January 22, 2003

Monthly Stock Market Report

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Market Analysis for Period Ending Thursday, January 16, 2003

This document presents technical and fundamental analysis commonly used by investment professionals to interpret direction and valuation of equity markets, as well as tools commonly used by economists to determine the health of financial markets and their impact on the domestic United States economy. The purpose is to provide a synopsis of equity markets from as many disciplines as possible, but is in no way an endorsement of any one mode of study or source of advice on which one should base investment decisions.

Definitions of terms and explanations of indicator interpretation follow the charts in the Endnotes section.

Technical Trends

Figure 1 presents price trends and daily volumes for the New York Stock Exchange and Nasdaq Composite Indices.

The New York Stock Exchange Composite Index (NYSE Index) closed Thursday, January 16 at 5165.34[1]. After establishing a new five-year low on October 9, the index has risen 16.0 percent. In the first two weeks of 2003, the NYSE climbed 3.3 percent. Still, the index has lost 14.4 percent just since the beginning of June.

The National Association of Securities Dealers Composite Index (Nasdaq Index) closed at 1423.75. The index has increased 27.8 percent since its six-year low on October 9, and is up 6.6 percent since December 31 (figure 1).

Figures 2, 3, and 4 present some technical indicators commonly cited by stock market analysts.

As of January 16, the relative strength index for the NYSE Composite had a value of 52.9 percent, a figure normally interpreted as neutral (figure 2, upper panel). The number of stocks making new 52-week highs has increased since the start of 2003, while the number of new 52-week lows has remained low (figure 3 upper panel). The middle panel shows that momentum (overbought/oversold oscillator) is in overbought

[1] On December 31, 2002, the New York Stock Exchange recalculated their composite index such that the closing price on that day would be 5000. The NYSE Index closed at 472.87 that day under the old base. Past figures have been recalculated to reflect this change.

territory and increasing, which could be seen as bearish. The Market Breadth indicator (figure 3, bottom panel) has seen a fairly steady increase since the beginning of October.

For the Nasdaq Index, the relative strength remains in neutral territory (figure 2). The upper panel in Figure 4 shows that the number of new highs increasing in the last two weeks, with the number of new lows falling. Advancing stocks have outnumbered declining ones recently (lowest panel, figure 4). The momentum indicator is in overbought territory and rising, a potentially bearish indicator (figure 4, middle panel).

Volatility

Indicators of market volatility are shown in figure 5.

The Chicago Board of Options Exchange (CBOE) provides daily measures of volatility for the S&P 100 (VIX) and for the Nasdaq 100 (VXN). Volatility remains historically high, though both indices are more than halfway back from their peaks from early October.

Put/Call ratios appear in figure 6.

Monthly data are shown from January 1997 through December 2002. The CBOE individual equity put/call ratio increased in December, remaining in what is normally interpreted as bullish territory. The S&P 100 put/call ratio increased narrowly and remains in neutral territory.

Sector Performance

Figure 7 compares the performance of the various economic sectors within the S&P 500 as well as other international and style indices.

All ten economic sectors in the S&P 500 have a positive year-to-date return as of January 16. The information technology sector, which had the highest negative return in 2002, has seen an 8.9 percent return in the first two weeks of 2003. Consumer staples, which had the smallest negative return last year, has risen 3.1 percent so far this year. The energy sector has the smallest year-to-date return thus far (figure 7, top panel).

The Wilshire 5000, composed of all U.S. equity issues, has gained 3.7 percent year-to-date. The German DAX has risen 5.6 percent since January 2, and Japan's Nikkei 225 has also increased slightly. The U.K.'s FTSE 100 has lost 1.5 percent so far in 2003 (figure 7, middle panel).

The Russell 1000 Value index, which had a 1 .78 percent average annual return over the last five years, has risen 3.9

percent. Large-cap stocks, represented by the Russell 1000, have also seen a 3.9 percent increase in the first two weeks of the year. The Russell 2000, which represents small-cap stocks, has increased 3.1 percent after falling on average over the last five years (figure 7, bottom panel).

Valuation

Figure 8 displays historical and current price-earnings ratios for the S&P 500 economic sector groups described above. Figure 9 graphs the current and previous earnings forecasts for several calendar years in the top panel, and lists the current and previous growth of earnings forecasts for each S&P 500 sector in the two tables. Figure 10 shows three measures of historical and future valuation: historical PE ratios in the top panel, forward and trailing PE ratios using analysts' estimates of operating earnings in the middle panel, and strategists' two-year forecasts of earnings growth in the lower panel.

Declining prices have finally deflated some of the extraordinary price-earnings ratios seen in many industries. Among the economic sectors, price-earnings ratios have increased for about half of the ten sectors since the fourth quarter of 2000. The energy sector has risen the most, from 21.4 to 39.8. The PE for the utilities sector has been cut nearly in half, from 25.2 to 13.0, due to both a decline in stock prices and an increase in earnings (figure 8, top panel).

The analysts surveyed by Thomson Financial/First Call report a 12.9 percent increase in earnings for the S&P 500 in the fourth quarter of 2002, and a 0.9 percent increase for calendar year 2002. Analysts have cut earnings expectations for the fourth quarter for nine of the eleven sectors, often sharply, since the quarter began. In the first quarter of 2003, analysts expect earnings to increase by 10.5 percent from a year ago. The energy and basic materials sectors are projected to see the largest increases in earnings in the first quarter, while the utilities sector is expected to continue to suffer (figure 9).

The macro projections from strategists for the growth of earnings for the Standard and Poor's 500 index over the next two years have been revised upward to 23.2 percent in the fourth quarter of 2002. The **S&P 500 trailing price-earnings ratio** increased from 26.9 in the third quarter of 2002 to 27.8 in the fourth quarter. During the fourth quarter, the price-earnings ratio for the Russell 2000 decreased to 28.6 from 29.9. The 2003 first quarter forecast for the **S&P 500 forward price-to-operating-earnings ratio**, using bottom-up forecasts from analysts, increased to 17.2 from 16.6 in the fourth quarter (figure 10).

Breadth of the S&P 500

Prices rose for 33.9 percent of stocks in the S&P 500 in the third quarter of 2002, down from 41.3 percent in the first quarter and the lowest figure since 1990 (figure 11, middle panel). Although the median price to operating earnings ratio dropped for all deciles of the S&P 500, only four deciles have median ratios below the historical average price-to-earnings ratio of 14.4 (figure 11, bottom).

Comparative Returns

The dividend-price ratio, an indication of the yield investors receive through dividends by holding stocks, increased to 1.8 percent in the third quarter from 1.5 percent in the second quarter. The earnings-price ratio increased to 3.4 percent in the third quarter from 2.5 percent in the second quarter. Both of these ratios are still substantially below the 5.0 percent real rate of interest on corporate bonds and their respective historical averages, 2.96 percent and 6.08 percent (figure 12). Typically, the earnings-price ratio falls below the real return on bonds when analysts expect earnings to rise rapidly.

Nonfinancial corporate businesses have tried to maintain dividends in the face of sagging profits, resulting in an unusually high dividend to operating profit payout rate of 61.6 percent in the third quarter of 2002, just below the highest ever recorded (figure 13, lower panel).

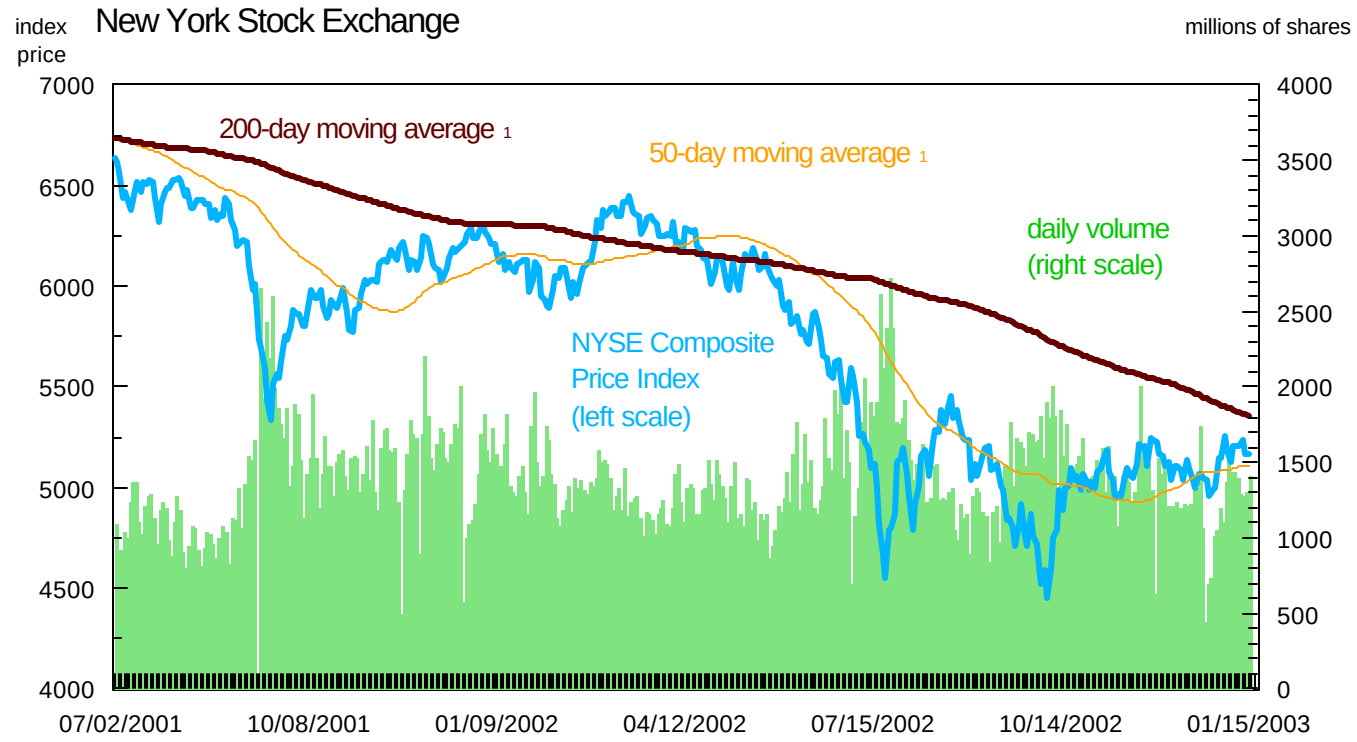
Moody's upgraded more investment grade securities and downgraded more speculative grade securities in December than in November (figure 15, top and middle panels). The default rate on junk bonds increased slightly, from 20.4 in November to 20.5 in December (figure 15, lower panel).

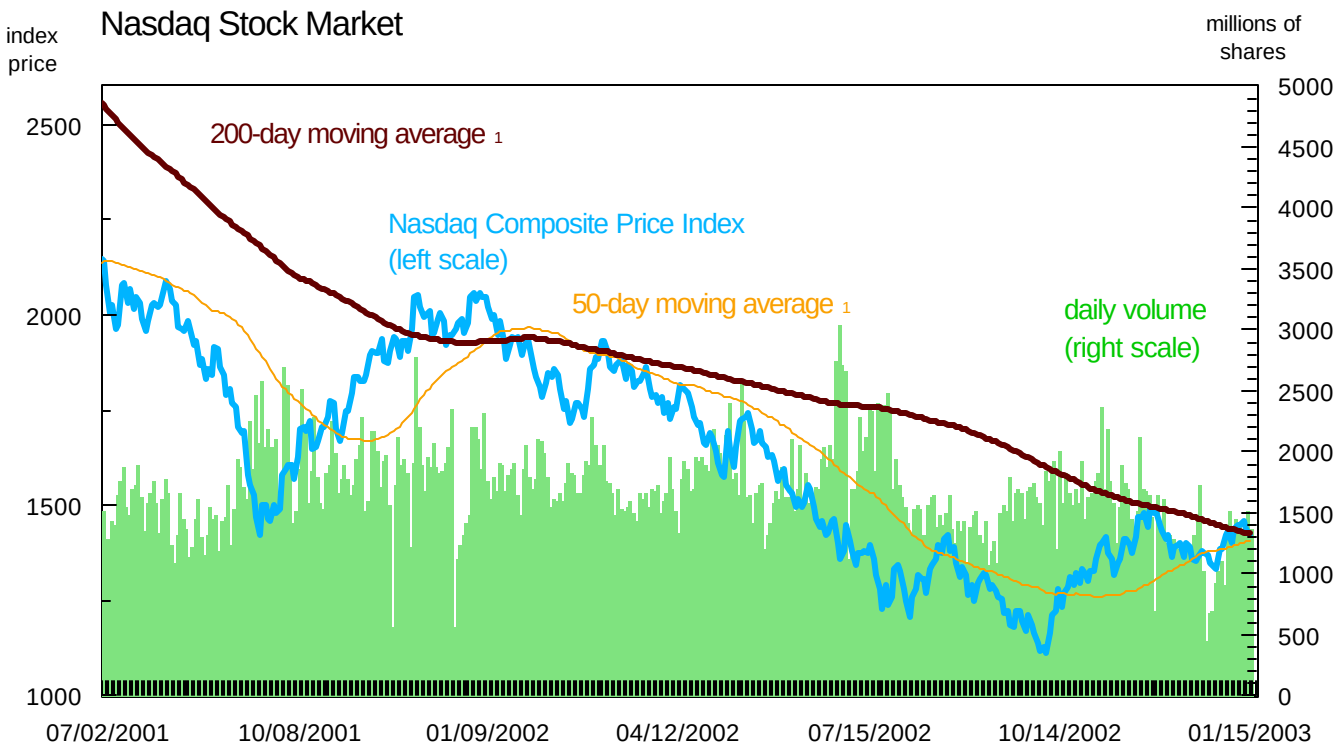
The Stock Market Report is available online (internally) at http://bosweb.bos.frb.org/bnkgrps/msmr/index.htm
(Please note: this URL has changed due to the conversion of the Bosweb site.)

Please contact Matthew S. Rutledge for questions and comments (617) 973-3198.

Figure 1

Daily Trends of Major U.S. Stock Exchanges

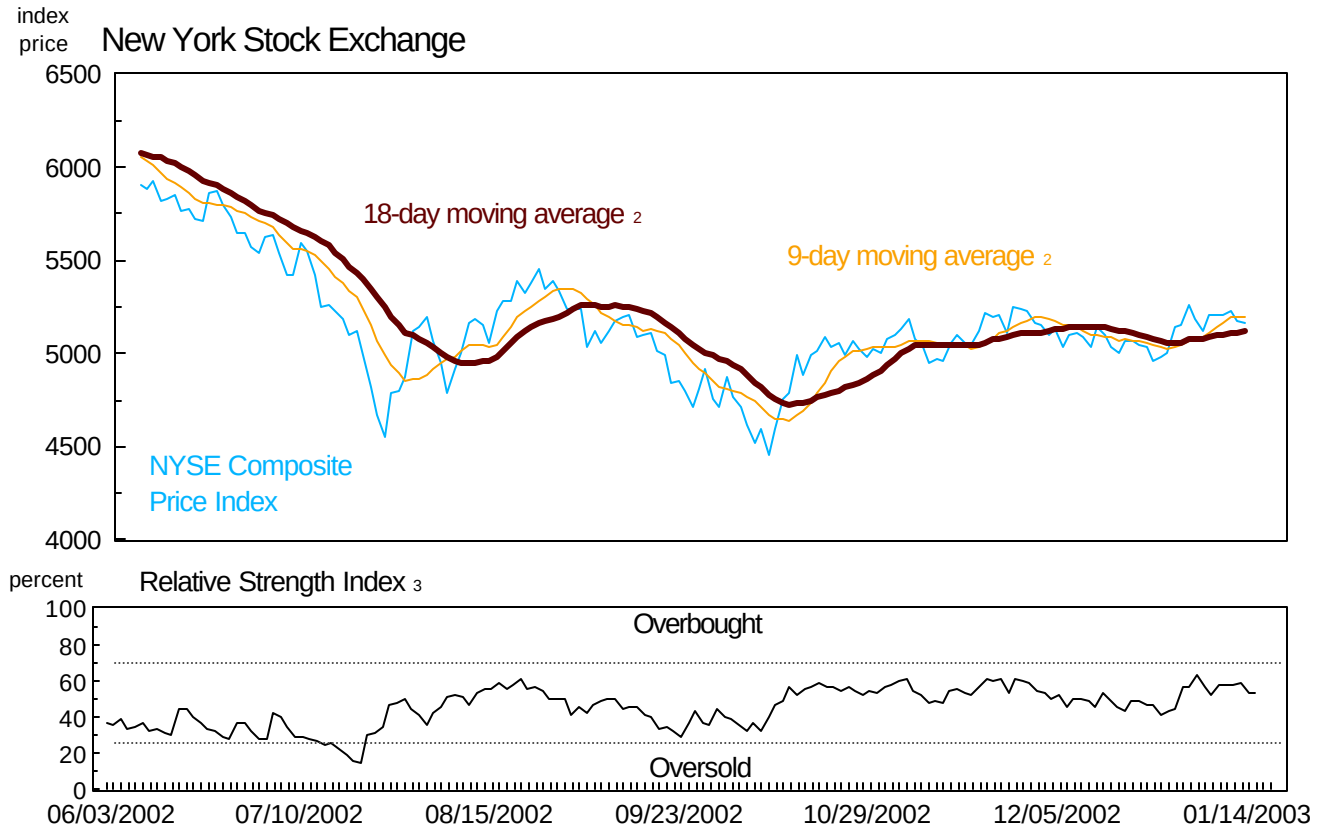


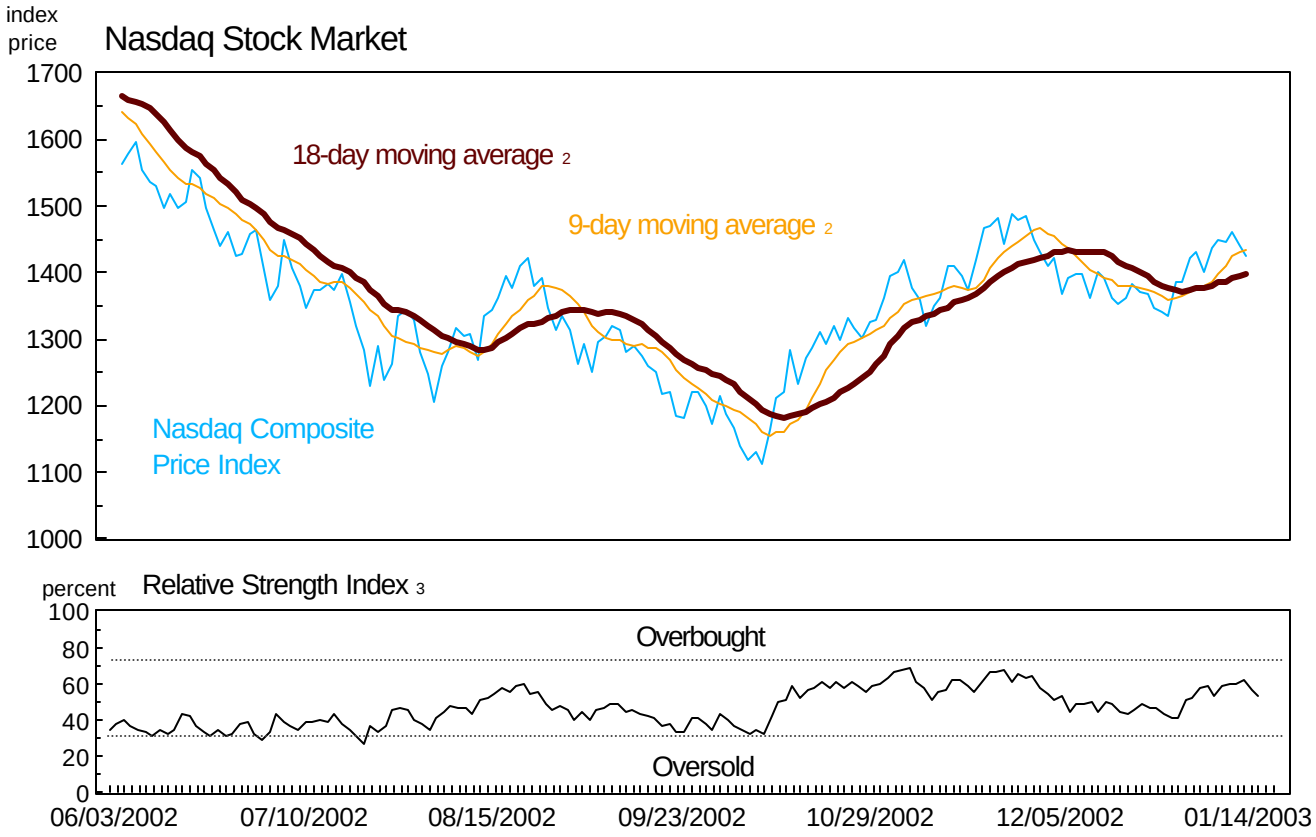


Source: Bloomberg, L.P.

Figure 2

Moving Averages and Relative Strength

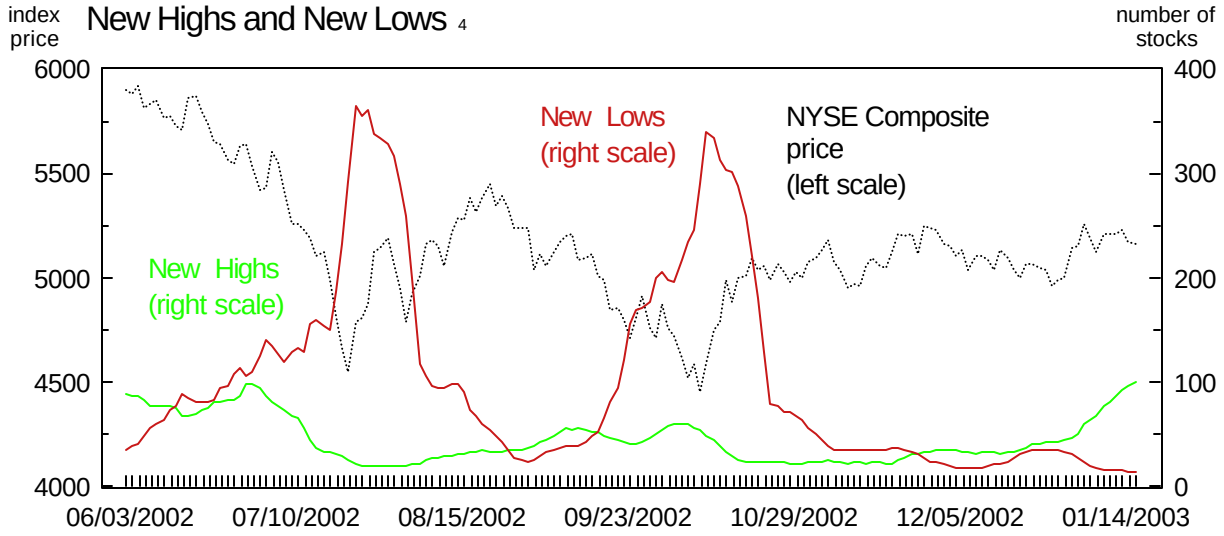


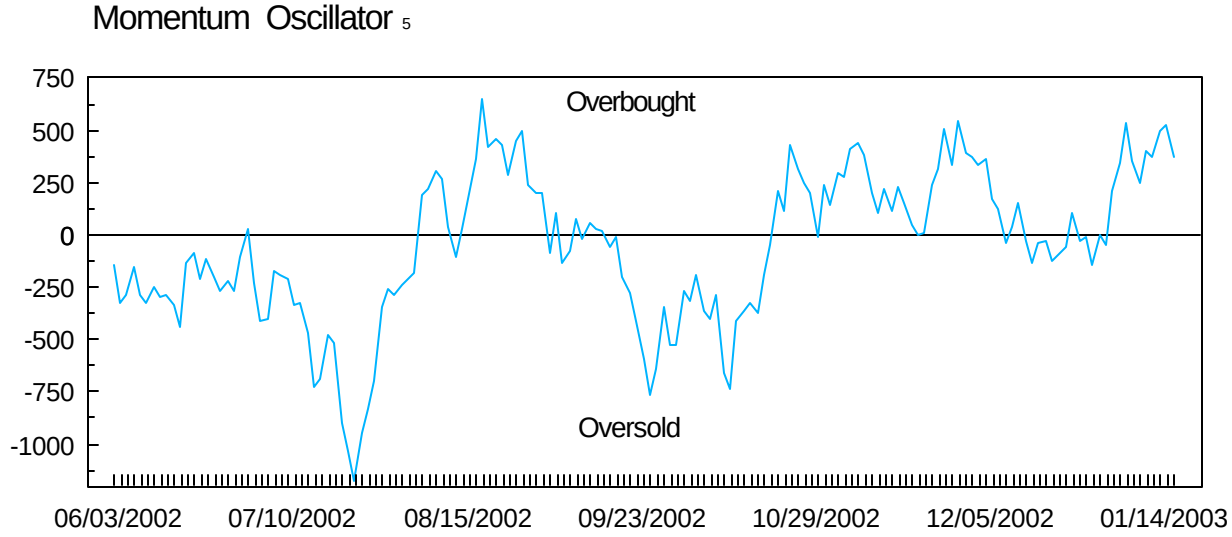


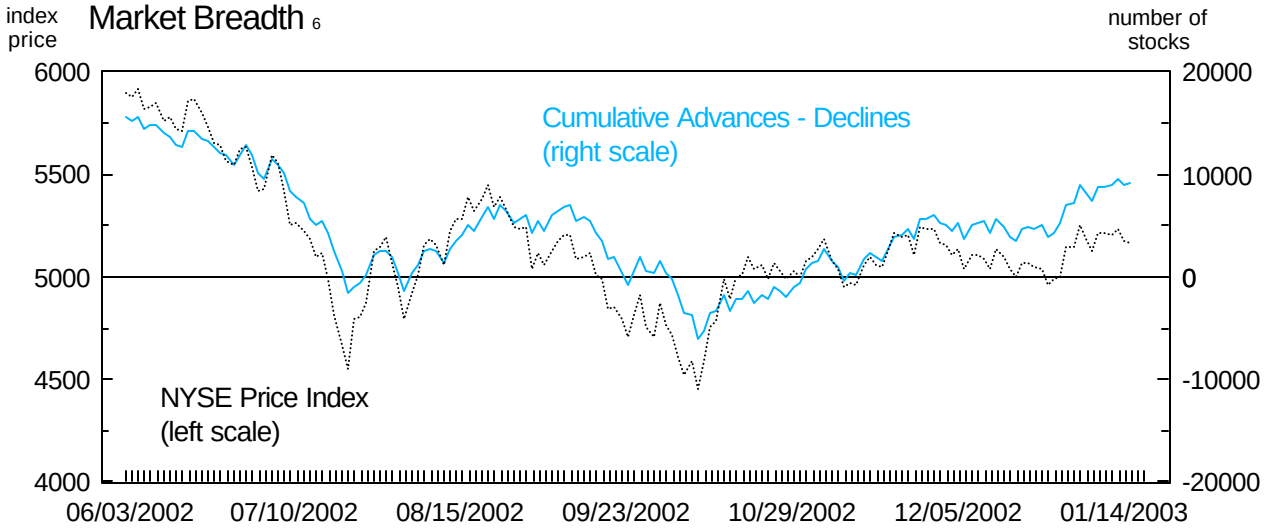
Source: Bloomberg, L.P.

Figure 3

Index Breadth and Momentum Indicators - New York Stock Exchange



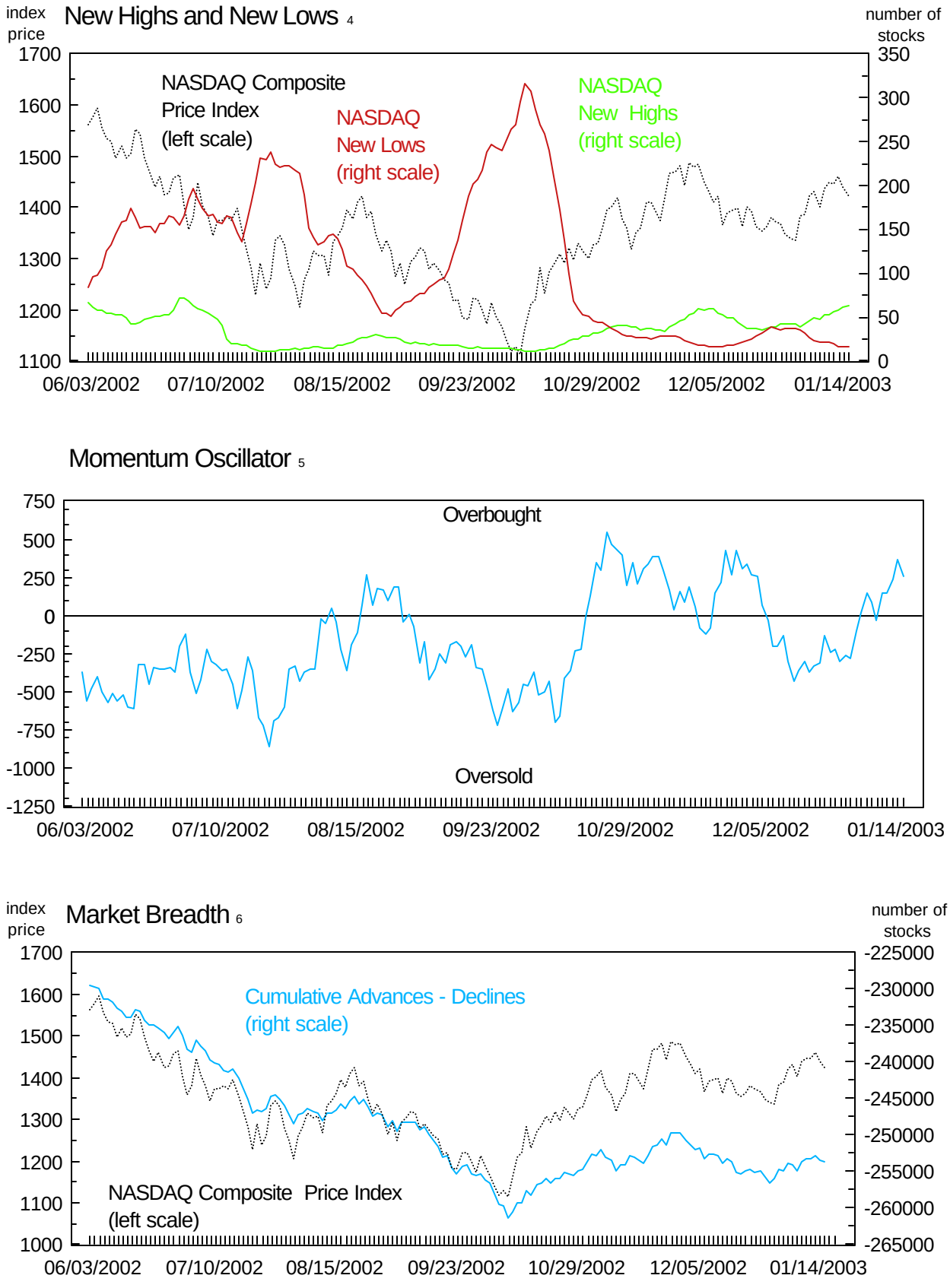




Source: Bloomberg, L.P.

Figure 4

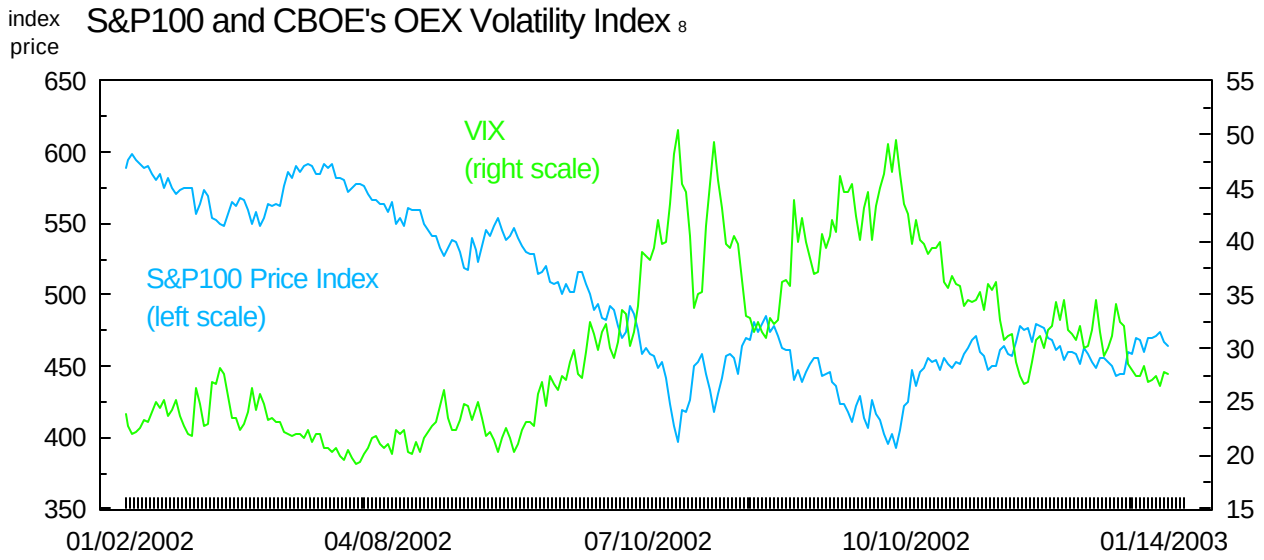
Index Breadth and Momentum Indicators - Nasdaq Stock Market

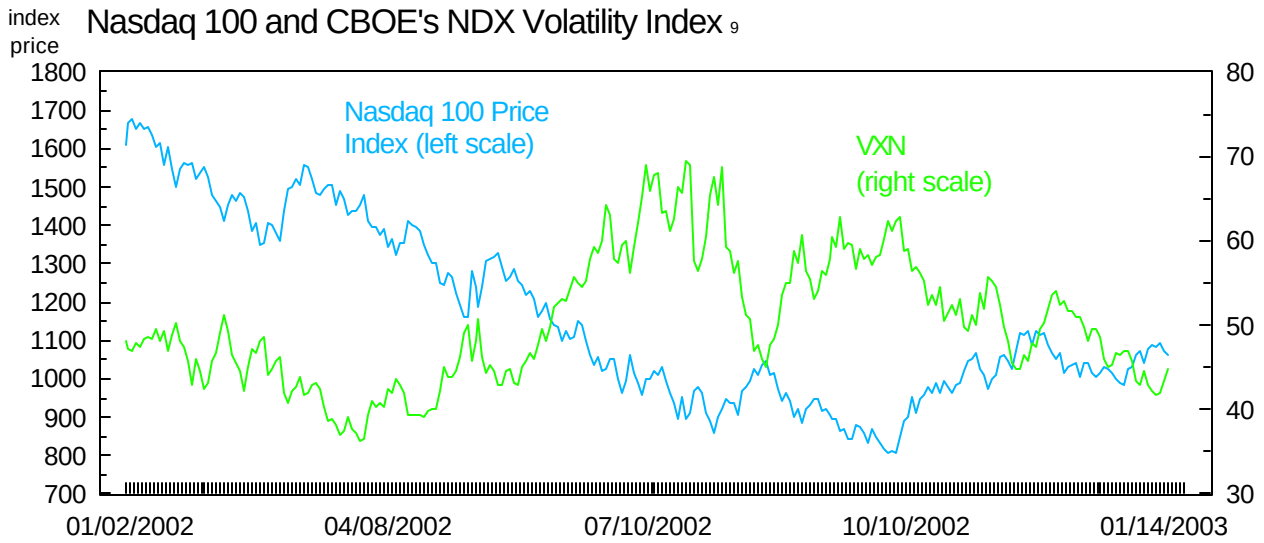


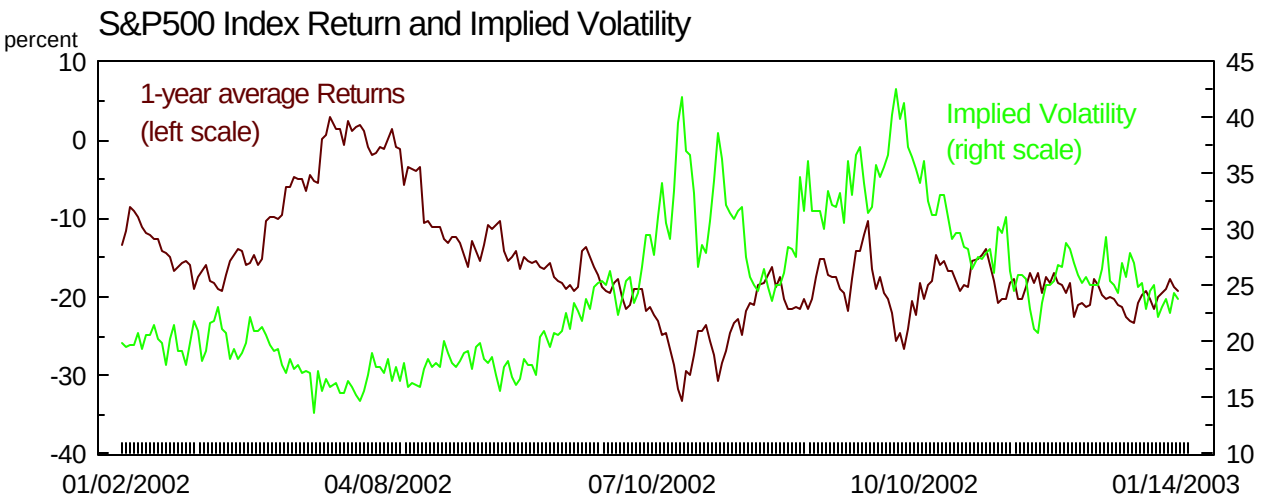
Source: Bloomberg, L.P.

Figure 5

Volatility [7]



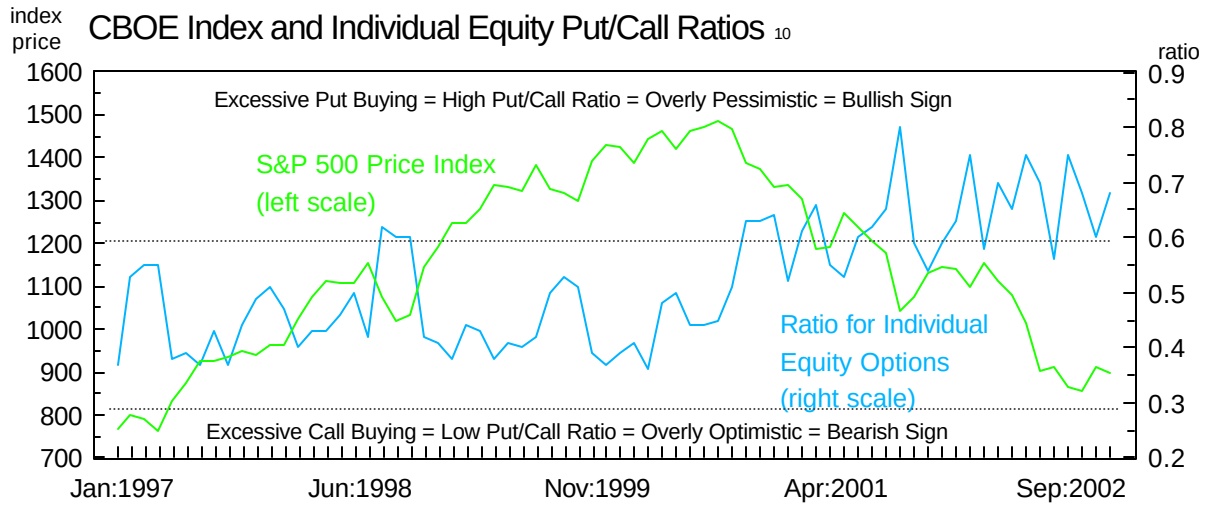


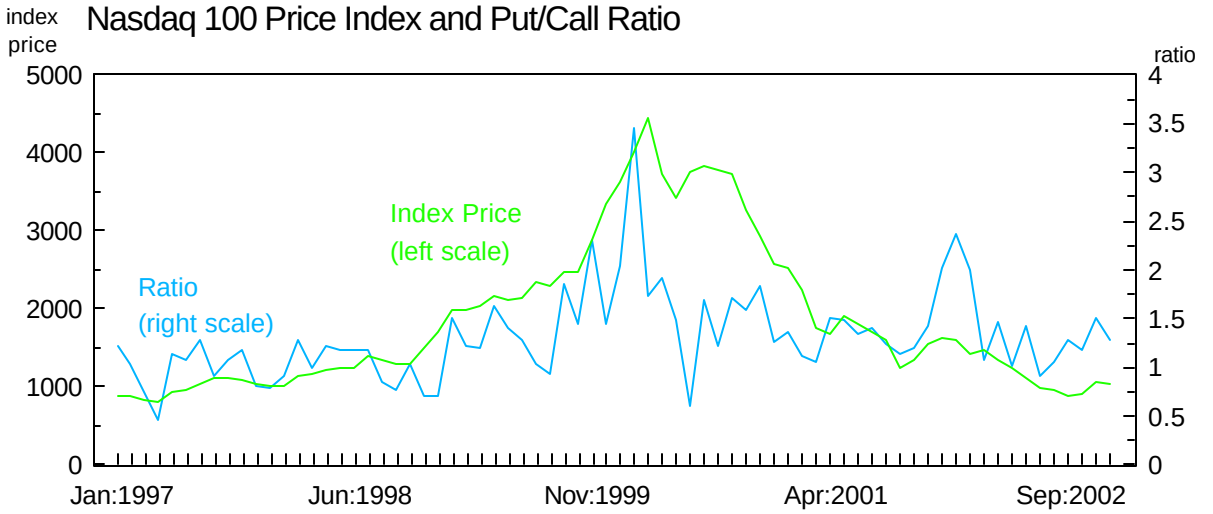


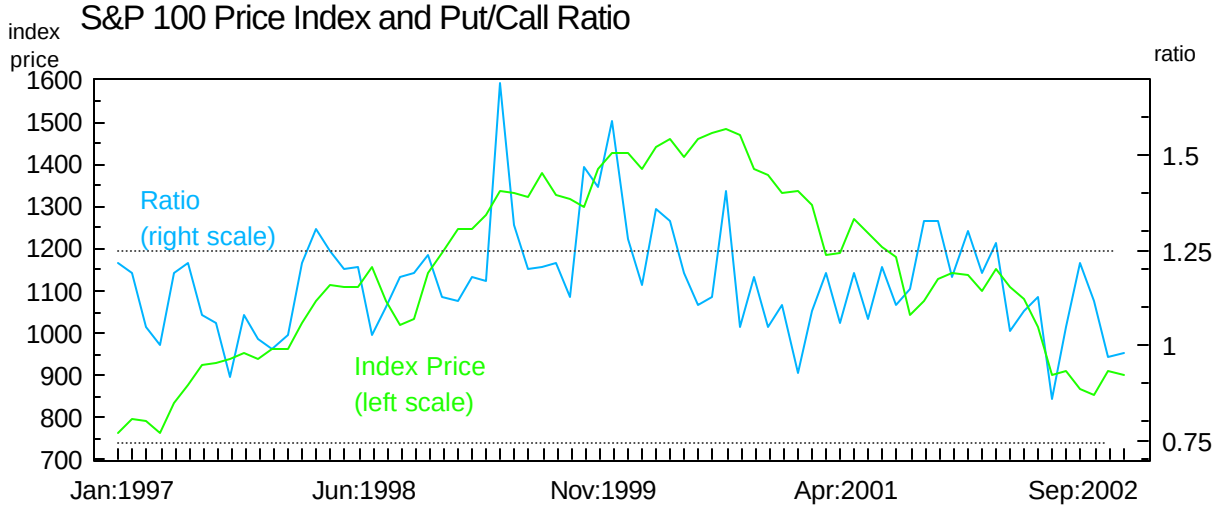
Source: Bloomberg, L.P.

Figure 6

Put / Call Ratio



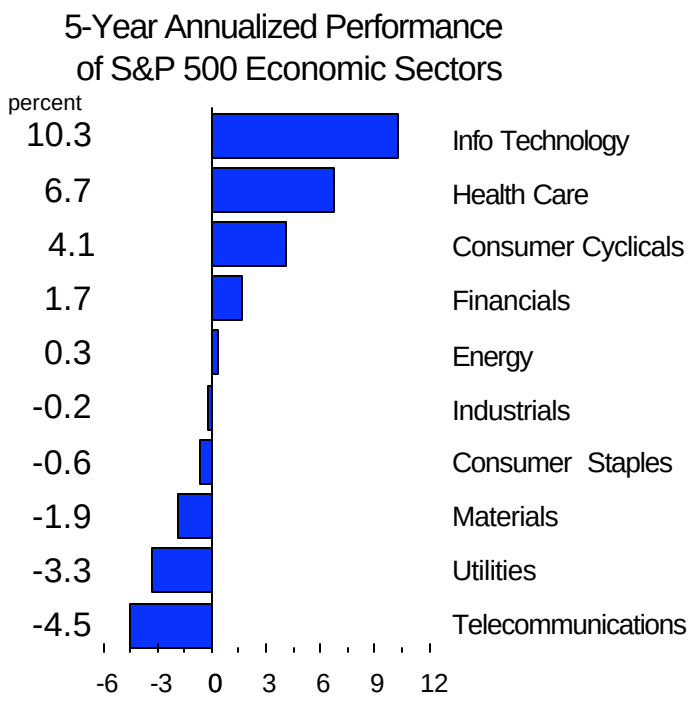


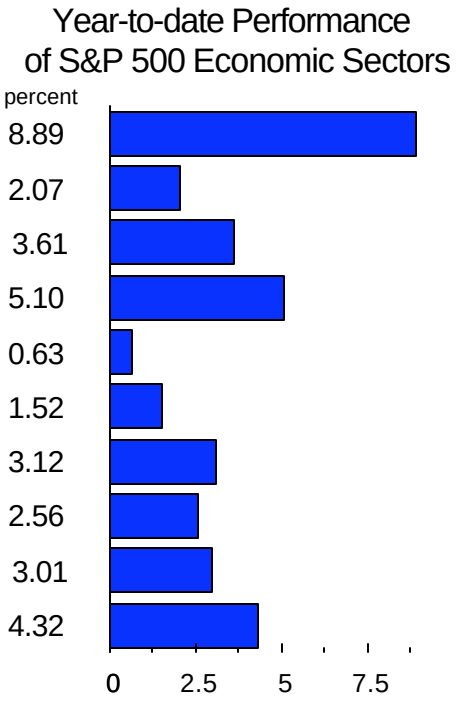


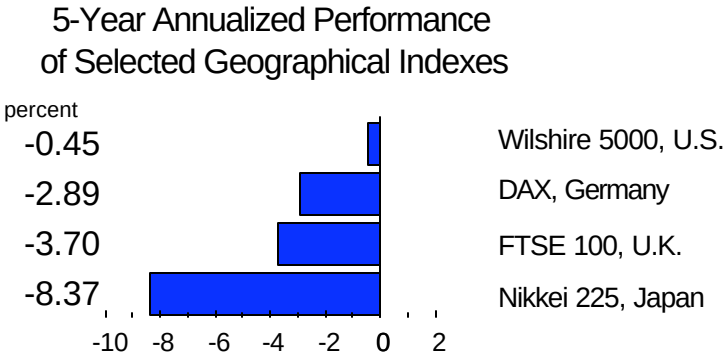
Source: Haver Analytics

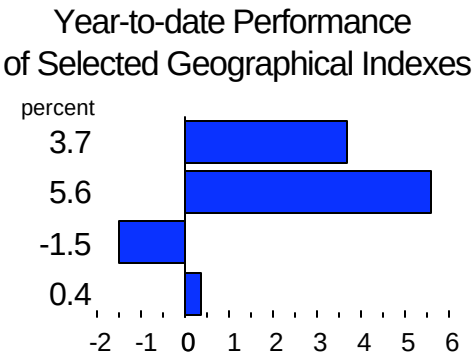
Figure 7

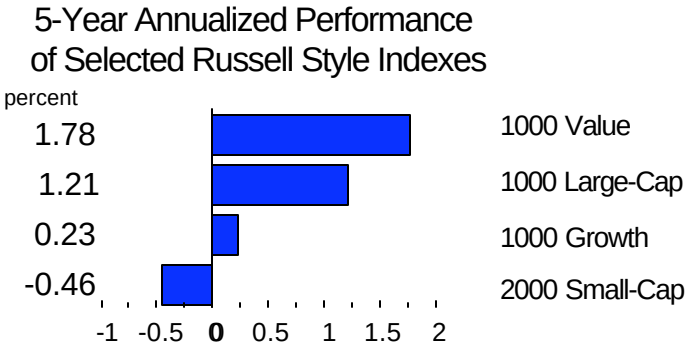
S&P 500 Economic Sectors - Index Returns











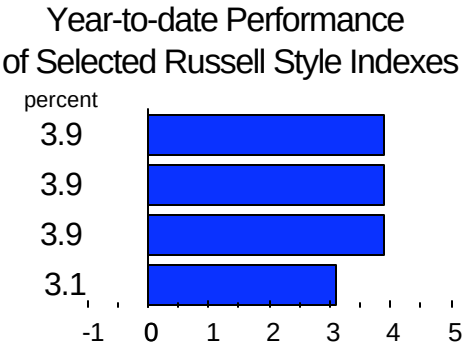
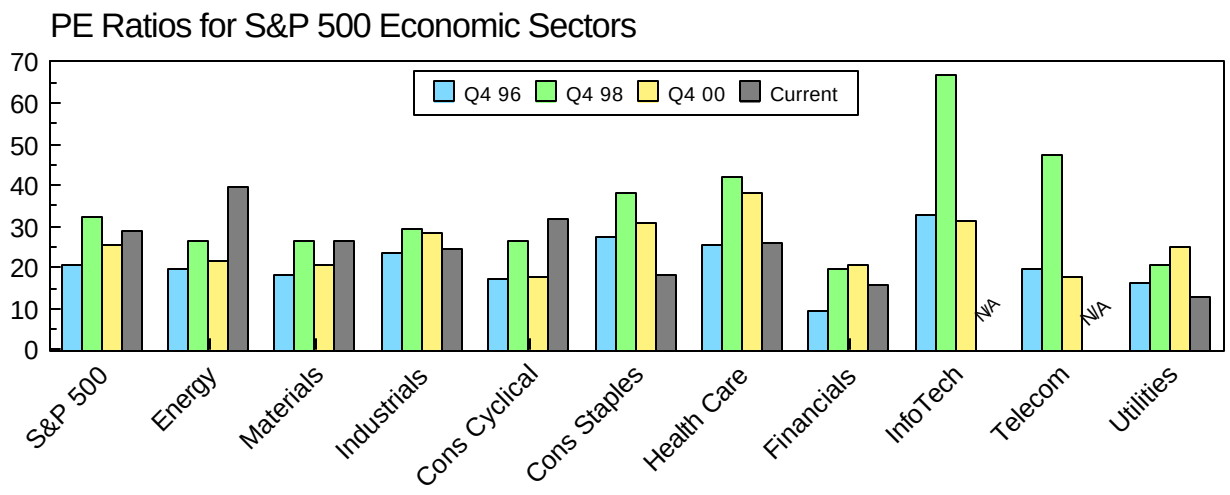
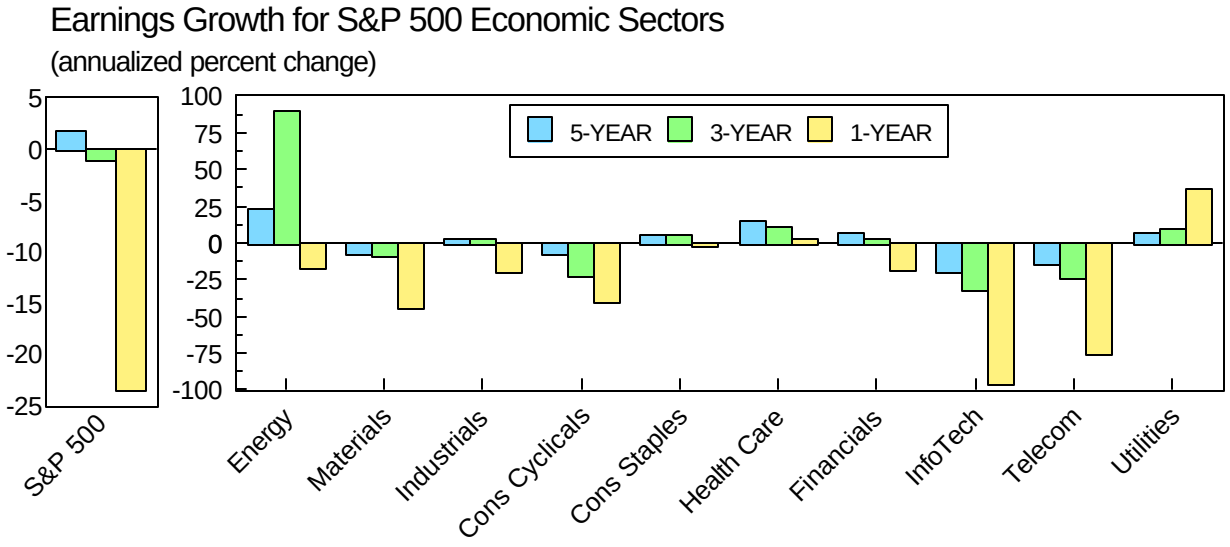
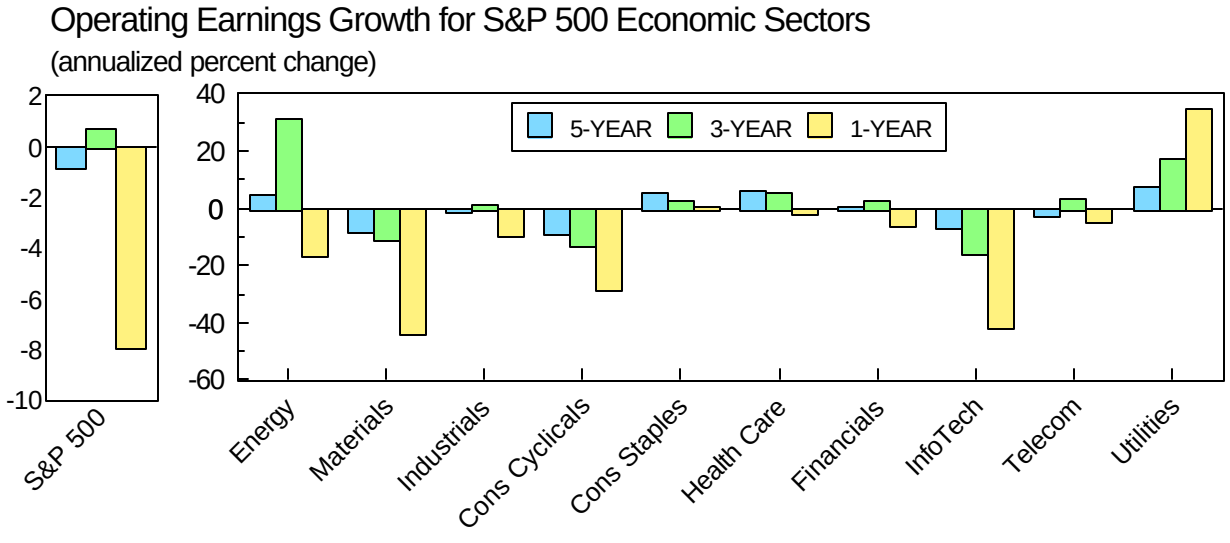


Figure 8

S&P 500 Economic Sectors - Earnings Growth



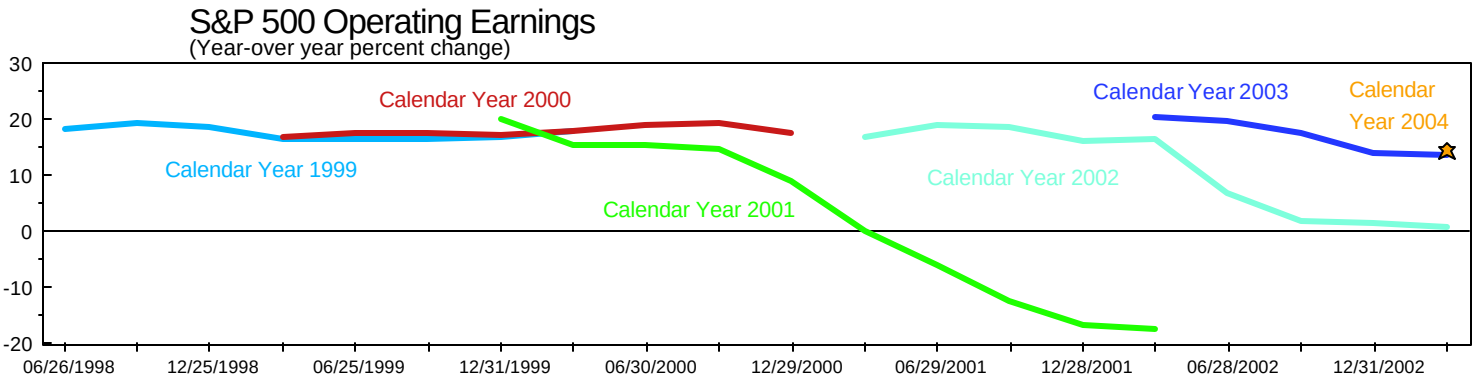




Source: Standard & Poor's Compustat Special Projects, Bloomberg, L.P.

Figure 9

S&P 500 Economic Sectors - Earnings Forecast



Growth of Earnings - Quarterly Pattern

(4-quarter percent change)

Sector	Current Dec02Q	Oct-02 Dec02Q	Jul-02 Dec02Q	Apr-02 Dec02Q		Current Mar03Q	Oct-02 Mar03Q	Jul-02 Mar03Q		Current Jun03Q	Oct-02 Jun03Q		Current Sep03Q		Current Dec03Q
Basic Materials	47.1%	95.5%	109.0%	108.0%		52.1%	104.9%	120.5%		23.5%	54.5%		46.8%		85.6%
Capital Goods	-13.6%	2.1%	7.0%	15.4%		-0.7%	12.2%	10.7%		-3.0%	6.7%		11.1%		22.9%
Telecom	39.4%	17.9%	18.2%	-10.0%		10.7%	11.2%	35.6%		3.5%	1.6%		1.4%		1.1%
Consumer Cyclicals	26.4%	31.8%	35.3%	33.4%		12.4%	21.4%	29.0%		3.5%	13.3%		9.8%		15.7%
Consumer Staples	7.4%	5.2%	10.7%	15.8%		5.4%	11.8%	13.8%		6.2%	12.3%		7.9%		14.6%
Energy	45.0%	45.4%	53.0%	49.0%		99.2%	91.0%	91.4%		19.0%	20.0%		12.0%		2.5%
Financials	17.5%	27.3%	34.6%	36.6%		6.2%	9.7%	13.6%		13.5%	17.1%		17.6%		25.2%
Health Care	9.3%	9.9%	11.0%	15.0%		8.0%	10.6%	11.5%		11.2%	13.8%		15.5%		14.4%
Technology	15.6%	32.4%	54.0%	61.0%		15.2%	28.1%	59.9%		25.1%	37.5%		50.9%		42.3%
Transports	70.9%	140.4%	255.0%	nm		24.6%	19.4%	33.3%		32.4%	14.0%		61.6%		82.5%
Utilities	-27.3%	-12.8%	6.0%	16.0%		-21.0%	-8.2%	9.5%		-10.9%	6.4%		4.4%		25.5%
Total	12.9%	19.9%	27.7%	31.5%		10.5%	17.4%	25.3%		9.9%	16.4%		16.2%		21.3%
Total ex. Tech	12.7%	18.6%	25.3%	28.4%		10.1%	16.4%	22.0%		8.6%	14.5%		13.4%		19.0%
Total ex. Energy	11.2%	18.5%	27.0%	31.1%		6.9%	14.2%	21.1%		9.4%	16.2%		16.5%		22.7%

Growth of Earnings - Calendar Year

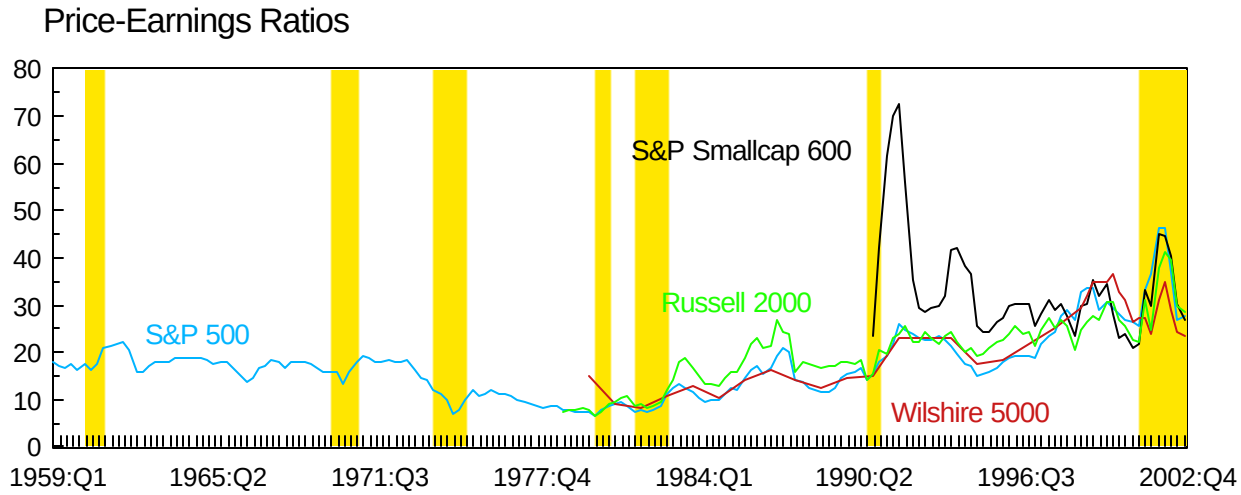
(4-quarter percent change)

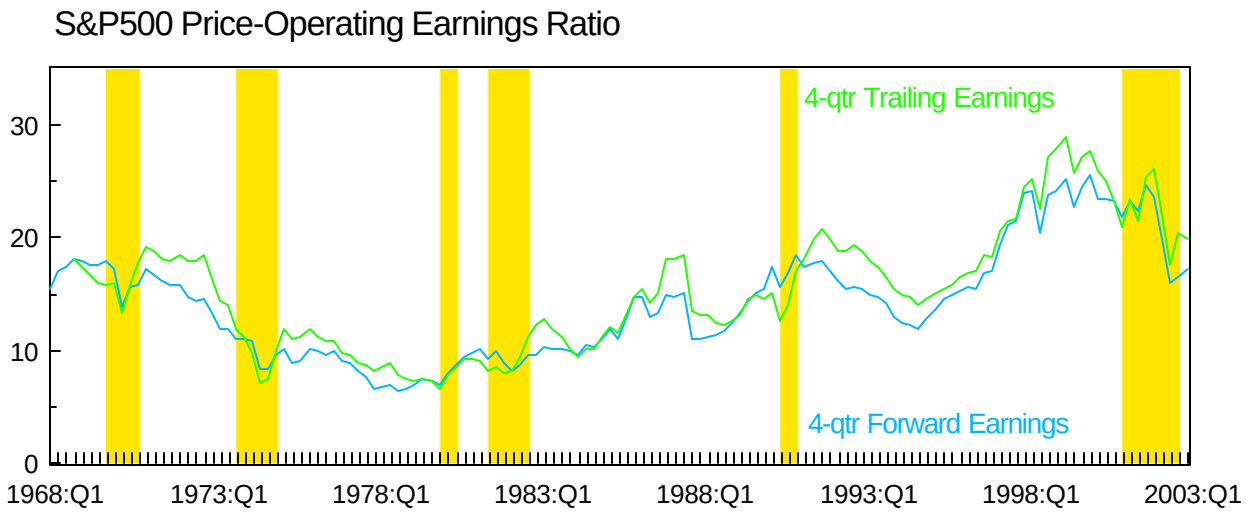
Sector	Current 02CY	Oct-02 02CY	Jul-02 02CY	Apr-02 02CY	Jan-02 02CY	Oct-01 02CY		Current 03CY	Oct-02 03CY	Jul-02 03CY	Apr-02 03CY		Current 04CY
Basic Materials	5.8%	15.8%	22.1%	23.6%	22.2%	70.9%		41.7%	57.0%	64.7%	68.6%		49.4%
Capital Goods	-10.2%	-7.0%	-2.8%	3.5%	2.9%	14.0%		7.1%	12.3%	15.5%	13.4%		12.5%
Communications	3.8%	-8.1%	-10.8%	-9.3%	-8.5%	22.4%		-3.2%	7.8%	9.8%	11.7%		8.8%
Consumer Cyclicals	24.1%	25.1%	23.7%	15.4%	10.8%	21.3%		9.9%	16.2%	19.7%	23.1%		17.5%
Consumer Staples	7.6%	3.6%	5.5%	8.8%	0.4%	14.8%		8.7%	12.7%	14.5%	15.5%		12.9%
Energy	-36.1%	-36.6%	-29.4%	-33.5%	-26.1%	-16.4%		21.0%	23.3%	19.8%	24.8%		0.4%
Financials	11.8%	15.7%	21.2%	22.6%	20.8%	20.5%		15.8%	15.9%	14.7%	14.2%		12.1%
Health Care	4.8%	4.2%	6.3%	10.5%	9.8%	15.9%		12.4%	14.2%	15.1%	14.6%		15.6%
Technology	2.1%	5.6%	30.4%	41.3%	46.4%	59.8%		34.5%	40.2%	52.5%	58.0%		25.0%
Transports	-15.8%	-5.7%	57.7%	nm	nm	166.0%		66.2%	89.6%	156.8%	152.2%		30.6%
Utilities	-24.5%	-18.4%	-7.3%	-1.3%	4.8%	13.4%		-3.7%	3.7%	8.1%	9.1%		6.2%
Total	0.9%	2.1%	6.8%	9.3%	8.8%	18.6%		13.7%	17.8%	20.0%	20.7%		14.6%
Total ex. Tech	0.8%	1.8%	5.0%	6.9%	6.2%	15.1%		11.9%	15.8%	16.9%	17.6%		13.5%
Total ex. Energy	4.5%	5.9%	11.1%	14.0%	13.2%	23.3%		13.3%	17.5%	20.0%	20.4%		15.5%

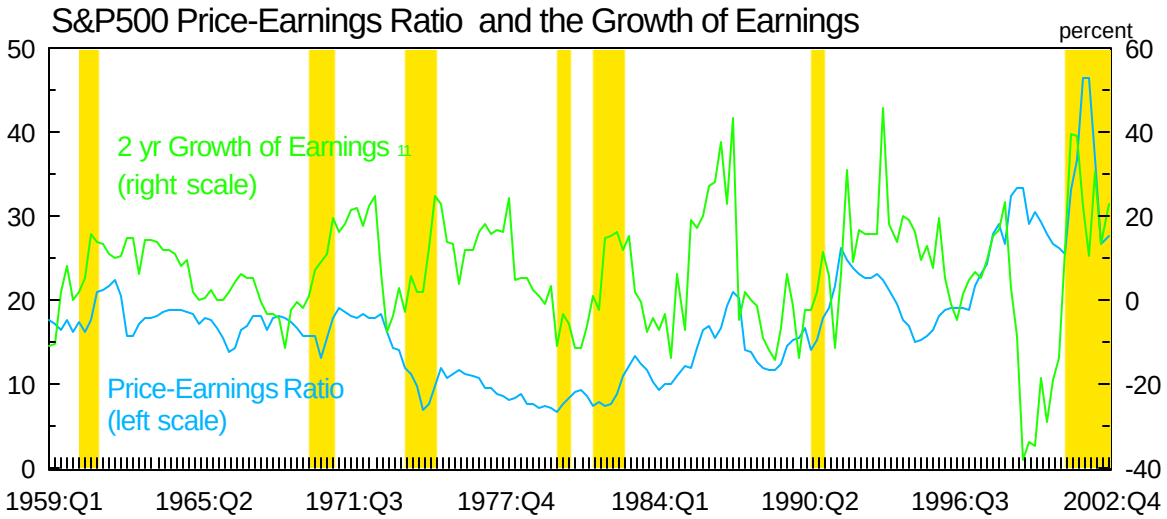
Source: Thomson Financial/First Call

Figure 10

PE Ratios and the Growth of Earnings



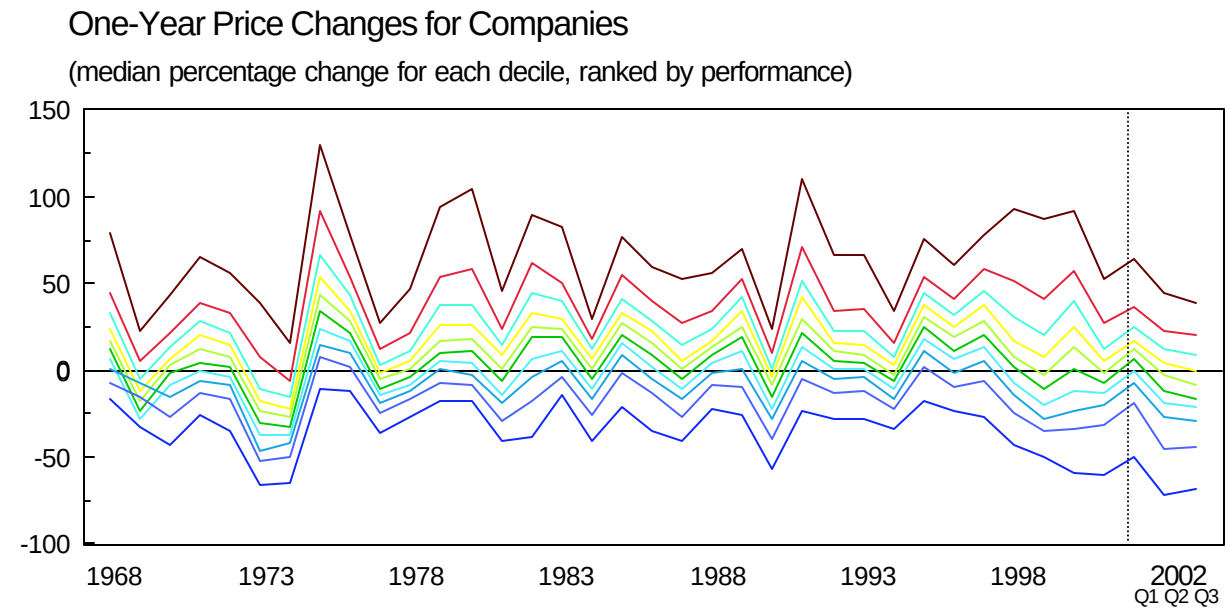


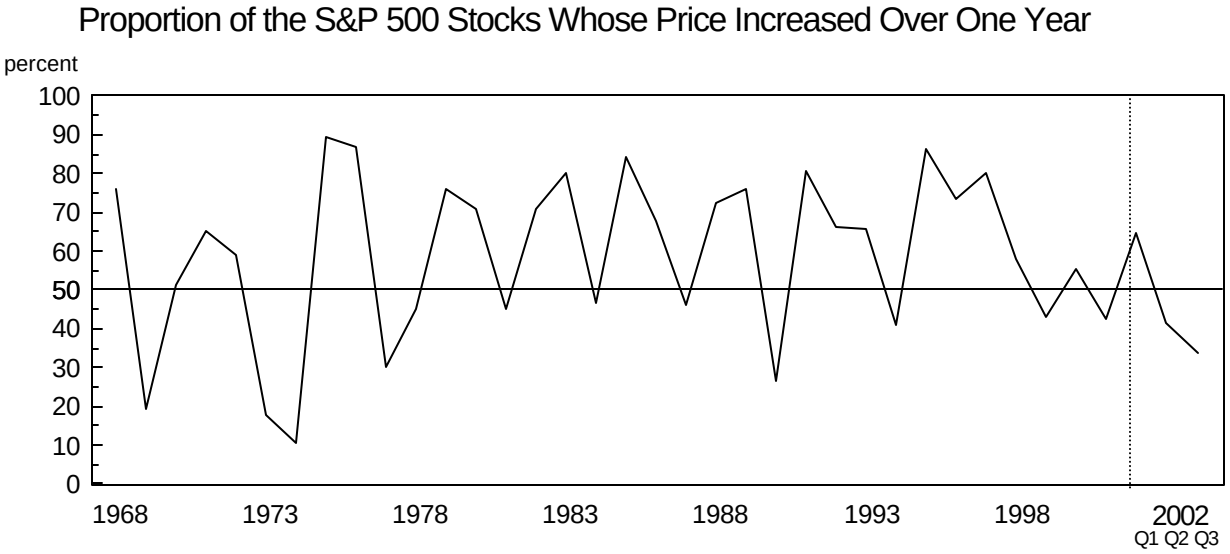


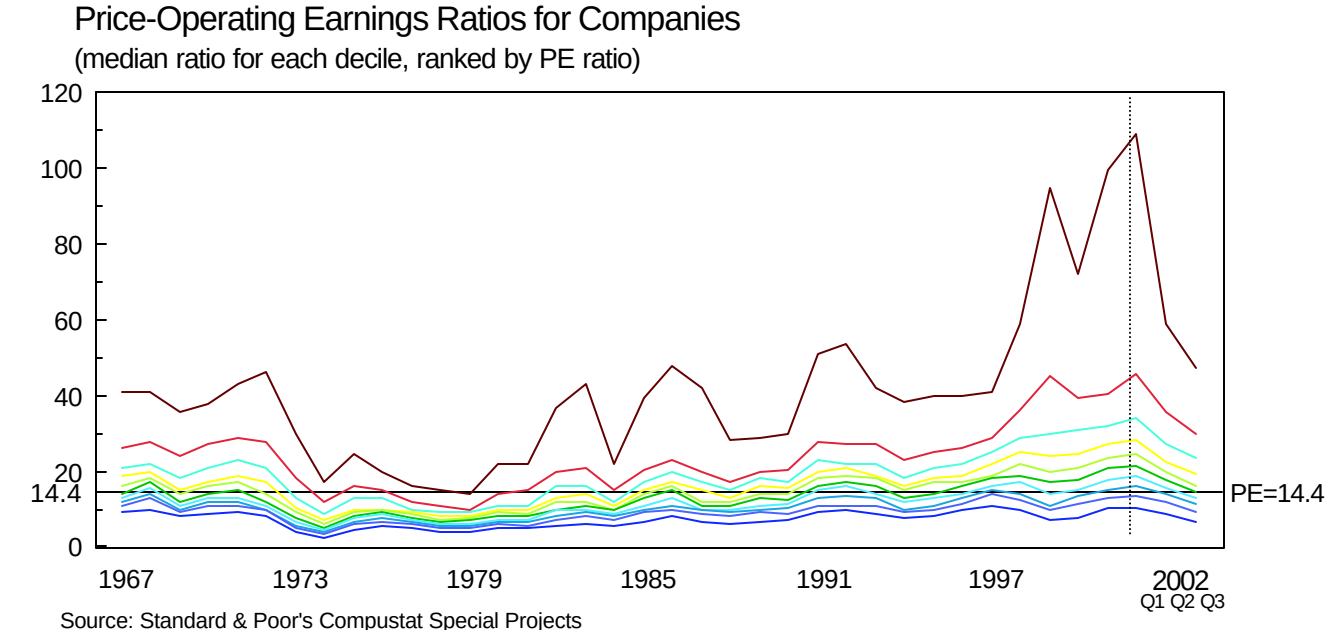
Source: Thomson Financial/First Call, Global Exchange (formerly DRI), Bloomberg L.P., Frank Russell Company

Figure 11

Breadth of the S&P 500





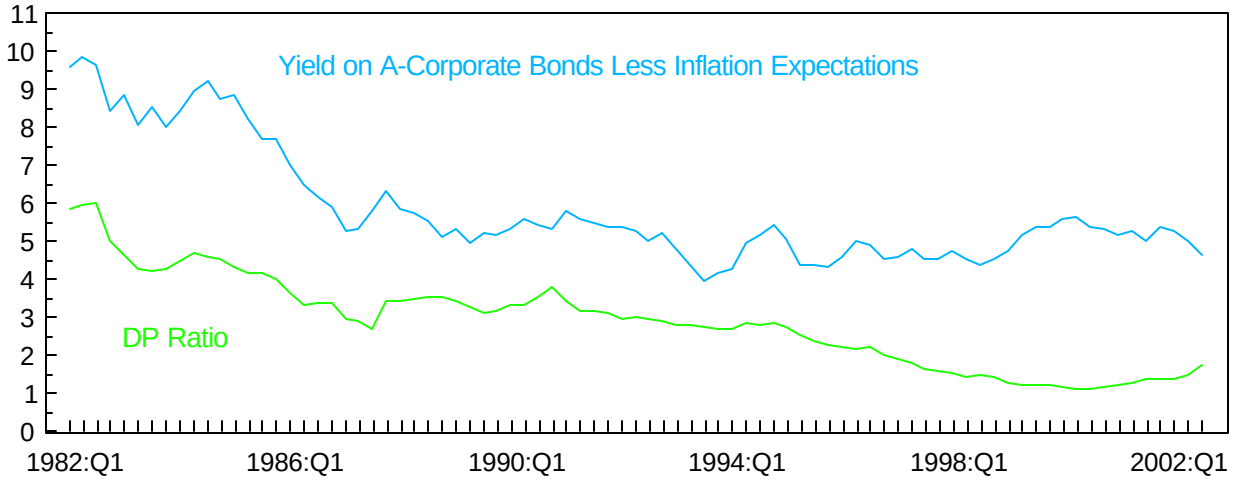


Source: Standard & Poor's Compustat Special Projects

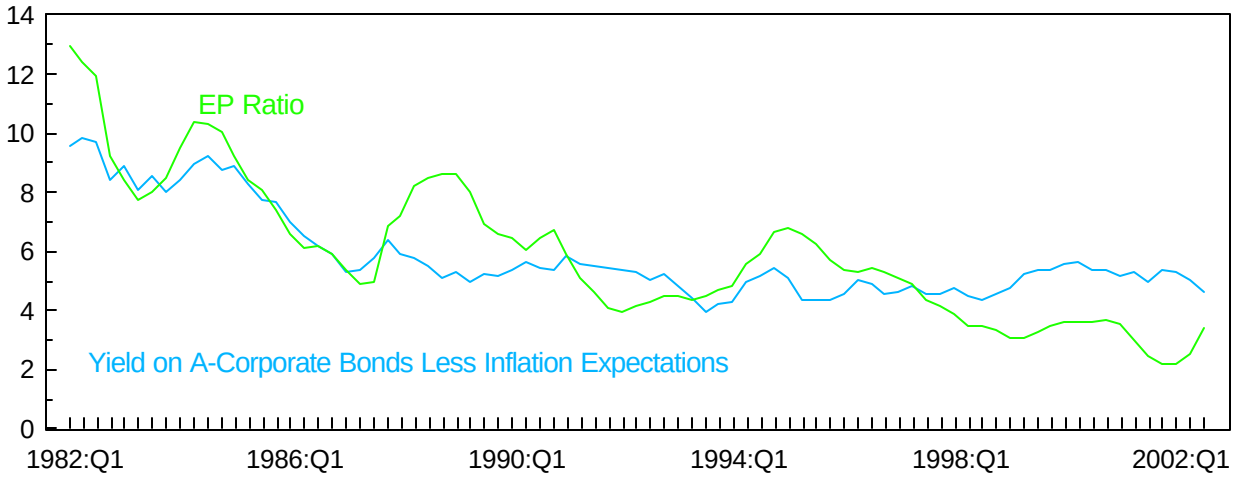
Figure 12

Comparative Returns

Dividend-Price Ratio [12] for the S&P 500 and the Real Corporate Bond Rate [13]



Earnings-Price Ratio [12] for the S&P 500 and the Real Corporate Bond Rate



Growth of Real Earnings for S&P 500

(average rate of growth for 2 years forward)

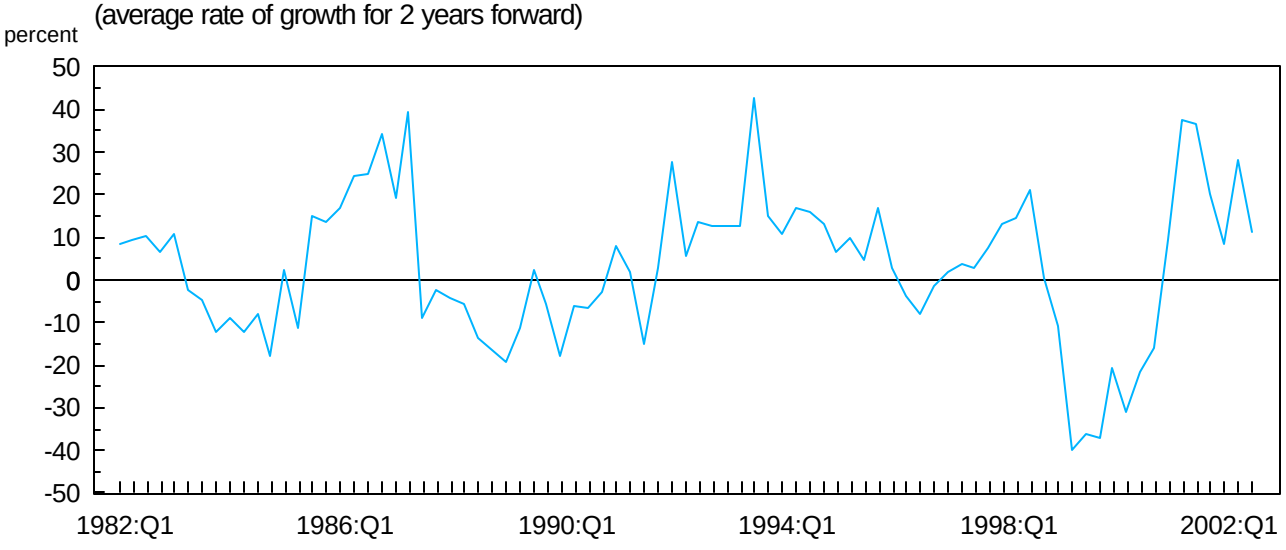
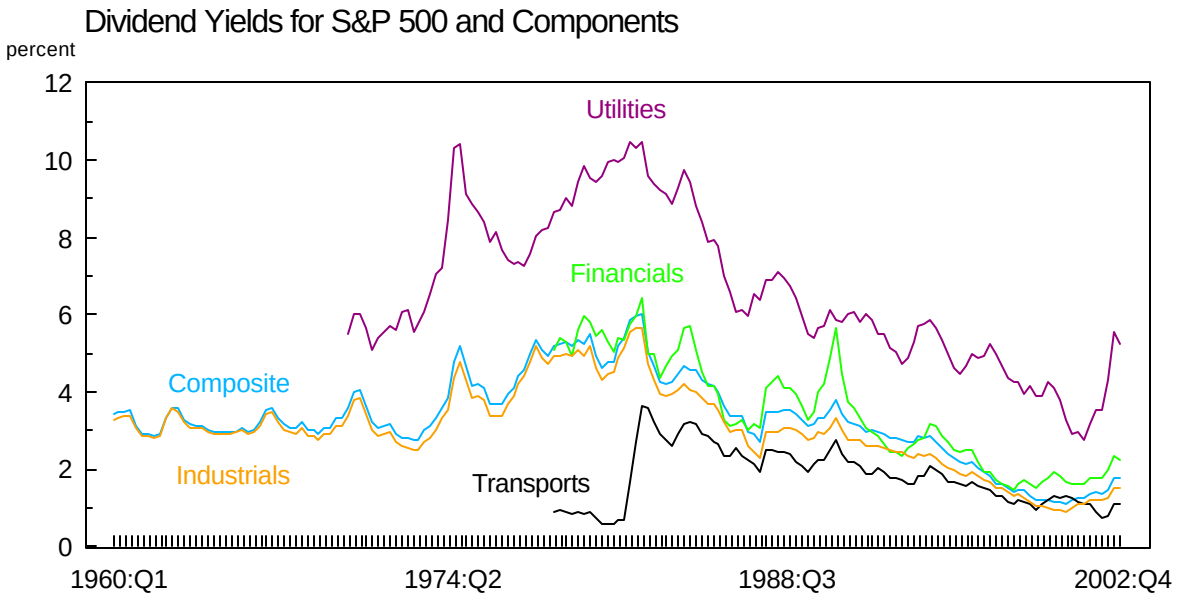
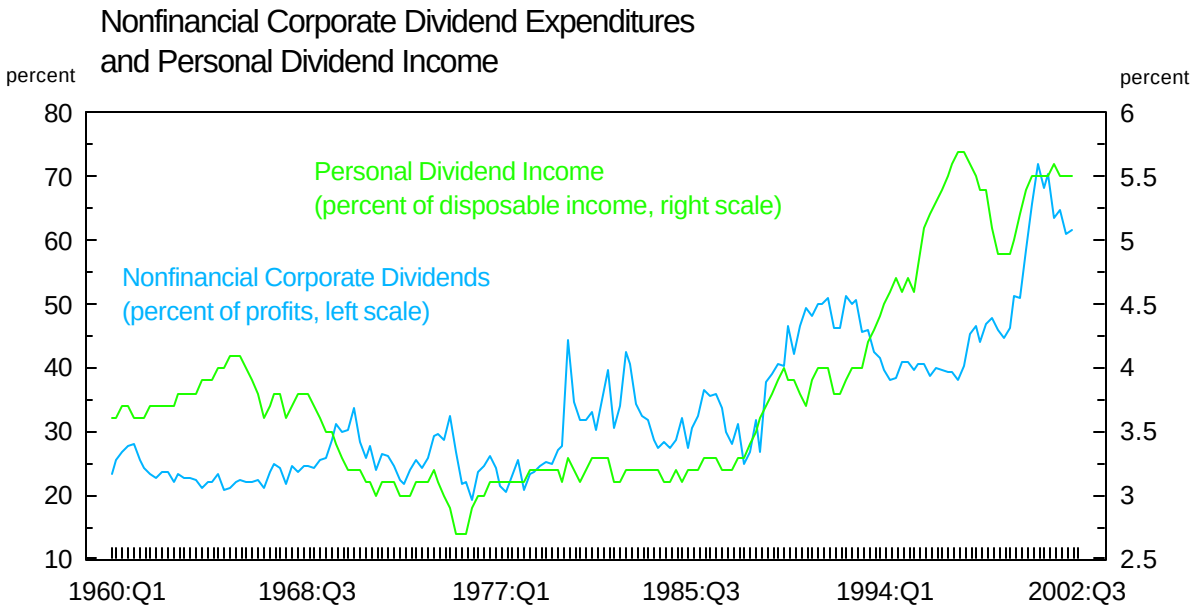


Figure 13

Dividend Yields



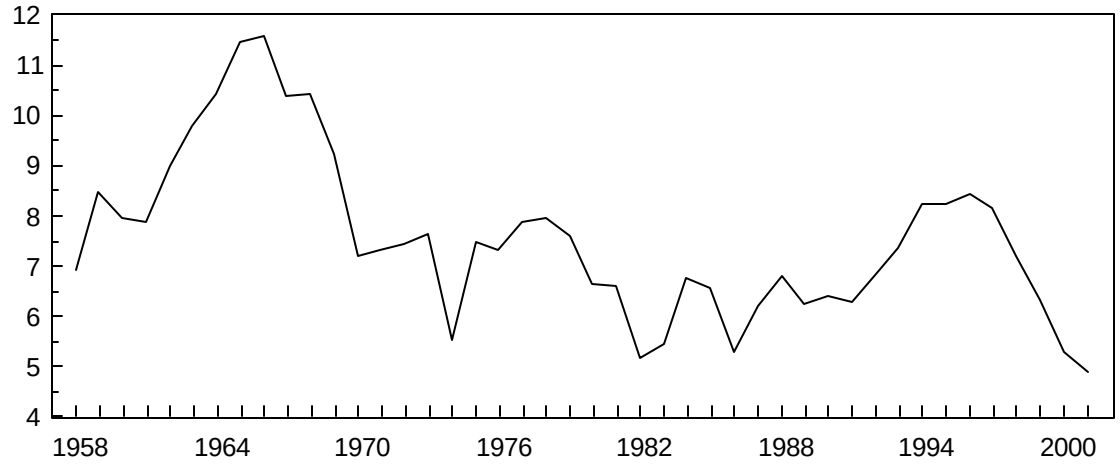


Source: Haver Analytics

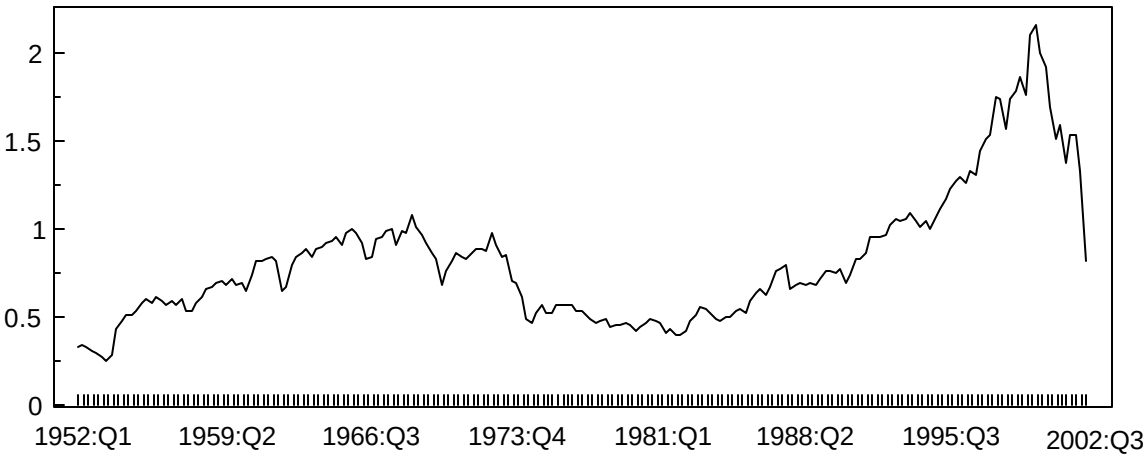
Figure 14
Economic Measures of Equity Valuation

Real Rate of Return on Nonfinancial Corporate Equity

percent (from National Income and Flow of Funds Accounts)

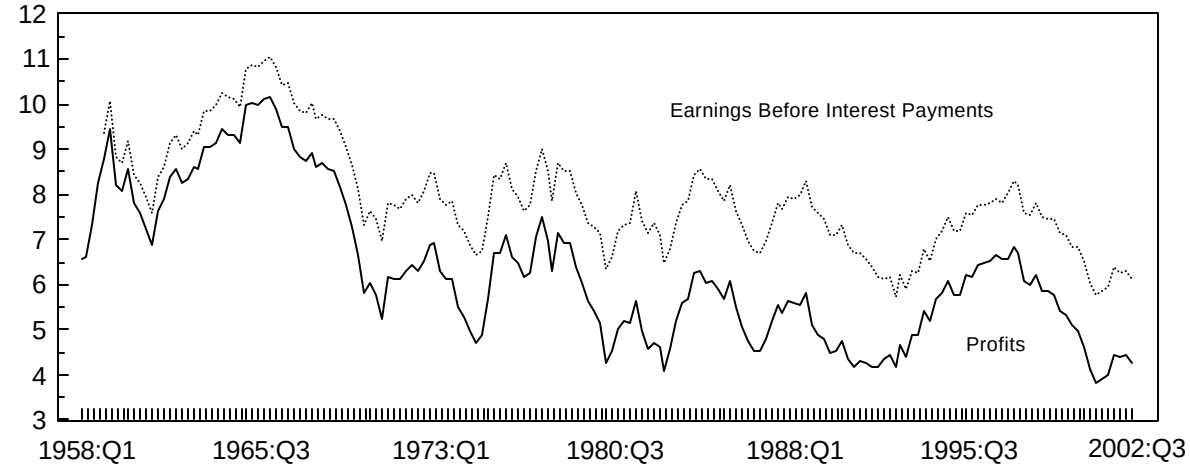


Tobin's q [14]



Profits of Nonfinancial Corporations

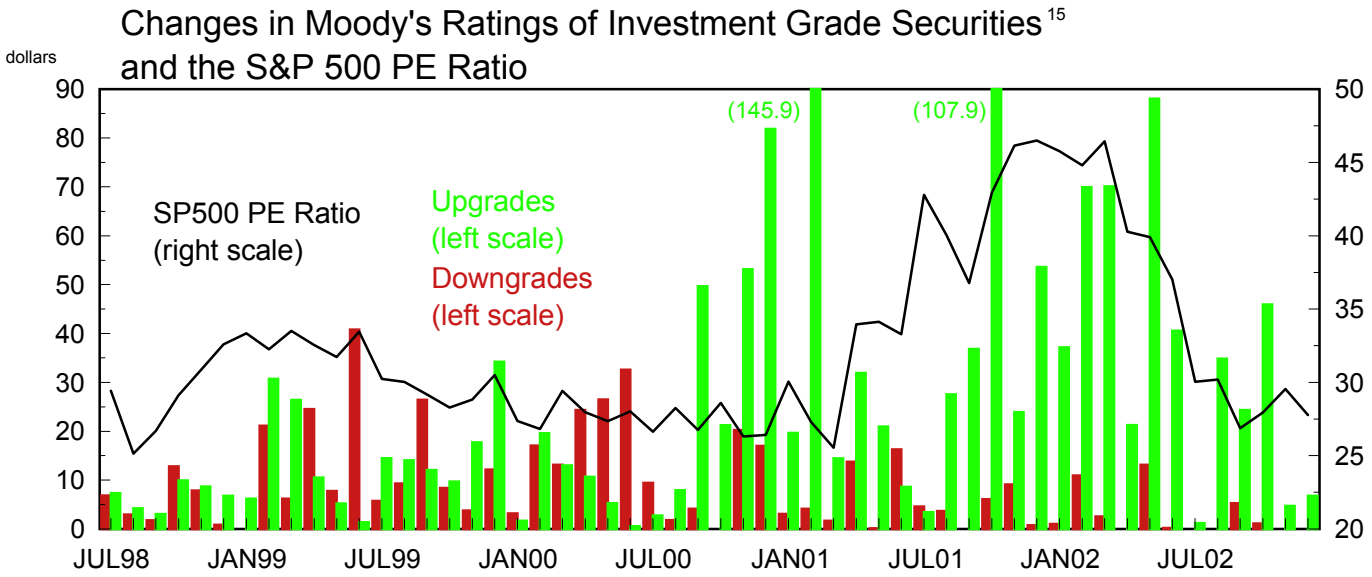
(percent of GDP)

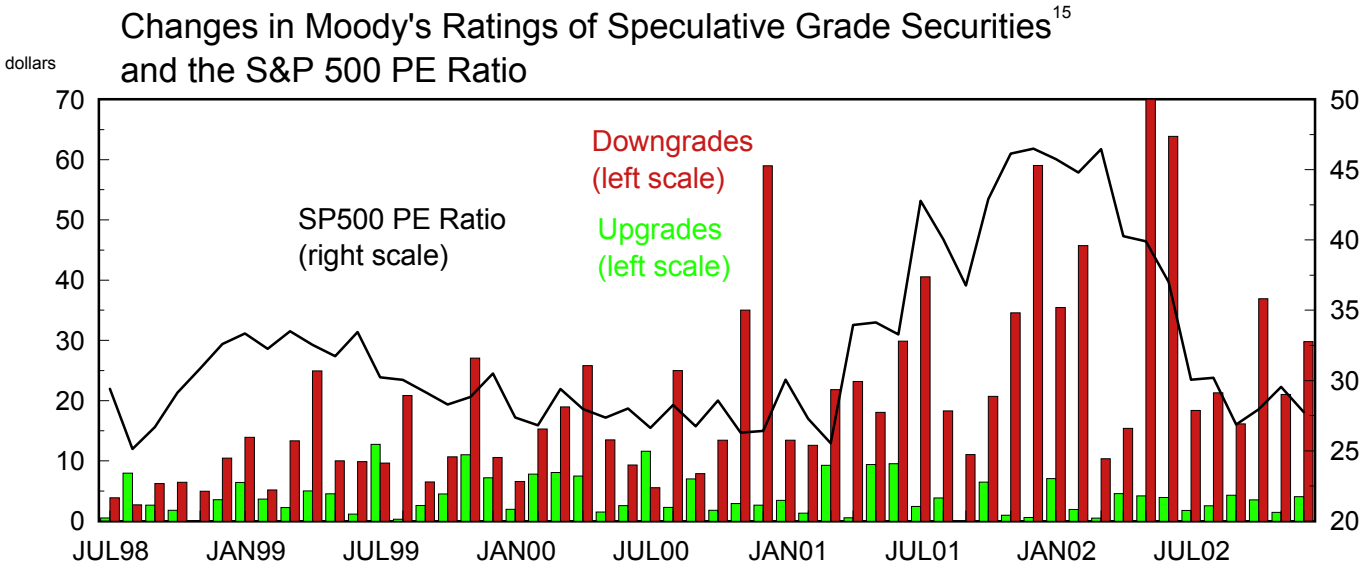


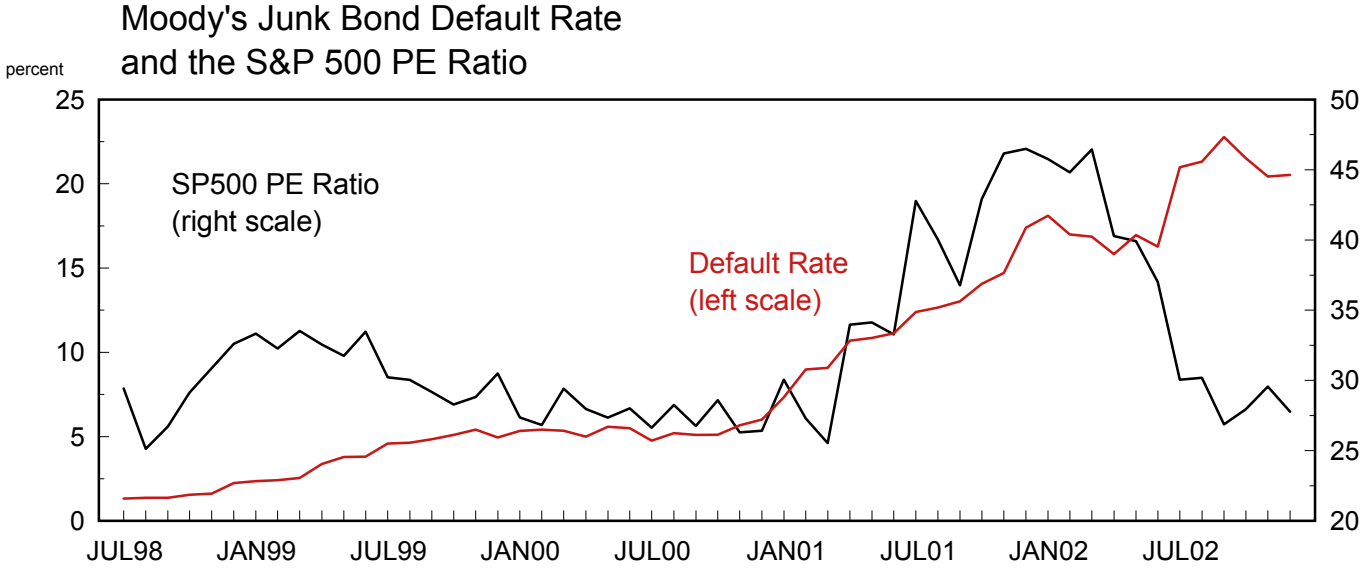
Source: Haver Analytics, NYSE Fact Book, Flow of Funds Accounts

Figure 15

Ratings and Default Rates

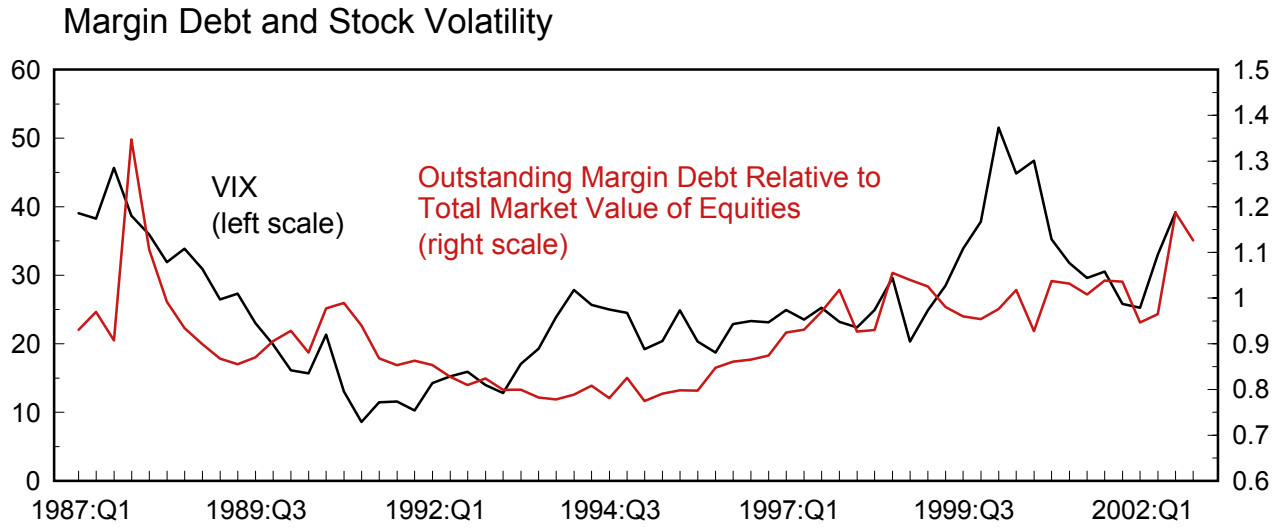


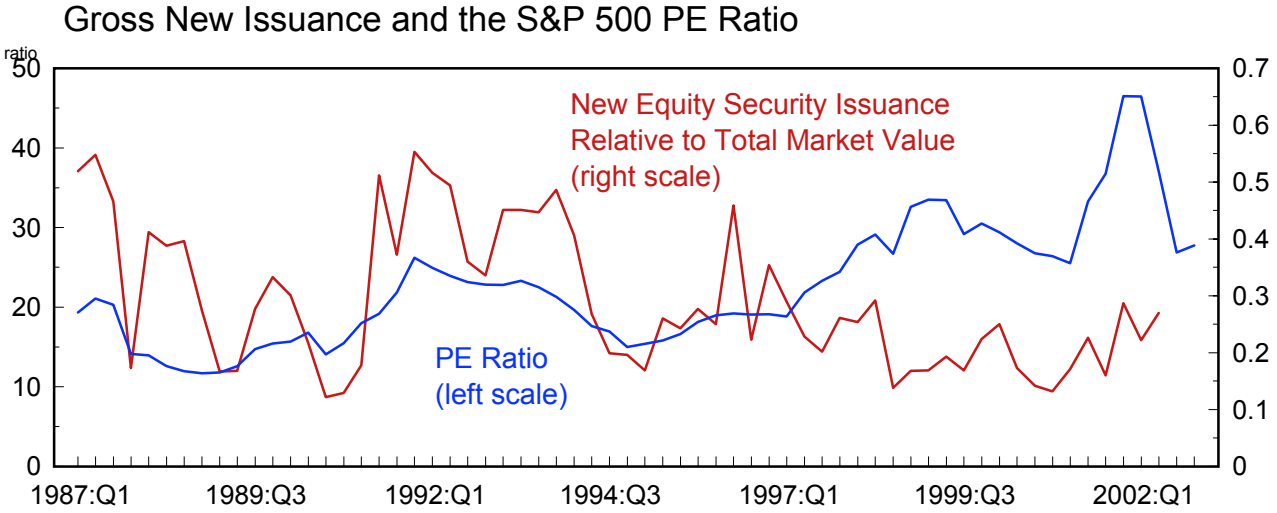


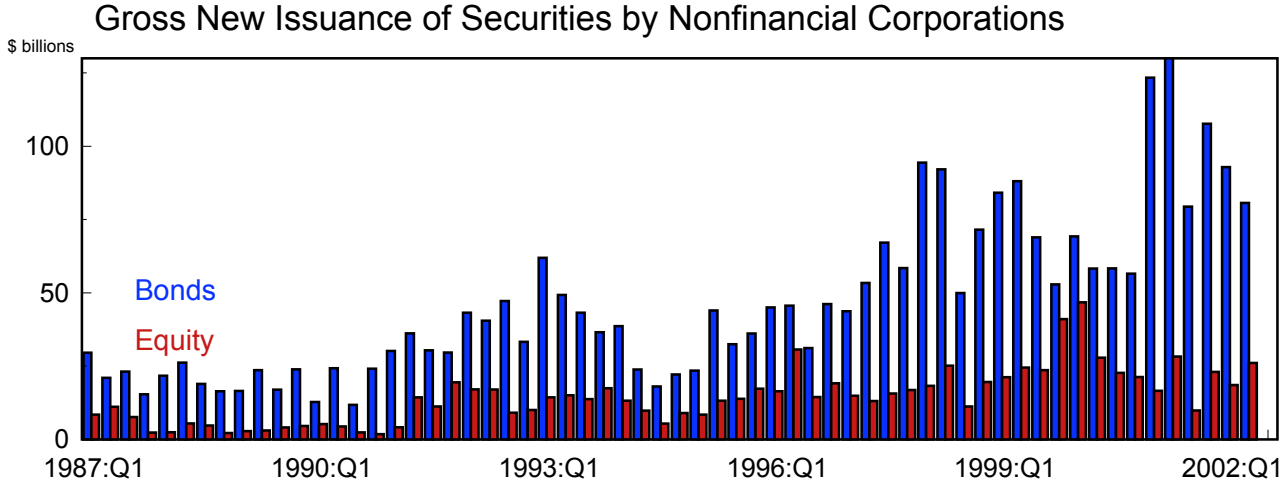


Source: Credqual database, Board of Governors of the Federal Reserve System

Figure 16
Margin Debt and Expected Returns

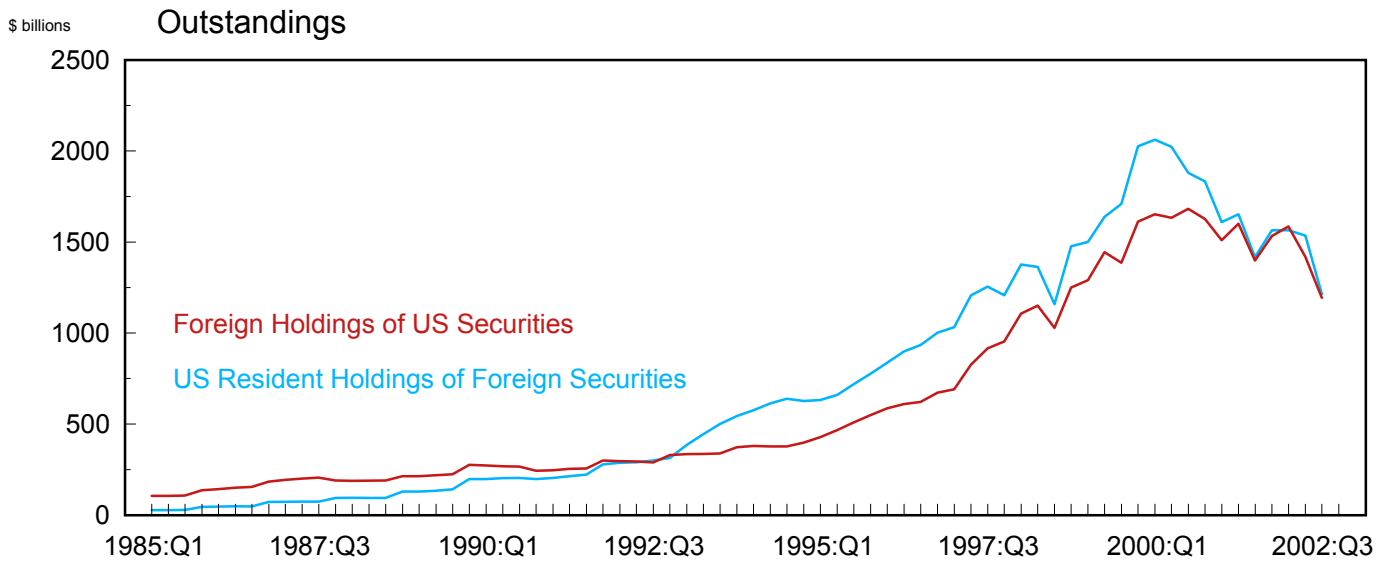


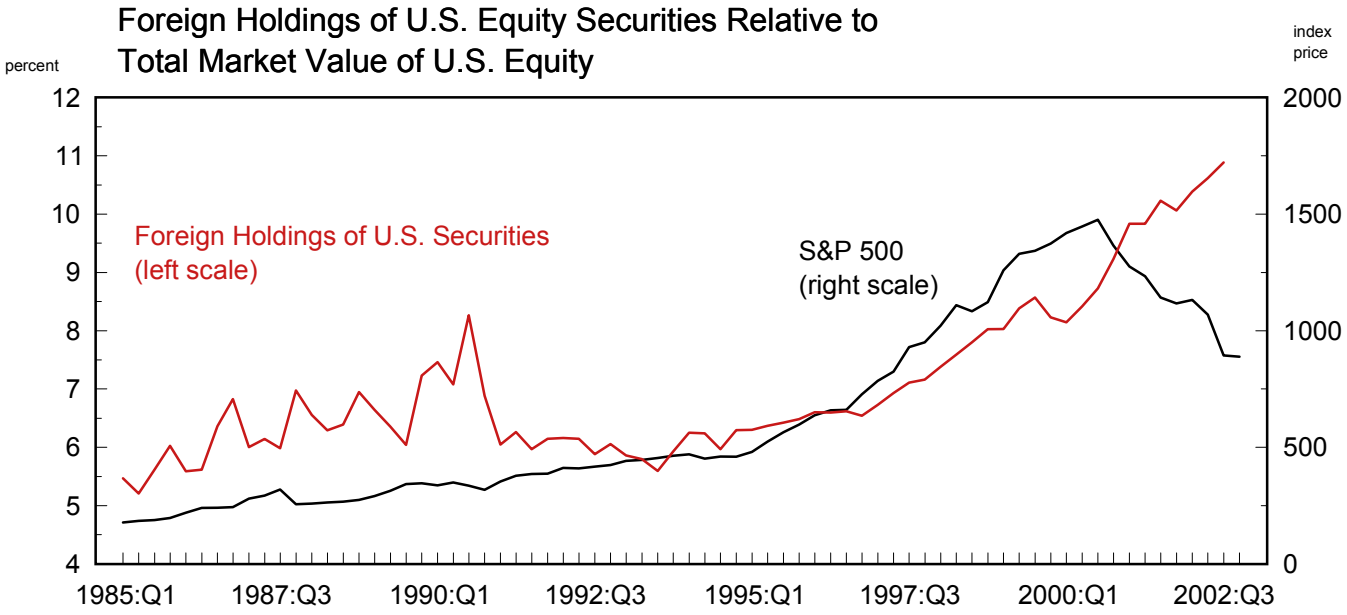


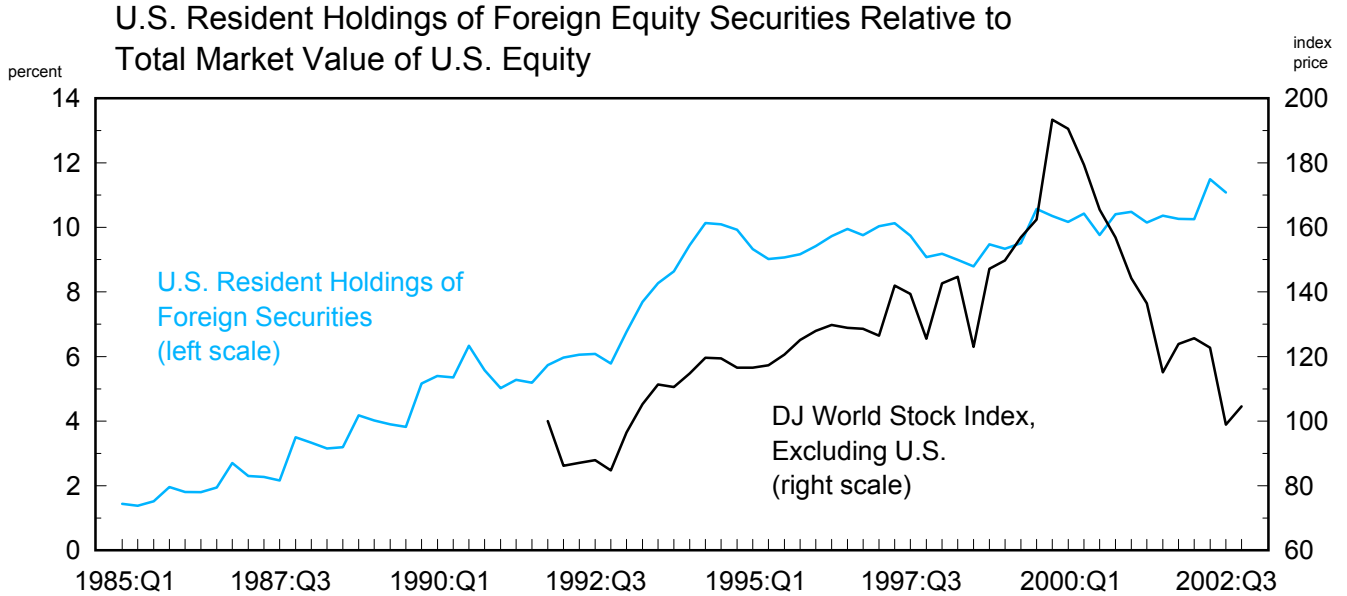


Source: Haver Analytics, FAME

Figure 17
Foreign and Domestic Holdings



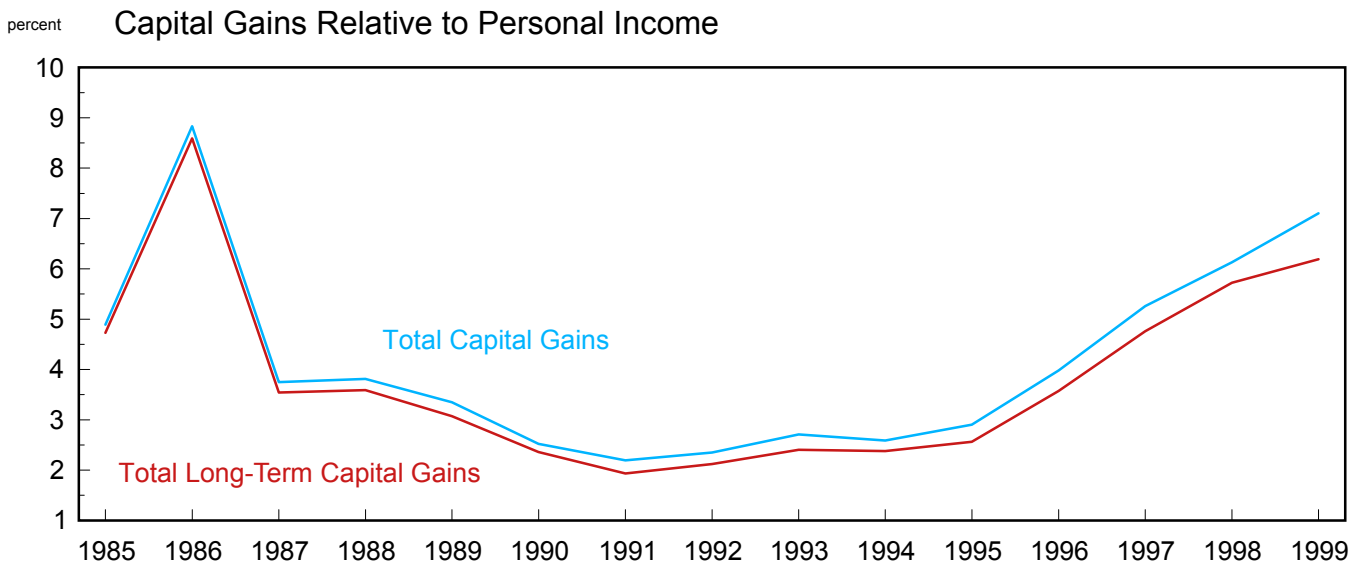


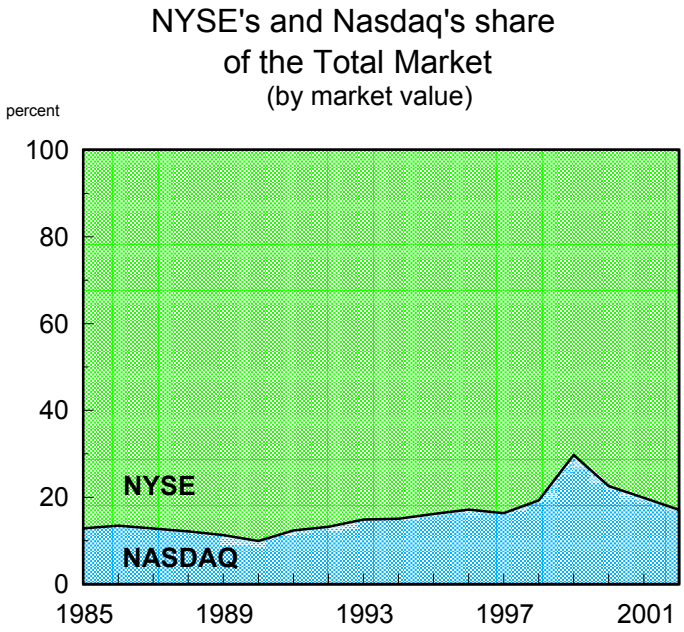


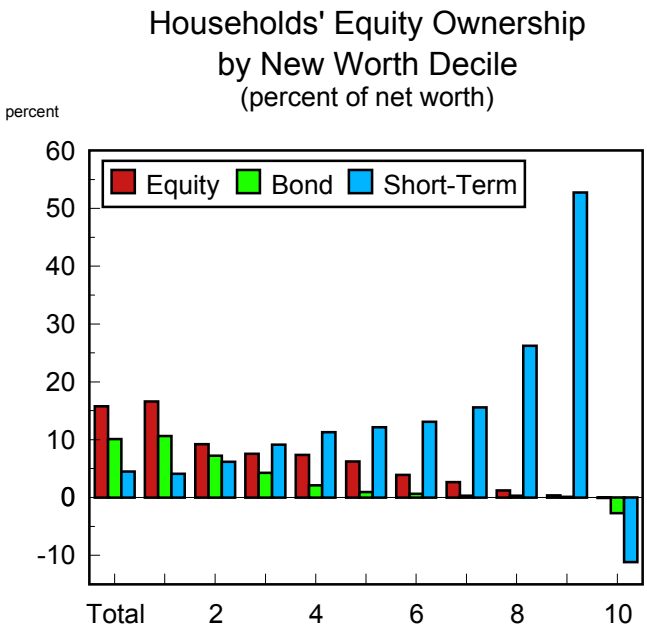
Source: Haver Analytics, FAME, Flow of Funds Accounts of the United States

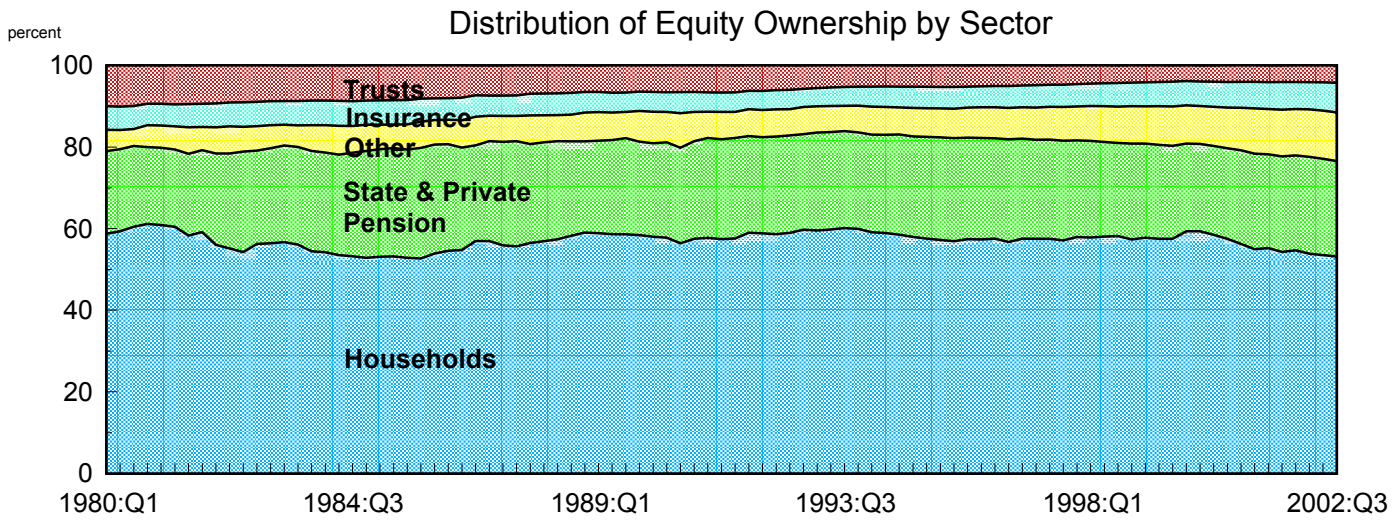
Figure 18

Demographics









Source: Haver Analytics, Survey of Consumer Finance, Flow of Funds Accounts

Endnotes

1. 50-Day, 200-Day Moving Average: Moving averages represent the average price investors paid for securities over a historical period, and present a smoothed picture of the price trends, eliminating the volatile daily movement. Because these lines offer a historical consensus entry point, chartists look to moving average trend lines of index prices to define levels of support or resistance in the market. When a chart trend is predominantly sideways (Figure 1, top chart), moving averages and the underlying series frequently cross, but during a time of prolonged increase or decrease (bottom chart) the daily prices of a security typically are above or below the trailing average. Moving above or below the 50-day moving average is sometimes associated with rallies or corrections. Similarly, prolonged movements, such as bull and bear markets can be represented by securities remaining above or below their 200-day moving average for prolonged periods of time.

2. 9-Day, 18-Day Moving Averages: The 9-day and 18-day moving averages are often used together to provide buy and sell signals. Buy signals are indicated by the 9-day average crossing above the 18-day when both are in an uptrend. The reverse, the 9-day crossing below the 18-day while both moving averages are declining is a sign to sell. However, this simple can often be misleading because of its dependence on trending markets and inability to capture quick market turns.

3. Relative Strength Index: This (RSI) momentum oscillator measures the velocity of directional price movements. When prices move rapidly upward they may indicate an overbought condition, generally assumed to occur above 70 percent. Oversold conditions arise when prices drop quickly producing RSI readings below 30 percent.

4. New Highs, New Lows: A straightforward breadth indicator, this is the 10-day moving average of the number of stocks on a given index or exchange making new 52-week highs or lows each day. This indicator also demonstrates divergence. If an index makes a new low, but the number of stocks in the index making new lows declines, there is positive divergence, and in this case a lack of downside conviction. Conversely, In rising markets if an index makes a new high but the number of individual stocks in that index making new highs does not increase this suggests a false rally.

5. Overbought / Oversold Oscillator: This momentum indicator is calculated by taking the 10-day moving average of the difference between the number of advancing and declining issues for a given index. The goal of the indicator is to show whether an index is gaining or losing momentum, so the size of the moves are more important than the level of the current reading. This is first affected by how the oscillator changes each day, by dropping a value ten days ago, and adding one today. If the advance decline line read minus 300 ten days ago, and minus 100 today, even though the market is down again, the oscillator will rise by 200 because of the net difference of the exchanged days' values. This suggests a

trough, however, if today's reading was minus 500 it would demonstrate a gain in downside momentum.

The magnitude in moves is useful when compared with divergence to the index price. If the Dow peaks at the same time the oscillator peaks in overbought territory, it suggests a top. If the index then makes a new high but the oscillator fails to make a higher high, divergence is negative and momentum is declining. If the index at this point declines and the oscillator moves into oversold territory it may again be time to buy. If the index rises but does not make new highs, but the oscillator continues to rise above a previous overbought level, upside momentum exists to continue the rally.

6. Cumulative Advance / Decline Line: Referred to as market breadth, the indicator is the cumulative total of advancing minus declining issues each day. When the line makes new highs a rally is considered widespread, but when lagging a rally is seen as narrow.

7. Volatility: With regard to stock prices and stock index levels, volatility is a measure of changes in price expressed in percentage terms without regard to direction. This means that a rise from 200 to 202 in one index is equal in volatility terms to a rise from 100 to 101 in another index, because both changes are 1 percent. Also, a 1 percent price rise is equal in volatility terms to a 1 percent price decline. While volatility simply means movement, there are four ways to describe this movement:

    1. *Historic volatility* is a measure of actual price changes during a specific time period in the past. Mathematically, historic volatility is the annualized standard deviation of daily returns during a specific period. CBOE provides 30 day historical volatility data for obtainable stocks in the Trader's Tools section of this Web site.
    2. *Future volatility* means the annualized standard deviation of daily returns during some future period, typically between now and an option expiration. And it is future volatility that option pricing formulas need as an input in order to calculate the theoretical value of an option. Unfortunately, future volatility is only known when it has become historic volatility. Consequently, the volatility numbers used in option pricing formulas are only estimates of future volatility. This might be a shock to those who place their faith in theoretical values, because it raises a question about those values. Theoretical values are only estimates, and as with any estimate, they must be interpreted carefully.
    3. *Expected volatility* is a trader's forecast of volatility used in an option pricing formula to estimate the theoretical value of an option. Many option traders study market conditions and historical price action to forecast volatility. Since forecasts vary, there is no specific number that everyone can agree on for expected volatility.
    4. *Implied volatility* is the volatility percentage that explains the current market price of an option; it is the common denominator of option prices. Just as p/e ratios allow comparisons of stock prices over a range of variables such as total

earnings and number of shares outstanding, implied volatility enables comparison of options on different underlying instruments and comparison of the same option at different times. Theoretical value of an option is a statistical concept, and traders should focus on relative value, not absolute value. The terms "overvalued" and "undervalued" describe a relationship between implied volatility and expected volatility. Two traders could differ in their opinion of the relative value of the same option if they have different market forecasts and trading styles.

8. CBOE Volatility Index (VIX): The VIX, introduced by CBOE in 1993, measures the Volatility of the U.S. equity market. It provides investors with up-to-the-minute market estimates of expected volatility by using real-time OEX index option bid/ask quotes. This index is calculated by taking a weighted average of the implied volatilities of eight OEX calls and puts. The chosen options have an average time to maturity of 30 days. Consequently, the VIX is intended to indicate the implied volatility of 30-day index options. It is used by some traders as a general indication of index option implied volatility. (Source: CBOE)

9. CBOE NASDAQ Volatility Index (VXN): Like the VIX, the VXN measures implied volatility, but in this case for NASDAQ 100 (NDX) index options, thereby representing an intraday implied volatility of a hypothetical at-the-money NDX option with thirty calendar days to expiration. Both the VXN and the VIX are used as sentiment indicators for the NASDAQ 100 and for the broader market, respectively. Higher readings and spikes generally occur during times of investor panic and at times coincide with market bottoms. Low readings suggest complacency and often occur around tops in index prices.

10. Put / Call Ratio: These ratios are used as contrary sentiment indicators. Higher ratio values, indicating more put trading, is considered more bullish. The CBOE index ratio tracks trade volume of all exchange traded index options, reflecting sentiment of professional and institutional strategies. The CBOE equity ratio is composed of trade volume for individual equity options and a better indicator of retail investor sentiment. Equity ratio readings 60/100 and 30/100 denote levels of bullishness and bearishness. Similarly, bullish and bearish boundaries for the S&P 100 are 125/100 and 75/100.

11. 2-Year Growth of Earnings: Growth of earnings over subsequent 8 quarters. Current observations use forecast of earnings from macro projections.

12. Earnings and Dividend Price Ratios: These ratios represent an investor's yield from earnings and dividend payments. Historically, the EP ratio often has exceeded the real return on bonds, reflecting the greater risk to shareholders for choosing equity investments. Recently, the EP ratio has fallen below the return on bonds as investors demand uncharacteristically large capital gains to compensate for the low earnings yield. Historically, the EP ratio has fallen below the real bond rate only when earnings are expected to rise dramatically.

13. Real Bond Rate: Moody's composite yield of A-rated corporate bonds less the expected rate of inflation over the next 10 years as measured by the consumer price index from the Survey of Professional Forecasters, published by the Federal Reserve Bank of Philadelphia.

14. Moody's Ratings: Denotes the change in dollar amount of investment grade (above BA1) or speculative grade (BA1 or below) securities outstanding for a particular company if that company is up/downgraded during a given month. For example, if company XYZ was upgraded, and they had bonds rated AA2 for $10, AA1 for $2, and A3 for $15, this company's contribution to the chart value is $27.

15. Investor Expectations: Internally generated composite of the Conference Board's 12-month forward investor expectations for no change, increase, and decrease in the stock market. Composite values of 50 indicate neutral expectations. Values below 50 demonstrate bearish sentiment, though the chart demonstrates that the outlook of investors is typically bullish.

16. Tobin's q: The ratio of the market value of equity plus net interest bearing debt to current value of land, inventories, equipment, and structures.