trends, perhaps today's valuations will prove correct in anticipating a period of very impressive profit growth.

Market bulls assert further that stock valuations should be higher when inflation and interest rates are as low as they are now. During periods such as these, the chief attributes of stocks—their potential for long-term growth in income and capital—are seen as more valuable than when inflation and rates are high. When interest rates are low, the discounting mechanism results in a higher present value assigned to future earnings and dividends. Also, investors—rightly or wrongly—appear to have reduced their traditional risk premium attached to stocks in light of the absence of normal business cycle pressures on growth and profits over the past several years.

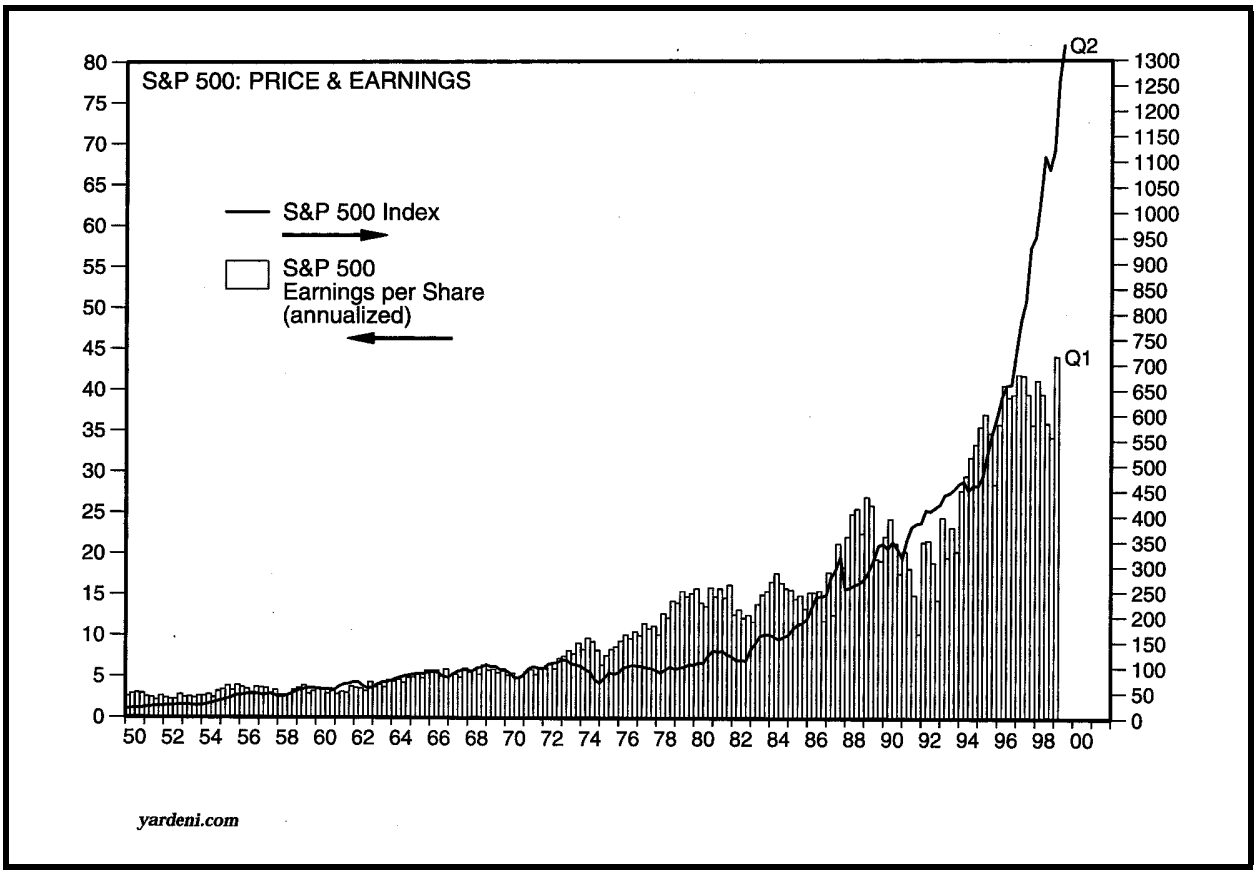
One thing we know for sure is that the stock market has never been more important to our economy. It used to react to events in the bond market and to economic trends. Now it is itself a major factor affecting interest rate movements and plays a crucial role in determining economic growth. Fed Chairman Greenspan's monetary easings of last year were widely seen as an effort to forestall a stock market collapse of major proportions, mindful of the serious effect this would have on consumer spending given the market's unprecedented dominant position in household wealth levels and its captivating hold on investor psychology.

Investors may well find that the above-trend stock market returns of the past few years cannot be sustained over the next few years. On the other hand, the landscape is strewn with economists and market strategists whose obsession with the past has caused them to miss out on the historic rally of the last few years. Are we in the midst of a unique period of economic nirvana where the old rules no longer apply or are we about to confront the rubble of a market bubble that bursts? Only time will tell.

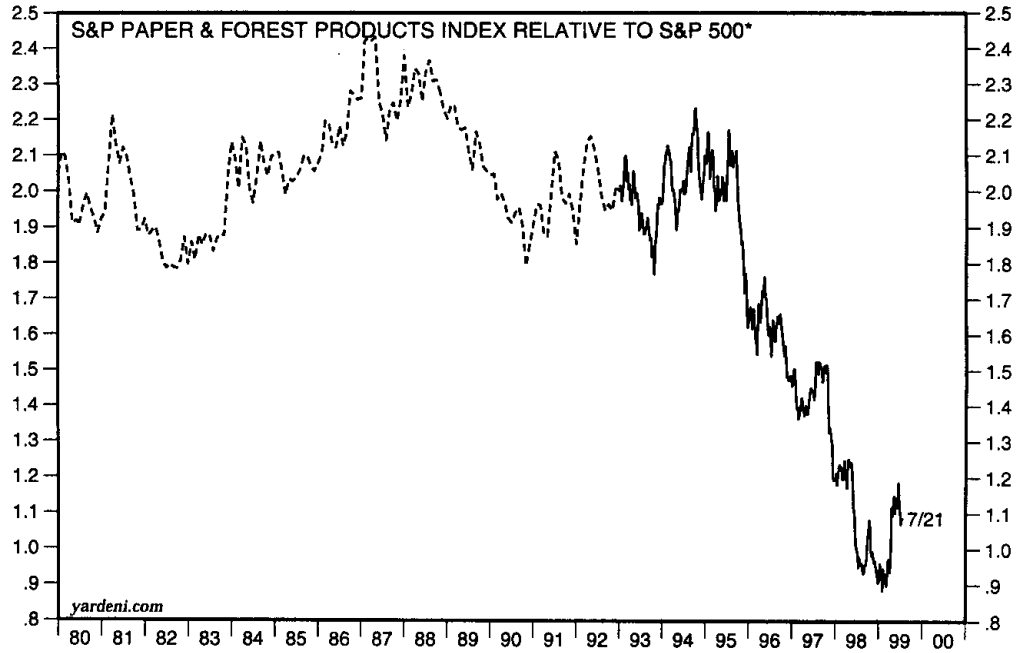
STOCK PRICES ARE AT AN ALL-TIME HIGH RELATIVE TO EARNINGS



STOCK PRICES HAVE FAR OUTPACED EARNINGS GROWTH



SECTORS LAGGING THE MARKET



* Currently includes Boise Cascade, Champion International, Georgia-Pacific, International Paper, Louisiana-Pacific, Mead, Potlatch, Westvaco, Weyerhaeuser, Willamette Industries.
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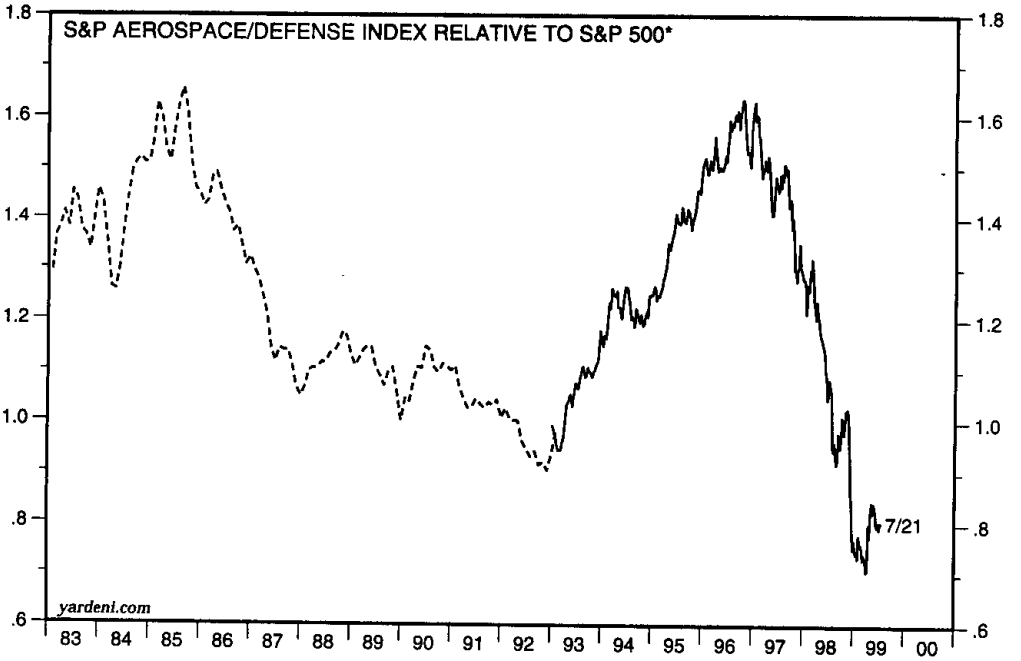

* Currently includes Boeing, General Dynamics, Lockheed Martin, Northrop Grumman.
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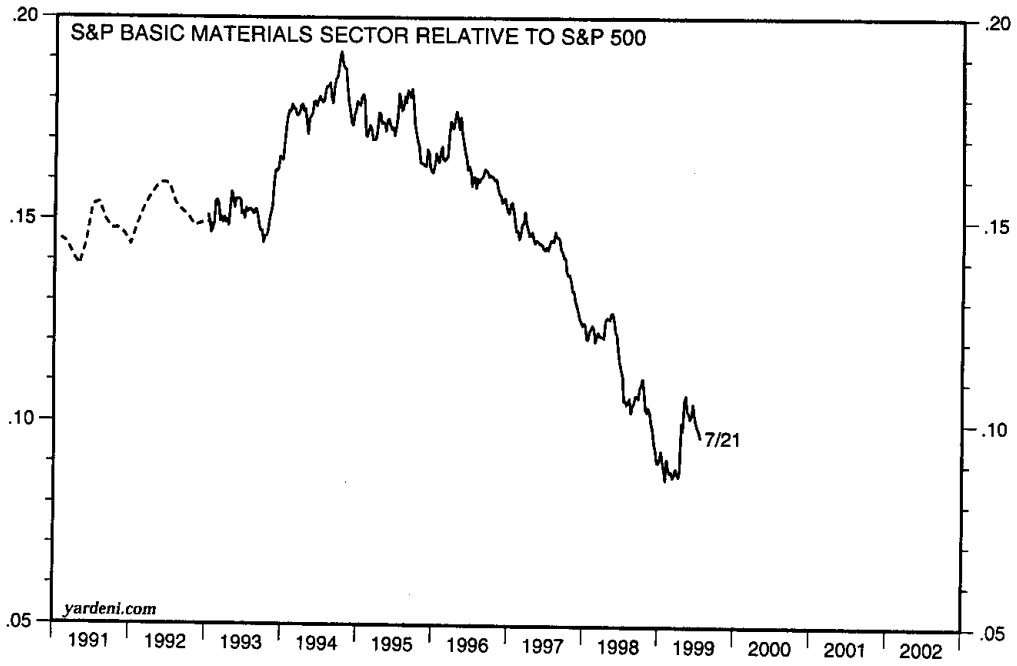

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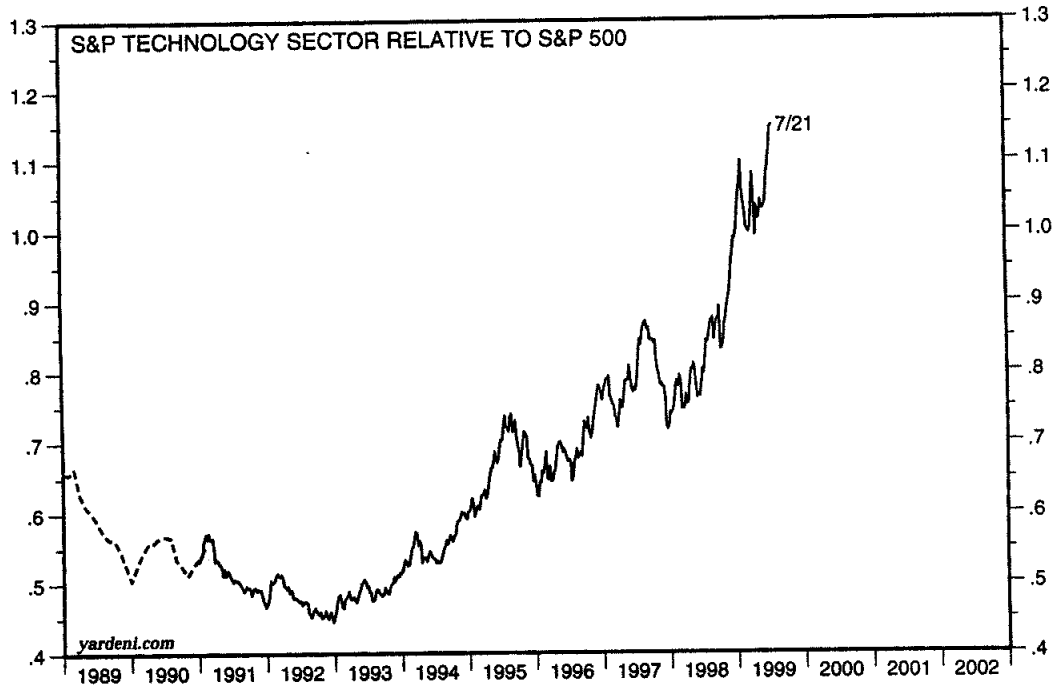
SECTORS OUTPERFORMING THE MARKET



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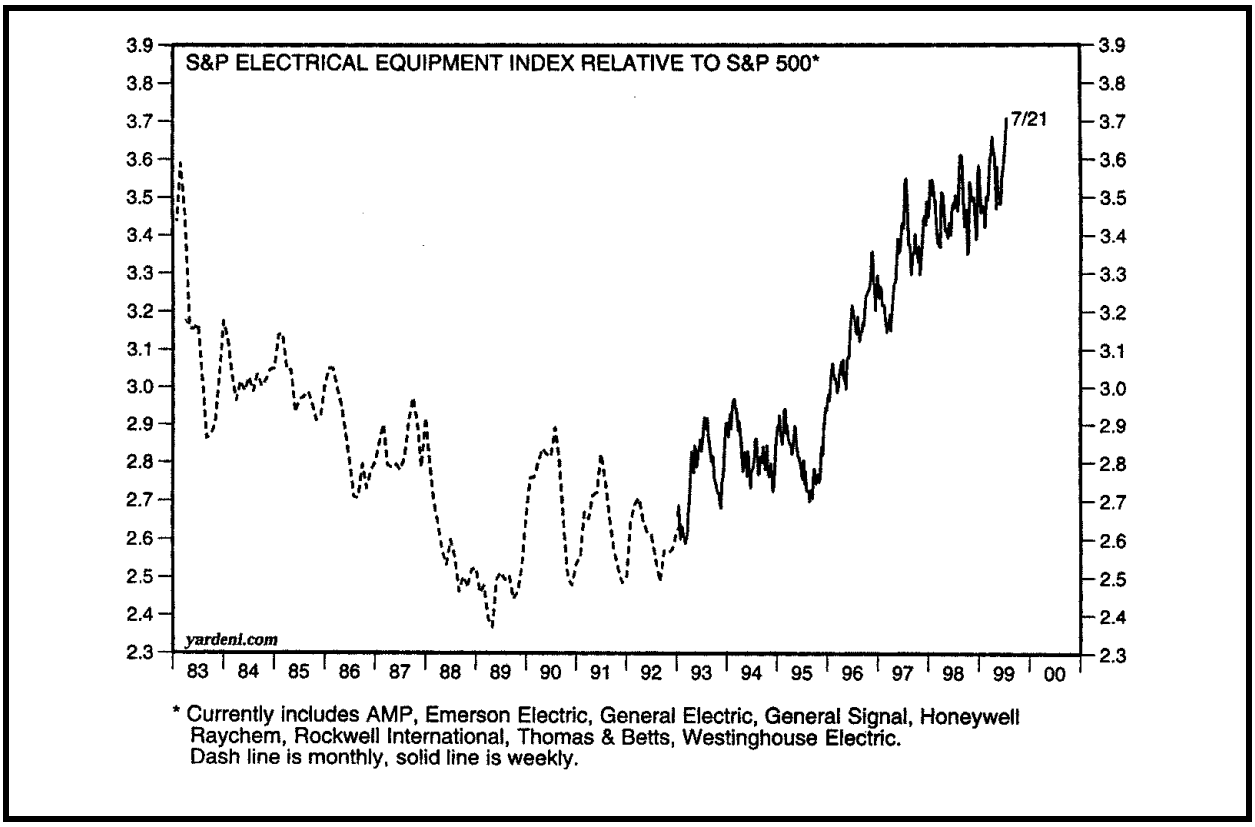
SECTORS OUTPERFORMING THE MARKET



* Currently includes AMP, Emerson Electric, General Electric, General Signal, Honeywell Raychem, Rockwell International, Thomas & Betts, Westinghouse Electric.
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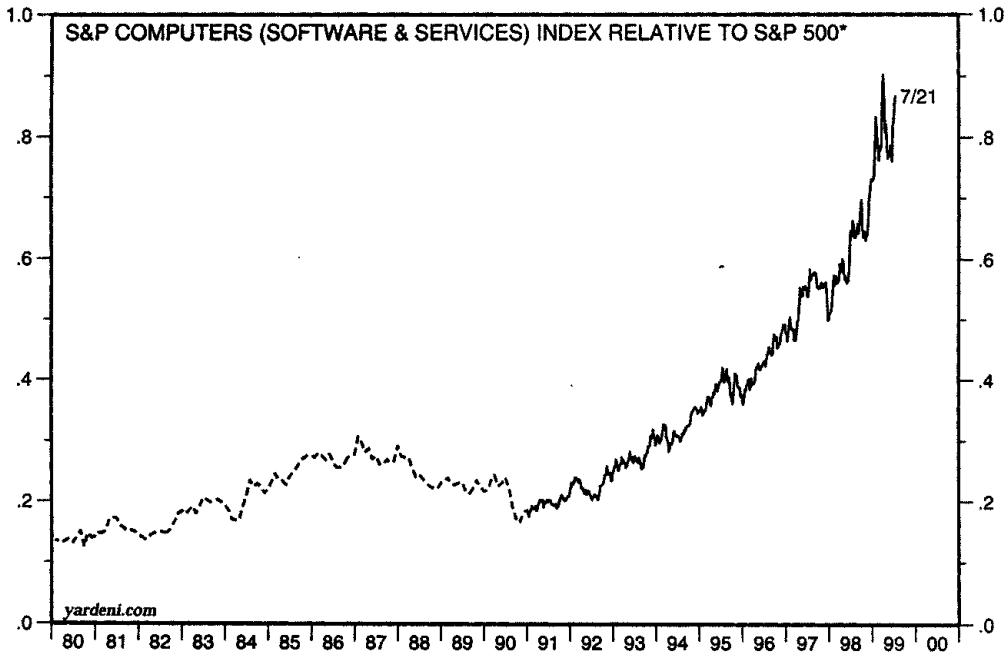
SECTORS OUTPERFORMING THE MARKET



* Currently includes Adobe Systems, Autodesk, Computer Associates Int'l, Computer Sciences, Microsoft, Novell, Oracle, Parametric Technolgy, UNISYS.
Dash line is monthly, solid line is weekly data.

2. The Fixed Income Market

A bond is a debt security, similar to an IOU, in which the purchaser is lending money to a government, municipality, corporation, or other entity. The issuer promises to pay a specified rate of interest during the life of the bond and to repay the face value when it matures, or comes due. Because bonds typically have a predictable stream of interest payments and repayment of principal, they have traditionally been seen as ways for investors to preserve and increase their capital and to receive dependable interest income.

Among the key investment considerations for bonds are:

1. MATURITY

The specific date on which the investors' principal is due to be repaid. Maturity ranges are typically characterized as short-term (up to 4 years), medium-term (5-12 years), and long-term (12 to 30 or more years).

2. REDEMPTION

Call Provisions: The issuer is allowed—or sometimes required—to repay the principal at specified dates prior to maturity.

Put: The investor has the option of requiring the issuer to repurchase the bonds at a specified date prior to maturity.

Average Life: In some cases, investors will receive their money back at some uncertain time before (or possibly after) the stated maturity due to cash flow considerations of the issuer; i.e., the effect of mortgage prepayments on mortgage-backed bonds.

3. CREDIT QUALITY

Bond choices range from the highest credit quality (US Treasury securities) to bonds that are below investment grade and considered speculative. The four major bond rating agencies are Moody's Investors Service, Standard & Poor's Corp., Fitch IBCA, and Duff & Phelps. Bonds rated Aaa, Aa, A, or Baa(BBB) are considered investment grade while those rated Ba(BB) or below are considered below investment grade. The lower the bond rating, the higher the interest rate on the security to compensate for the credit risk.

4. INTEREST RATE

Bonds pay interest rates that can be fixed (most are), floating (adjusted periodically to prevailing market rates), or payable at maturity (zero-coupon bonds).

5. PRICE

Newly issued bonds typically sell at or close to their face value, but in the secondary market, their price fluctuates in response to changing interest rates as well as factors affecting supply and demand, credit quality, maturity, and tax status. Bonds will trade at either a premium

(above face value) or at a discount (below face value).

6. YIELD

Unless an investor purchases a bond at original issuance, the effective yield on the instrument will differ from the initial interest rate. **Current yield** is derived by dividing the bond's interest rate by its purchase price. **Yield to maturity,** or **yield to call,** measures the total return received by holding the bond until it matures or is called, taking into account all interest payments as well as the differential between the bond's face value and the purchase price.

Among the important concepts to understand about bonds is the link between **price and yield.** When prevailing interest rates rise, prices of outstanding bonds fall to bring the yield of older bonds into line with higher yielding new issues. Similarly, when prevailing interest rates fall, prices of outstanding bonds rise, until the yield of older bonds is low enough to match the lower interest rate on new issues.

An individual bond's market value will be determined by its maturity, credit quality, and other characteristics, but the factor that historically is the most crucial to overall interest rate levels is current and anticipated inflation levels.

The link between **interest rates and maturity** is also crucial. Changes in interest rates don't affect all bonds equally. The longer it takes a bond to mature, the greater the risk that prices will fluctuate along the way and that the fluctuations will be greater. Investors expect to be compensated for taking the extra risk. A "normal yield curve" for a particular issuer will show yields progressing higher from short to intermediate to long-term maturities. Depending on the market's sentiment about the future course of the economy, yield curves can also be "steep", "flat", or "inverted".

As noted, the longer until a bond becomes due, the more it will fluctuate in value according to changes in interest rate levels. In assessing this risk, it is important to understand the crucial distinction between a bond's maturity date and its **"duration",** a far better gauge of price volatility. Duration measures the weighted stream of cash flows, usually semiannual interest payments, through the life of the bond, while maturity merely states when the principal is to be repaid. The more a bond's total cash flows consist of coupon payments over the life of the bond, the shorter its duration. Thus, bonds with the same maturity can have different durations—and thus different levels of exposure to market risk.

For example, the US Treasury's 5.25% bond due November 2028 has a duration of about 15 years, meaning that its price will move up or down about 15% for each percentage point move in interest rates. However, a Treasury zero coupon bond maturing at the same time—a bond sold at a deep discount that pays no interest over its life—has a duration of 29 years, meaning that a percentage point move in rates will move its price by more than 25%.

The key to bond investing is to successfully balance yield and risk. An investor who buys a bond with a higher than market level yield is usually taking on extra risk in terms of either a long maturity, lower credit quality, or poor call protection. The longer the maturity, the greater the market risk if interest rates rise. The lower the credit quality, the greater the market risk not only from individual security loss but from an overall widening of credit spreads arising from an economic downturn. Poor call protection risks not only loss of coupon income but also poor price performance during periods of falling interest rates.

An individual bond's market value will be determined by its maturity, credit quality, and other characteristics, but the factor that historically is the most crucial to overall interest rate levels is current and anticipated inflation levels. Investors thrive on steady, sustainable growth rates. The spectre of rising inflation is why the bond market typically falls (prices decline, interest rates rise) when the government releases unexpectedly strong economic news. Similarly, the bond market typically acts euphorically (prices rise, interest rates fall) when economic reports hint of a coming slowdown or recession.

MARKET SEGMENTS

The US bond market is a huge market, consisting of at least six major segments in addition to money market funds. Bonds are actively traded, with most of it done on the over-the-counter (OTC) market that comprises hundreds of securities firms and banks that trade bonds by phone or electronically. Some corporate bonds are listed on the New York Stock Exchange.

U.S. TREASURY SECURITIES

$3.3 trillion outstanding

Sold in periodic auctions by the government, Treasuries are the largest, highest quality, and most liquid of all bond markets. Most are issued as non-callable. The most recently issued 30-year security is termed the "long bond" and is used as a benchmark for the entire long-term bond market. As the US government has gone from chronic deficits to surpluses in recent years, the supply of Treasuries has begun to diminish. In fact, the ratio of total Treasury debt to Gross Domestic Product, which peaked at 35% in 1995, has now fallen to 25%.

FEDERAL AGENCY DEBT

$1.1 trillion outstanding

Fannie Mae, Ginnie Mae, the Federal Home Loan Bank, and the Student Loan Marketing Association are among the agencies that issue bonds at slightly higher yields than pure Treasuries.

CORPORATE DEBT

$2.4 trillion outstanding

As are stocks, corporate bonds are generally classified in several sectors, including telephones, utilities, industrial, finance, and banks. Most corporate bonds are debentures, or unsecured obligations backed by the issuer's general credit and its capacity to repay debt service out of earnings. Public utilities are the primary issuer of mortgage bonds, where real estate or other physical property worth more than the bonds has been pledged as collateral. Although bondholder protections have increased in recent years, corporates are also subject to event risk; when management has

tried to boost shareholder value by undertaking leveraged buyouts, restructurings, mergers, and recapitalization, the new layer of debt can suddenly push bond values down significantly.

Investment grade corporate bonds typically trade 50-150 basis points above US Treasuries, but bonds rated below investment grade trade in a market of their own.

High Yield or **junk bonds** are issued by newer or startup companies, those in a particularly competitive or volatile market, and those whose overall business or financial condition is relatively weak or risky. These bonds typically yield from 300-700 basis points higher than US Treasuries of comparable maturity. Because they are so credit sensitive, they react less to general interest rate trends than do investment grade bonds. Indeed, their trading patterns often mirror the equity market. Given their generous yield advantage over Treasuries, a well diversified portfolio of junk bonds is likely to provide attractive returns compared to higher grade portfolios over time. The risks are in investing in the sector when it is trading at relatively narrow spreads to high grades and in investing in individual companies or sectors just before their descent into junk bond status or whose business conditions deteriorate even further. Defaults and bankruptcies in this sector are not uncommon. In fact, reported default rates for this sector are as high as 3%.

MORTGAGE-BACKED SECURITIES

$2 trillion outstanding

Mortgage securities represent an ownership interest in mortgage loans made by financial institutions to finance the borrower's purchase of a home or other real estate. These loans are "pooled" by issuers or servicers for sale to investors. As the underlying mortgage loans are paid off, investors receive their payments of interest and principal. The most basic securities are known as "pass-throughs" or participation certificates, representing a direct ownership interest in a pool of mortgages. These securities may be pooled again to create collateral for more complex types of securities known as Collateralized Mortgage Obligations or Real Estate Mortgage Investment Conduits. CMOs and REMICs both allow cash flows to be directed so that different classes of securities with different maturities and coupons can be created. Most mortgage securities are issued and/or guaranteed by GNMA (Ginnie Mae), a government-owned corporation, or by FNMA (Fannie Mae) or the Federal Home Loan Mortgage Corporation (Freddie Mac), both US-chartered but privately held corporations.

Because the timing and speed of principal payments may vary according to economic and interest rate conditions, the cash flow on mortgage securities is irregular. Accordingly, these securities are sold and traded in terms of "average life" rather than their maturity dates. The average life is the average amount of time that will elapse from the date of security purchase until the principal is repaid based on an assumed prepayment forecast. Professional mortgage bond investors employ complex computer modeling in efforts to predict prepayment flows of individual mortgage pools.

Mortgage securities carry higher coupon rates than Treasuries not only to reflect the

rates on underlying mortgage loans which are always higher than governments but also to compensate investors for the level of investment risk they are assuming in the context of prepayment risk. Because of the difficulty of predicting the precise return from a mortgage loan pool, mortgage securities usually offer attractive yield advantages not only relative to Treasuries but also in relation to other securities of comparable quality.

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ASSET-BACKED SECURITIES

$600 billion outstanding

One of the fastest segments of the bond market consists of the securitization of several types of pooled consumer and business loans. Among the most prominent issues in this sector are bonds backed by repayment of home equity loans, auto loans, credit card receivables, student loans, equipment loans, and manufactured housing. As in mortgage and corporate bonds, the yield advantage of these various types of bonds over Treasuries will vary according to investors' perceptions of the economic factors that may affect their security as well as temporary aspects of supply and demand that may affect market valuation.

MUNICIPAL BONDS

$1.4 trillion outstanding

The debt of states, cities, counties, and various enterprise authorities is a large and well established market. Since nearly all the bonds in this sector have relatively low yields reflecting their tax-exempt status, they are not typically used by pension funds.

THE BOND MARKET TODAY

An accompanying table shows market offerings in major bond market sectors, and in different ranges of credit quality and maturity, as of July 15, 1999.

Also included is a table showing the sensitivity of total returns in the US Treasury market to changes in interest rates. It shows that an investor purchasing the actively traded 30-year Treasury bond on July 1, 1999 would enjoy a total return of 21.2% (15.2% capital appreciation, 6.0% income) if the market interest rates on those bonds declined to 5.0% on July 1, 2000 and would suffer a loss of –6.3% (12.3% capital loss, 6.0% income) if rates were to rise to 7.0%. The corresponding gain and loss would be 40.1% and -16.4% if rates were to decline to 4.0% or rise to 8.0% over that period. The chart illustrates the fact that bond values are affected by changing interest rates and that the magnitude of such changes is a function of maturity with the shortest maturities exhibiting the least potential fluctuation.

U.S. TREASURY MARKET

SENSITIVITY OF TOTAL RETURNS TO INTEREST RATE CHANGES
ONE YEAR HORIZON

	INTEREST RATE CHANGE				
MATURITY	-2%	-1%	0	+1%	+2%
2-YEAR	7.5%	6.5%	5.6%	4.6%	3.7%
5-YEAR	13.1%	9.3%	5.7%	2.2 %	**-1.1%**
10-YEAR	20.9%	13.0%	5.8%	**-0.8%**	**-6.9%**
30-YEAR	40.1%	21.2%	6.0%	**-6.3%**	**-16.4%**

TOTAL RETURN IS INCOME PLUS CHANGE IN VALUE
MARKET YIELDS ON JULY 2, 1999

FIXED INCOME MARKET YIELDS

July 15, 1999

U.S. TREASURY SECURITIES

MATURITY	YIELD
2 Years	5.52%
5 Years	5.58%
10 Years	5.69%
30 Years	5.89%

MORTGAGE-BACKED SECURITIES

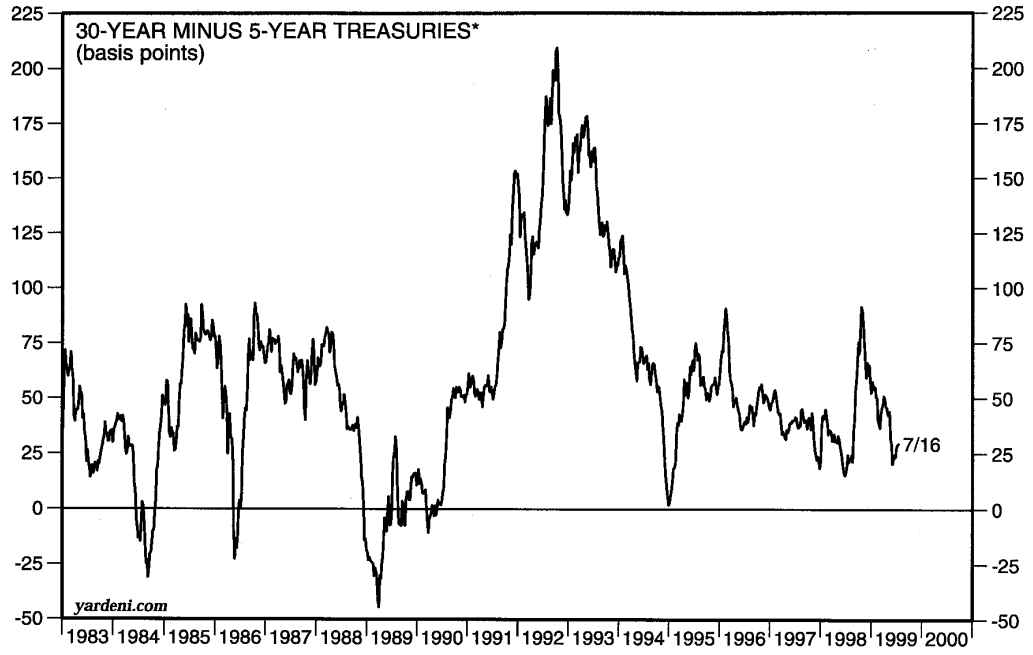
ISSUER	COUPON	AVG. LIFE	YIELD TO MATURITY
GNMA (1997) 30-year	8.00%	5 years	7.72%
FNMA (1997) 30 year	7.00%	6.4 years	7.18%
FHLMC (1997) 15 year	6.50%	4.8 years	6.83%

CORPORATE BONDS

ISSUER	RATING	COUPON	MATURITY	YIELD TO MATURITY
Bell Atlantic NJ	AAA	5.875%	2004	6.31%
Johnson & Johnson	AAA	6.73%	2023	6.82%
AT&T Corp	AA	7.75%	2007	6.60%
Procter & Gamble	AA	6.45%	2026	7.06%
Merrill Lynch & Co.	A	7.375%	2006	6.66%
Coca Cola	A	6.75%	2023	7.19%
Marriott Int'l	BAA	7.125%	2007	7.61%
Ralston Purina	BAA	7.875%	2025	7.56%

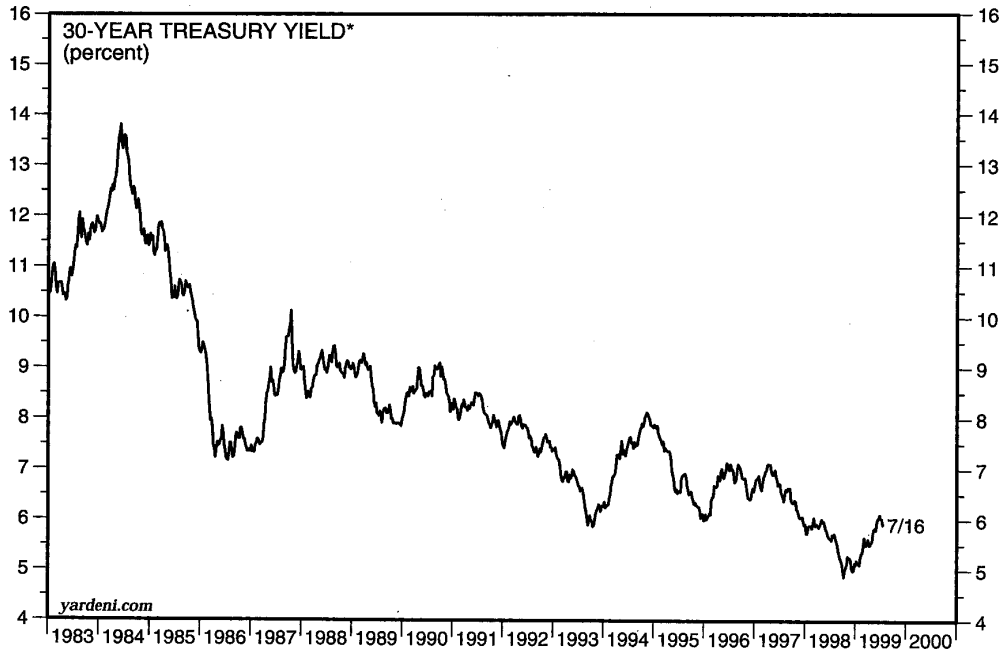
HIGH-YIELD "JUNK" BONDS	
Merrill Lynch Composite Index	10.25%

THE YIELD CURVE HAS FLATTENED



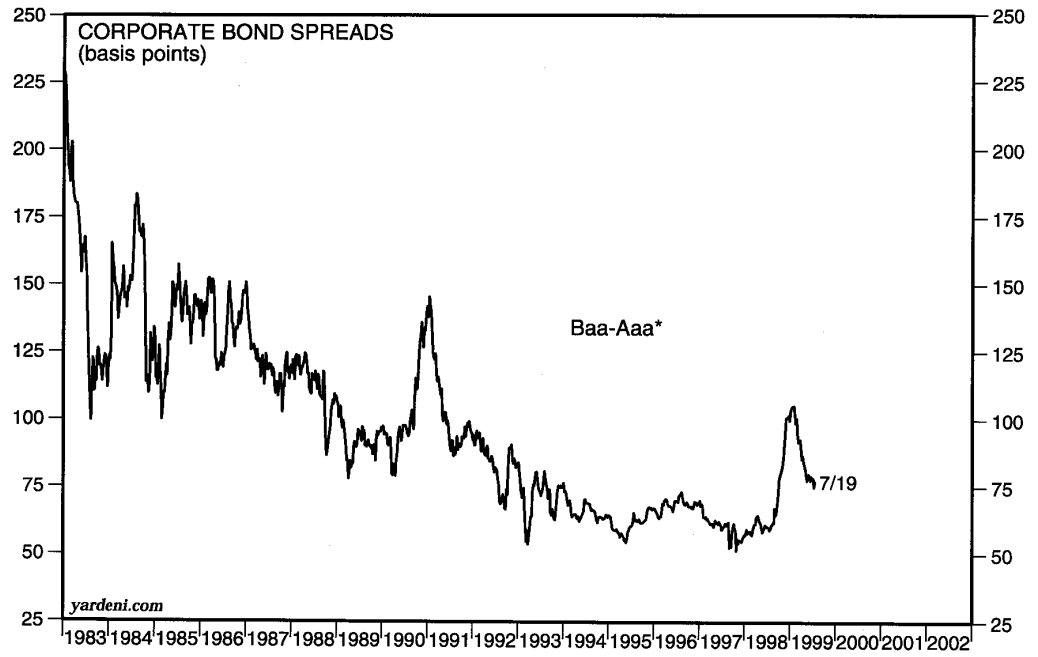
* 5-day average of daily data.

LONG-TERM INTEREST RATES HAVE TRENDED LOWER



* 5-day average of daily data.

TRENDS IN CORPORATE BOND QUALITY YIELD SPREADS



* Source: Moody's Investors Service. Aaa and Baa corporates are maturities of 25 years or more.

3. International Stocks

International stocks have become a core holding in most pension fund portfolios. They are generally seen to enhance performance over time as well as reduce risk compared to a portfolio of only domestic stocks. Among the rationales for international stock investing are:

1. As the world's economies have become more and more integrated, thousands of companies have expanded into worldwide markets, leading to the fact that a company's headquarters country has become less important in influencing stock prices than the industry that it's in. For example, although Japan's stock market, the Nikkei, has been flat or down over the past several years, the stock of Honda—a very successful, profitable company—has soared. In fact, Honda's stock performance over the past several years has been much better correlated with those of major US automakers such as Ford than with the generally moribund Japanese stock market. There are many similar examples, leading to the conclusion that there are no longer foreign or American companies, only successful or unsuccessful companies.

2. The US no longer dominates the world economy. America's gross national product represented nearly half the world's output in 1970 but it is only one-third of it today. Also, US stocks today account for less than half of total world market capitalization, down from two thirds in 1970. The largest companies in many major industries are based overseas as well as some of the fastest growing companies.

3. Among the major ten foreign markets from 1980 through 1998, the US was the best performer in only one year, 1982. From 1979 through 1994, the Morgan Stanley Capital International EAFE Index, a widely recognized benchmark composed of 21 major markets in Europe, Australasia, and the Far East, outperformed the S&P 500 every year in terms of performance of the previous ten-year holding period. Over the past four years, however, the US—uniquely benefiting from a sustained period of low inflation and strong corporate earnings—has been the outstanding cumulative market performer. This fact is consistent with long-term patterns that indicate that changes in leadership between US and foreign stocks occur every few years.

4. Diversifying into foreign stocks is intended not only to enhance returns over time but also to reduce risk. Foreign stock markets generally do not move in tandem with the US market over the long term. The correlation between the S&P 500 and the Morgan Stanley EAFE Index has been less than 50%. Thus, while it is likely that one or more foreign markets will outperform the US each year, diversification into international stocks will

also likely reduce the overall volatility of a stock portfolio.

Among the concerns and important differences between domestic and foreign investing are:

1. Many countries are considerably less stable politically than the US and have much less diverse economies. Thus, foreign investments are much more likely to be jeopardized by sudden political or economic upheaval. The unanticipated collapse of several Asian economies in 1997 is a prime example of this.

2. Accounting and financial disclosure practices can vary widely by US standards. Original research is crucial since financial information about specific foreign companies can be difficult to obtain.

3. Currency translation is generally the greatest ongoing concern. Initially, dollars must be converted to the local currency to purchase a foreign security. Subsequently, share price quotations, stock dividends, and sale or redemption proceeds must be converted from that currency back into US dollars. Because foreign exchange rates fluctuate constantly, currency movements can increase or decrease the dollar value of an investment even if the security's price remains unchanged. An appreciation of a foreign currency relative to the US dollar is positive for US investors since each unit of the local currency will translate into more US dollars. Portfolio managers may use sophisticated hedging techniques to cushion the impact of potentially negative currency movements but such hedging techniques will limit the possibility of gains as well as losses.

In the long run, the effect of currency fluctuations is usually far less important than the profitability of individual companies and the overall strength of local equity markets. Given the often wide variance in economic and market performance among countries, having a well-diversified portfolio supported by strong research is of paramount importance in international investing.

The theories behind international stock investing have become increasingly controversial in recent years. An emerging skepticism of international stocks considers not only the dominant performance of US stocks in recent years but also the argument that the increasing globalization of the world economy has lessened the value of international stocks as a diversifying, low correlation asset class. The past few years have provided ample fodder for the skeptics; indeed, over the ten years ended December 1998, the Wilshire 5000 Index of most regularly traded US stocks returned 18.1% a year while the Morgan Stanley EAFE Index gained just 5.9% annually, according to Ibbotson Associates. Nevertheless, performance is indistinguishable over the long term; since the end of 1970, Ibbotson also reports that the Wilshire 5000 and MS EAFE indexes have had exactly the same return, 13.7% annually through December 1998.

4. International Fixed Income

The rationale for international bond investing is very similar to that for stock investing. Foreign bond markets have grown to represent more than half the worldwide fixed income market and this portion is increasing as emerging economies issue debt at attractive yields to finance their growing infrastructure and expanding businesses. Also, the US bond market has rarely been the best performing among those of the major industrialized nations.

As noted previously, returns in bond investing are largely determined by changes in overall interest rate levels, and rates in foreign countries frequently do not move in tandem with US rates. Indeed, a study of monthly returns over a recent twelve-year period showed that only one country—Canada—had a correlation higher than 50% versus returns in the US bond market. Australian government bonds showed the lowest correlation, at less than 10%. Thus, being invested in several bond markets helps smooth out the volatility of a portfolio as strong returns from some markets will offset weaker ones from poorly performing ones.

Historical studies have shown that an optimal allocation of foreign bonds—-the mix that provides the highest return without significantly increasing risk—ranges between 10% and 20% of a fixed income portfolio.

As in international stock investing, investors in international bonds must be wary of political and economic instability, particularly in emerging markets, and must have strong research capability to effectively monitor overall economic developments in the countries as well as factors affecting specific credits. Currency fluctuations represent the greatest concern since these changes represent a greater portion of foreign bond than foreign stock returns. Changes in interest rate levels, as well as a currency's supply and demand situation, directly affect the dollar's value relative to foreign currencies.

The recent introduction of the "euro", the new currency representing the economic consolidation of the eleven countries in the European Monetary Union, will significantly reduce but not eliminate the opportunities available to foreign bond managers who seek to diversify their portfolios by finding differences in relative value between currencies around the world.

5. Real Estate

Pension funds invest in real estate because the asset class is seen as a good inflation hedge and because it offers clear benefits of diversification. Historical returns, while favorable, have a very low correlation with either stock or bond returns. Besides reducing overall portfolio volatility, real estate can offer attractive current returns, benefiting from the steady cash flows from rents that derive from a portfolio of well-leased operating properties.

Investors in real estate expect to receive returns both from income and from capital appreciation. Expected long-term performance is higher than that of high grade bonds but lower than the historic returns of blue-chip stocks. Among the various types of property included in real estate investments are downtown office buildings, industrial parks, research and development buildings, suburban office buildings, hotels (full-service or limited service), apartments, shopping centers, and regional malls. As in other investment asset classes, different segments will do better at different times. The success of real estate investments closely mirrors overall economic conditions as well as the specific health of the real estate market on not just a national but on regional and also very local scales.

Besides the risks of general, regional, and local economic and market conditions, risks of real estate investing include fluctuations in interest rates; overbuilding and increased competition; increases in property taxes and operating expenses; changes in zoning laws; heavy cash flow dependency; possible lack of mortgage fund availability; losses due to natural disasters; regulatory limitations on rents; variations in market rental rates; changes in neighborhood values; and losses due to environmental problems. In such a complex industry, the quality of management—its structure, financial strength, and overall skill—is obviously of paramount importance.

Pension funds and other institutions invest in real estate either through direct property ownership or through pooled instruments such as Real Estate Investment Trusts. REITs were created by Congress in 1960 to offer investors the real estate equivalent of mutual funds. They pool investors' funds for investment primarily in income producing real estate or real estate related loans (although not construction financing). A REIT is not taxed on income distributed to shareholders if it complies with various requirements relating to its organization, ownership, assets, and income and the requirement that it distributes to its shareholders at least 95% of its taxable operating income each year. This benefit relative to taxation is also the greatest limitation of REITs since it restricts retained earnings that could be invested for growth.

Among the various types of REITs, equity REITs invest directly in real property and derive their income primarily from rents. They can also realize capital gains by selling appreciated property. Their value is affected by

changes in the value of the underlying property owned. Mortgage REITs invest the majority of their assets in real estate mortgages and derive their income from interest payments. They are affected by defaults or delinquencies relating to the underlying mortgages as well as prepayment risks. Hybrid REITs combine the characteristics of both types.

Equity REITs are the dominant form of this relatively small investment sector. As of mid-year 1999, 175 out of the 212 publicly traded REITs were equity REITs. Total market value of outstanding REIT securities is about $145 billion. Roughly $135 billion were rated by one or more rating agency, with the average rating being low investment grade (Baa/BBB). About 80% of the publicly traded REITs trade on the New York Stock Exchange with the rest on the American Exchange or on NASDAQ.

Real estate is by nature an illiquid investment, requiring large amounts of capital, sophisticated market knowledge, active and ongoing property management, and a commitment to long holding periods. Aided by the development of generally accepted valuation methodologies, REITs are intended to offer a greater degree of liquidity to real estate investment.

One of the generally accepted ways of measuring a REIT's operating performance is "Funds From Operations" (FFO), or price relative to FFO. Funds from Operations is defined as net income excluding gain or loss from sales of property or debt restructuring and adding back depreciation of real estate. One of the major differences between FFO and corporate earnings is that commercial real estate maintains residual value to a much greater extent than machinery, computers, or other types of property.

As fears of an economic downturn were decisively dissipated as the second quarter of 1999 began and the effects of last year's flight to quali ty were largely reversed, REITs (along with small cap stocks) enjoyed a powerful recovery.

REITs have had only five years of negative total returns in their 38 year history, but their returns can be very volatile. After the average REIT lost 40% of its value in 1974 when the economy suffered from the worst possible condition—stagflation, the class was out of favor with investors until the 1990s. They've done well during this decade, tracking the S&P 500 in terms of cumulative return until 1998. Last year the sector had its worst year since 1974, with negative returns of about 17% (as measured by the National Association of Real Estate Investment Trusts). The market reacted to concerns about a slowing economy and fears about deflation, and it ignored the sector's average earnings growth of 13%. The asset class went from being overvalued to being undervalued, in the view of many analysts, relative to the underlying property assets supporting the securities. This trend continued into 1999 as REITs had

negative total returns of about 5% during the first quarter. Over the three years extending through 1999's first quarter, average REIT returns had been close to those of small capitalization stocks, with both asset classes dramatically underperforming the S&P 500 Index of large cap stocks.

As fears of an economic downturn were decisively dissipated as the second quarter of 1999 began and the effects of last year's flight to quality were largely reversed, REITs (along with small cap stocks) enjoyed a powerful recovery. The average REIT returned more than 10% during the quarter. Contributing to the stronger tone was the fact that some very prominent institutional investors were said to have added to their REIT holdings in light of their intrinsic cheapness relative to actual market value.

An important point is that REITs represent only about 10% of institutional quality real estate. In sharp contrast to the significant losses suffered by REITs in 1998, privately-held real estate actually registered a 16% positive return for the year, as measured by the Russell Real Estate Open-End Funds Universe Average. The startling difference between public market and private market real estate returns reflects the fact that changing investor sentiments can drive securities in public markets to extremes of over- or undervaluation relative to underlying assets. Since publicly-traded REITs remain a small market subject to dramatic swings in valuation that reflect investor psychology more than market fundamentals, these securities do not provide all the attributes that pension funds expect from private real estate, such as inflation hedging.

The National Council of Real Estate Investment Fiduciaries (NCREIF) publishes a widely-followed index of quarterly total returns on commercial real estate properties held by institutional investors such as pension funds. Its returns are market-weighted and divided into income and capital components of total return. The universe includes existing investment grade non-agricultural income producing properties in four major categories: Apartment, Industrial, Office, and Retail. In each category, returns are calculated for the four major regions of the country. The NCREIF indicated overall total return of about 18% from its properties in 1998.

After last year's sharp correction, REITs may still offer good value at this time, even after the recent recovery. As always, the challenge is to find securities backed by high quality assets, ample coverage of current dividends, and a strong management team. REITs today offer dividends in the 7-8% range (well above those for either stocks or high grade bonds) and anticipate annual capital appreciation in the 2-5% range.

Unless interest rates continue to rise, the fundamentals for real estate look to be generally favorable with supply and demand in general equilibrium in most areas. Most of the reasons for previous excesses, such as the Japanese buying binge or resolution of the Savings and Loan crises, are behind us and there are no tax proposals before Congress that would negatively affect the market. Also, the current mix of low inflation and low interest

rates is very favorable to real estate. The major risks to the market remain 1) a recession that negatively impacts demand for units or 2) a building boom that creates oversupply and downward price pressure.

With property owners having the ability to raise rents over time and to grow via appreciation and property acquisition, investment in real estate offers both an inflation hedge as well as potential growth. Nevertheless, returns—particularly in the publicly traded marketable securities—can be very volatile and the class clearly has inferior liquidity relative to more traditional investments such as blue chip stocks and high grade bonds. Overall, however, US pension funds have been allocating an increasing percentage of their assets to various equity real estate investments for the expected benefits of diversification and the anticipation of reasonable returns.

6. Alternative Investments

Alternative investments, or investing in private markets, has been increasing in importance among pension and endowment funds in recent years. Investors in this class are paid a premium for the risk of holding illiquid, nontradeable investments and they have the potential to earn higher returns if the underlying projects are run by experienced general partners with strong strategic visions and management skills and who can effectively exploit the inefficiencies that frequently exist in the private markets.

Many of the nation's largest public pension funds invest in the private equity markets through a limited partnership vehicle. Managers are chosen for their expertise in a particular field in private equity and assume the general partner role. Investors participate as limited partners; as such, they have very little say in project management but their potential liability is limited to the invested capital.

There is no defined secondary market for private equity and limited partners may be unable to liquidate their entire positions over the 8–10 year life cycles of typical partnerships. Volatility, as measured by the standard deviation from a mean return, is generally considered to be twice as high for private equity than for domestic public equity. Management fees are much higher than in traditional investments and are often drawn down from committed capital before money is actually invested in the project. These fees are essentially reimbursed to investors as capital is returned on successful projects. The basic compensation of the general partners derives from the predetermined portion—usually around 20%—they take from partnership profits. Valuation of holdings prior to project exit can be very subjective. Balanced against these and other risk factors are the benefits of diversification with an asset class that has low correlation with others and which has expected returns of 400-500 basis points above the S&P 500 over time horizons of ten years or more.

Private markets total about $1 trillion in market value, or equivalent to about 10% of the US public equity market. There are six distinguishable sectors:

1. ACQUISITION EQUITY OR "BUYOUTS" are when an investor seeks financial control of a mature public or private company. Often this will occur when an investor attempts to bring about management change and to create value for a company he considers mismanaged, inefficiently operated, or in financial disorder. Investors such as this will use privately raised capital and borrowed money to buy companies, "fix them up", and then exit, usually by selling outright using an

Initial Public Offering.

According to Private Equity Analyst, $47.3 billion out of the $85.3 billion raised by US-based private equity limited partnerships in 1998 was in acquisitions and buyouts.

2. VENTURE CAPITAL is an equity investment in a private company that is in the early stages of development. "Early stage" companies seek capital to complete product development and begin marketing. "Late stage" companies focus on advanced business development issues such as growth in market share and strengthening the management team. Venture capital investors typically have long investment horizons, expecting low or negative returns for the first 3-5 years and higher returns near the end of the partnership term. With an increasing amount of institutional money seeking profitable investments in this area, finding well-structured, strategically sound partnerships that are fairly priced for investors is a major challenge.

For the seventh straight year, venture capital commitments increased in 1998 as 198 funds raised a record $24.01 billion, according to the National Venture Capital Association. Money actually invested rose to $16.02 billion.

Companies in the computer software and services sector received over one-third of the total, while California and Massachusetts had the most disbursements among the states.

3. INTERNATIONAL PRIVATE EQUITY includes both buyouts and venture capital for international markets. Allowing for differences in regional and country-specific economic growth and equity market valuations, international private equity is similar to the US market in strategy and structure. The more problematic area is private equity funding for emerging markets, where the upside return is enormous but the risks are equally impressive.

4. DISTRESSED SECURITIES are stocks and bonds of companies in financial distress. Investors in these securities seek capital appreciation by purchasing the securities of companies that are distressed due to debt overhang, poor management decisions, or other factors that they feel can be eventually overcome. Holders of these securities must be willing and able to be involved in a corporate bankruptcy process.

5. HEDGE FUNDS are portfolios that are actively and aggressively managed to maximize total return. Among the unconventional strategies employed by these funds are short sales, selling securities not owned in order to profit from a decline in value; leverage, borrowing money to increase the fund's investable capital and to capture the differential in return between the cost of borrowing and the investment return; investing in multiple types of securities (stocks, bonds, futures, currencies, et al) in one portfolio; and not following the usual principles of diversification. Hedge fund managers employ sophisticated models in an effort to uncover inefficiencies in markets around the world and they feel that their bets are sufficiently numerous so as to limit overall market exposure. As was dramatically seen in summer's collapse of Long-Term Capital Management, troubles can ensue when the

market inefficiencies become larger rather than swiftly trade back to equilibrium and when nearly all the fund's bets go against them in a short time. For the Nobel Prize winners and other "rocket scientists" behind LTCM and for the previously high-flying managers of many other hedge funds that lost billions last year, 1998 was truly a year of humbling enlightenment. In terms of being a factor in the markets, hedge funds have generally not yet recovered from last year's debacle.

6. OTHER

Opportunistic Real Estate investments, usually involving more leverage than traditional real estate investment funds, are popular when the real estate market, either national or local, is depressed, as in the early 1990s.

Energy and Natural Resources investments would include segments such as cogeneration facilities and other types of alternative energy production; equity investments in energy exploration and production and in energy-related companies.

Mezzanine Debt is the origination of a loan that is junior to senior debt and senior to equity in the capital structure. Such securities share some of the characteristics—and risks—of both equity and debt.

Flows have been increasing into private market investments since expected returns are as high as 7% above those of US stocks. Performance data compiled by Wilshire Associates shows that returns are widely dispersed and only top quartile partnerships achieve a return of 7% above the S&P 500. Nevertheless, historical returns in this sector are impressive and indicate that venture capital is the sector offering the highest potential returns in private equity. Venture Economics, a division of Securities Data Corporation, reported annualized returns of 17.2%, 27.4%. and 17.7% for venture capital over 1, 5, and 10 year periods ending December 31, 1998. Corresponding returns were 12.8%, 20.5%, and 16.9% for all private equity including buy-outs. An index compiled by Cambridge Associates of Boston shows annualized returns of 27.6%, 34.2% and 23.0% from venture capital over the same 1,5 and 10 year periods and 15.1%, 21.2% and 16.7% for all US private equity.

Implementation of a successful private market investment requires a diverse and complex set of skills which include: identifying investment opportunities, gaining access to superior general partners, performing due diligence, negotiating deal terms, and monitoring partnership investments.

There are a limited number of "top-tier" private equity firms that have consistently excellent returns. Participation in their partnerships is often limited to existing investors, experienced investors, and those who are able to approve investments quickly.

While many pension funds, working with their consultants, have been successful in identifying and investing in alternative investments partnerships, retirement boards may also want to consider "fund of funds" structures as offered by some vendors as practical and cost-effective ways to participate in this potentially very rewarding but also uniquely challenging asset class.

7. Asset Allocation

The most important determinant behind success or failure in investment management is not individual security selection or trading by investment managers. It is estimated that about 90% of the variance in investment returns among different portfolios is determined by asset allocation, the percentage of portfolio assets allocated to specific asset classes such as stocks, bonds, real estate, venture capital, et al. The goal of asset allocation is to maximize returns at a prudent level of risk, and the process of determining the appropriate asset allocation should involve an analysis not only of assets but also of the liabilities of an organization such as a retirement board.

The primary goal in constructing a portfolio is that it should return enough to meet an investor's objectives and do so with a level of risk that an investor is comfortable with. There are several asset classes, or groups of investment securities whose behavior is similar during changes in economic circumstances, and each class (i.e., stocks) has several subclasses (large, midcap, small cap; growth and value). The major inputs to an asset allocation process are the expected historical returns for each distinct asset class, the volatility of those returns over time, and the correlation of returns among the asset classes. An effective portfolio is not just the sum of its parts but should incorporate the expected interaction among those parts. Considering the likely correlation in performance among asset classes should reduce risk and volatility in a portfolio while helping to achieve expected returns.

Risk means different things to different people. To a bungee jumper, it's the possibility that the cord might break. For an investor, risk means the possibility of losing money and not meeting one's financial objectives. Similarly, asset allocation is like wearing protective gear in athletics. One might perform better if not hampered by protective gear, but without it, a blow to an unprotected part of the body could prove disastrous. That's why even though large cap growth stocks have been by far the best performers among major asset classes for some time, a well-constructed portfolio will also have assets in currently underperforming sectors like bonds, small stocks, and real estate. These sectors currently serve as hedges that may inhibit maximum performance today but will likely cushion the portfolio to some degree when the high-flying growth stocks inevitably turn down.

Historically, stocks have returned more than bonds. Since 1926, the annualized return on blue chip US stocks has been slightly over 11% while that on high grade bonds has been about 5.5%. Over the ten years ending 1998,

the difference has been even greater as the S&P 500 has gained 19.2% annually compared to 9.3% for investment grade bonds. The greater return on stocks reflects their larger "risk premium", or extra return demanded by investors to compensate for the fact that stock returns are historically about three times more volatile than bonds in terms of variability of periodic returns. The S&P 500 returned 34.1% in 1995 while long term bonds have rarely done better than the 18.2% registered by Treasuries in 1993. But the worst year for bonds has been the 7.8% loss in 1994, compared to the 26.5% loss suffered by the S&P in 1974. Illustrating the cushioning effect, when the S&P plummeted 14.5% in August 1998, bonds had a positive return of 1.5%.

Historical analysis shows that, as noted above, returns from stocks have been about twice those from bonds. Stocks also have about three times as much risk as bonds, as measured by the annualized standard deviation of monthly returns. This traditional measure of volatility refers to the variance from the mean return that will be observed in about two-thirds of sample returns.

If one were to use historical observations of returns and risk from stocks and bonds to construct a graph with investment returns on the vertical axis and risk on the horizontal axis, such a graph would have an entry for stocks in the upper right sector (high return, high risk) of the chart and for bonds in the lower right (lower return, lower risk) of the chart. The practice of asset allocation involves drawing a line between these two extreme points and determining what combination of stocks and bonds strikes the right balance between an investor's required return and the level of risk he/she is comfortable with. In reality, the choices will involve more than just two broad asset classes because both the stock and bond markets consist of several distinct styles and sectors and there is also the option to invest internationally as well as domestically. For instance, small stocks historically have returned more than large stocks but at a significantly higher risk level. Also, the risk/return relationships among asset classes will not typically be represented by a straight line because the benefits of diversification among asset classes usually cause the expected returns for a given level of risk to be greater than the sum of the individual returns.

An asset allocation process today should properly include a number of different asset classes. It's not unusual for one asset class or investment style to dominate returns for four consecutive years as US large cap stocks have recently done, but other classes—including small caps, international stocks, and real estate—have enjoyed similar extended periods of superior performance over the past quarter century. If one looked at historical returns of large US stocks, small US stocks, international stocks, and high grade US bonds over the twenty years through 1998, there was only one year prior to 1995 that large US stocks provided the best performance among these four asset classes. The lesson here is that a portfolio diversified among asset classes will never match the performance of the best asset class in each year but it will also never equal the worst.

ON THE OTHER HAND ...

There are, of course, some dissenting voices to the theoretical frameworks governing the search for today's most efficient portfolios. First of all, some scholars see the far greater risk premium traditionally attached to stocks compared to bonds diminishing as the differential in volatility between the asset classes appears to be narrowing in recent years. For bonds, interest rates have become more volatile in recent years as the Fed fine tunes monetary policy in order to keep the economy growing at a sustainable pace. For stocks, investors may be perceiving this sector as less risky as a result of better education, new tax laws that encourage long-term holding in IRA accounts, improved corporate efficiency, better governmental monetary and fiscal policy, an improved regulatory and tax environment, and diminished foreign threats. (While volatility of stocks, as traditionally measured in terms of variability of monthly returns, may or may not be decreasing, it is generally agreed that increased retail participation in the market has served to increase day-to-day market volatility.)

The breakdown of trade barriers and advances in communications technology have meant that previously independent economies are becoming more correlated to our own.

Also, some analysts have been questioning the value of international diversification. By placing a portion of assets in markets not correlated with the US market, can an investor really reduce the volatility of the portfolio while maintaining.and sometimes increasing returns? The world's markets, at least among the developed countries, seem to be moving in at least the same direction (if not in the same magnitude) to a greater extent in recent years. Such an occurrence is what brought down Long-Term Capital Management last August. As that failed hedge fund learned, diversification won't dampen volatility when global markets move synchronously.

The events of last August were a short-term phenomenon and do not destroy the validity of the benefits of international diversification in the long run. Nevertheless, it could turn out that the benefits from that strategy may be overestimated because of the slow but steady trend towards an increasingly homogenized global economy. The breakdown of trade barriers and advances in communications technology have meant that previously independent economies are becoming more correlated to our own.

Certainly, there is no other major economy that has been firing on all cylinders like the US over the past several years. No other country is at the forefront of the technological revolution and also enjoys sound economic and fiscal policy and stable political leadership. The trouble with this argument against international diversification is that ten years ago investors were similarly drooling over Japan as the world's invincible economy. Today, after several years of stalled economic growth and failed political leadership, Japan's economic

future is very much in question.

SUMMARY

Asset allocation is a practice whose benefits do not enjoy universal intellectual support among market professionals, but its basic objective remains one of prudence. It can be seen as representing an insurance policy against the day when today's hottest sector cools down. Foreseeing such a day becomes difficult, and the opportunity costs in investment returns become real, when one sector such as US large cap stocks has been dominant for so long, but that day will inevitably come. Also, rather than investing in various asset classes for the sake of filling out a portfolio, a more enlightened rationale for asset allocation would be to emphasize those asset classes that are clearly undervalued today but where the road to better valuation can be unmistakeably seen on the horizon.

In summary, the goal of asset allocation is to select a combination of assets that will generate a return sufficiently high but also sufficiently safe in order to meet a future financial liability. In the most general of terms, it is simply an expression of the centuries-old axiom of "don't put all your eggs in one basket". To use a comforting analogy, asset allocation is like a pillow: if one part of the pillow is punched in, another will puff out, and the benefits of portfolio diversification will provide the investor with steady enough returns so that he or she can sleep well at night.

In reality, the world's financial markets—and the relationships among them—are sufficiently dynamic and constantly changing so that asset allocation in practice does not conform to simple and cute analogies. Nor does it lend itself to simply choosing portfolio combinations from a neatly drawn graphical curve of "efficient portfolios" calculated from past experience. Asset allocation remains more an art than a science since the models and assumptions used are approximations of the realities of an investment universe that is exceedingly complex and constantly changing.

ASSET ALLOCATION IN PRACTICE

While there is no common "black box" or other standard methodology employed by pension systems and their consultants, there does appear to be a general similarity among the asset allocations currently adopted by both public and private pension systems. "Pension & Investments" newspaper reported that the largest public defined benefit plans in the US had aggregate asset allocations as follows in 1998: Domestic Equity, 46%; International Equity, 11%; Domestic Fixed Income, 32%; International Fixed Income, 2%; Real Estate, 4%; Alternative Investments, 2%; Other, 1%; and Cash 2%. Surveys that include private as well as public plans show approximately similar results.

An asset allocation plan will typically involve percentage ranges (such as 35-45%) assigned to each asset class rather than a fixed percentage. An asset allocation plan is typically determined in the context of an overall Statement of Investment Objectives and Policies. This Statement will usually begin with a Rate of Return Objective, conventionally stated as a targeted incremental return over inflation or over a benchmark index (or a series of benchmarks for each asset class).

There should be a discussion of the appropriate level of risk that is expected. Pension funds, both public and private, need to be generally conservative in that they are managed relative to certain future liabilities but a reasonable amount of short-term volatility is permissable since these liabilities are basically long-term and the need for short-term liquidity is modest.

Policies typically included in an Investment Statement would include diversification guidelines such as percentage of assets in one company (such as 5%) or in one industry (e.g., 15%) or in the percentage held in a corporation's total issuance (e.g., 5%). There could be guidelines for the number of stocks held, any targets as to market capitalization, the age or maturity of a company, and portfolio turnover rates. For fixed income accounts, there could be guidelines for credit quality and duration targets. There also could be general restrictions such as prohibition against private placements, "short sales", commodities, direct real estate, et al.

8. Selecting an Investment Manager

PEOPLE

- What is the education and experience level of key personnel?
- Who will be the primary manager assigned to this account? Get to know him or her!
- How many accounts does he/she manage?
- Who will be his/her backup?
- What is the organizational structure of the firm, and of the specific investment group involved?
- What is the extent of cohesion among staff in this investment group?
- What has been the staff turnover rate?
- How are key staff compensated?

PHILOSOPHY

- What is firm's traditional overall investment philosophy? Top-down, bottom-up, quantitative, etc.
- What is role of research? In-house staff, or street research? What factors are emphasized?
- How is investment policy determined? Is there an investment committee?
- What is current investment strategy in major markets?
- Has there been consistency in investment philosophy and strategy?

PROCESS

- How is the philosophy implemented?
- Do individual managers have discretion relative to firm's investment strategy?
- What is the review and control system relative to managers' performance?
- How is security selection and trading done?
- How are trades allocated among accounts?
- What is the buy/sell discipline?
- High turnover, or buy-and-hold?
- What is the methodology of portfolio construction?
- Portfolios: highly concentrated or highly diversified?
- Is there a system of risk management safeguards? How is it implemented?

PERFORMANCE

- Are timely, accurate returns regularly calculated and made available?
- How has performance been relative to benchmark for this product?
- Is the benchmark appropriate?
- Is performance presented objectively and fairly?

- Has performance been consistent?
- How volatile have returns been?
- Performance attribution: is there a system for attributing performance along several criteria (i.e., cap size, industry, style, et al)?
- Is performance repeatable or has it been due to special, one-time factors?
- Is performance consistent or widely dispersed among accounts?

THE FIRM

- Is it independent?
- If not, what is nature of relationship with parent company?
- Do employees have a stake in ownership? If so, what %?
- Compensation and incentive program
- Corporate culture
- Are there any significant company affiliations or joint ventures?
- What are overall business objectives?
- Recent growth trends
- What products are “hot”?
- Is there any limit on asset growth or new clients?
- What new products or other changes are contemplated?
- Is client base diversified?
- Is client base stable? How many accounts gained or lost recently?
- How is client service structured?
- Are portfolio managers accessible and responsive?
- How many other public pension or similar clients are served?
- Any ongoing litigation, investigations, or financial problems?
- Any potential conflicts of interest?
- Recent material developments

9. Outline of the Competitive Process

COMPETITIVE PROCESS

- Open
- Objective
- Fair
- RFP
- Processing
- Record Keeping

OPEN

- Public notice - Reasonable time
- Posted
- Published
- Secretary of State notice
- May send to prospective bidders

OBJECTIVE

- Evaluation based only on requirement and criteria in RFP
- Pre-established criteria
- Objective and relevant criteria
- Business/Technical
- GFOA, PERAC, PRIM examples

PROCESSING RESPONSES

- No alteration/corrections after date for submission
- Date stamped on receipt
- Witness to opening RFPs

PROCUREMENT FILE

- Record of procurement
- Selection process
- Selection criteria
- RFP
- Copy of minutes
- Copy of responses
- Disposal schedule/ 6 yrs. after contract ends

ROLE OF CONSULTANT

- Board is decision maker
- Develop RFP
- Data base screen
- Incorporate into data base and analyze respondents
- Selection of consultant
- Ability to meet fiduciary duty of board

CONTRACT

- Written contract
- Executed prior to assuming duties
- Investment objectives
- Brokerage practices
- Fees
- Termination

BOARD NOTICE OF COMPETITIVE PROCESS

- Prior to retention of Mger/con.
- Board notify PERAC competitive process followed
- Chapter 32 provisions met
- PERAC regulations met
- In all cases exemption or not
- No form-statement from board

VENDOR CERTIFICATION FORM

- All vendors submitting bids
- Selected vendor must submit to PERAC
- Good faith submission
- Without collusion or fraud
- In all cases exemption or not