

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

U.S. MARKET COMMENT: THE RISE AND FALL OF THE S&P 500

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The Rise and Fall of the S&P 500

Investors prescient or lucky enough to invest in the S&P 500 at the start of the great bull market in 1982 and sell the index just on March 31, 2000 (just after the March 24th peak), would have enjoyed an average annual compound return (AACR) of 18.3%. A \$100 initial investment would have grown to \$2,164 over the 18.25 years. Much of this return was due to dividends, as \$100 would have grown to \$1,223 over the period without the reinvestment of dividends—just over half of the accumulation if dividends had been reinvested. None-the-less, the capital appreciation over the period was exceptional—14.7% on an average annual basis. Between March 31, 2000 and March 31, 2002, however, the market has lost a cumulative 23.4%. Investors that held on to their investment in the index through the end of March 2002 would have seen their fortunes dwindle to \$1,694 with dividends reinvested, and \$936 without reinvestment. To understand how we got to where we are today, and what we might reasonably expect of U.S. equities tomorrow, we thought it worth deconstructing the drivers of returns.

How Did We Get There?

Over the course of the 18.25-year bull market, more than half of the market's capital appreciation was driven by inflation and the decline in interest rates, and another 20% by multiple expansion, leaving only about 20% of the appreciation attributable to real earnings growth. (See Table A.)

While forward and trailing P/E multiples both expanded at an annual average rate of about 7.5% over the period, accounting for about half of the capital appreciation of the index, about 60% of the multiple expansion was driven by interest rates, which fell at an annual rate of 4.3%. Trailing P/E multiples based on reported earnings increased from 8.0 to 29.4 and forward P/E multiples based on operating earnings expanded by a similar margin (6.6 to 25.0), as the 30-year Treasury yield fell from 13.0% to 5.8%. The fall in interest rates was the most significant driver of capital appreciation over the period, accounting for about 30% of the 14.7% AACR of S&P 500 prices, while multiple expansion, over and above what is attributable to declining interest rates, accounted for about 20%.

Approximately 45% of the price return of the S&P 500 from 1982 to March 2000 was driven by rising corporate profitability. Over the period, reported earnings increased at an average annual rate of 6.8%, while 12-month forward earnings expectations increased at almost the same rate (6.7%). However, about half of this increase in earnings was due to inflation, as both real reported earnings and inflation increased at an annual rate of 3.3%, accounting for just over 20% of the price return of the index.

Where Are We Now?

Between March 31, 2000 and March 31, 2002, inflation continued to be a positive contributor to the S&P 500, generating a positive AACR of 2.0%, compared to the -12.5% price return of the S&P 500. However, interest rates were a negative contributor, as 30-year Treasury yields rose from 5.84% to 5.96%, accounting for a -1.0% AACR. The contributions of earnings and multiple expansion is far less clear, as the answer depends on whether you look at reported earnings or operating earnings.

While both real operating and reported earnings have contracted, reported earnings have contracted far more precipitously, at an average annual rate of 39.1%, compared to just 10.4% for operating earnings. Similarly, 12-month forward operating earnings expectations contracted at an annual rate of 6.7% in real terms. The hit to reported earnings, driven by the slowdown in the economy and poor stock performance, caused many companies to engage in "big bath" accounting, depressing earnings to a greater degree. However operating earnings were not as affected, as they generally exclude the many charges that impacted reported earnings, including charges that are recurring and arguably related to ongoing operations.¹ Given that reported earnings fell at a faster rate than did the market, while operating earnings and forward earnings estimates fell at a slower rate, P/E multiples had a positive impact on returns when based on reported earnings and a negative impact when based on operating earnings.

Where Do We Go From Here?

Looking forward, the main question for U.S. stock investors is how each of these drivers of return might be expected to affect future returns.

- **Falling interest rates and rising inflation.** These two drivers, responsible for about half of the price appreciation during the bull market, are widely expected to have a smaller impact on returns going forward. The bond markets are pricing in inflation expectations of approximately 2%, and with interest rates as low as they are today, it is difficult to imagine the same degree of benefit from interest rates unless the economy falls into deflation, in which case earnings would deteriorate.
- **Valuation multiples.** P/E multiples, whether based on forward operating earnings or trailing reported earnings, are well above their long-term means, although the latter is clearly more extended at 58.5, or a whopping 6.8 standard deviations above its long-term average. The P/E

¹ For more discussion on differences in reported and operating earnings, see our November 2001 report, *U.S. Market Comment: Writing Down U.S. Equity Valuations*.

based on forward operating earnings, at 21.2, is still 1.5 standard deviations above its long-term average, despite coming down 15.2% since March 2000. Regardless of the metric used, it seems unlikely that valuations will be a positive contributor to returns over the long term.

- **Earnings growth.** Forward earnings expectations remain strong, with I/B/E/S consensus earnings estimates of 17.4% growth in 2002, 20.9% growth in 2003, and 14.2% over the next three to five years. As we have noted repeatedly, earnings growth rates of this magnitude are unlikely based on historical earnings trends. Earnings have grown 6.0% in nominal terms and 2.6% in real terms annually on average over the last 75 years.² Furthermore, earnings growth has exceeded 17.4% in only 17 years, 20.9% in only 13 years, and 14.2% in only 11 of 71 rolling five-year periods. Many analysts claim that these optimistic earnings expectations are justified because earnings are so depressed. However, as we noted in last month's *U.S. Market Comment: A Short, Sharp Earnings Recovery?*, while operating earnings have fallen approximately 20%, this decline is close to the post-1926 average peak-to-trough cumulative earnings declines.

Reported earnings are down to levels last seen in 1993 and should be expected to generate above average growth once they begin to recover. However, reported earnings could sink lower before beginning their recovery as corporations continue to take large goodwill write-offs following the change in accounting rules and as they move to more conservative accounting practices in the aftermath of the Enron debacle. Reported earnings have already declined 63.5% from their September 2000 peaks. This magnitude of earnings decline has occurred only twice since our data series begins in 1926—in 1937-38, when earnings fell 59% (60% in real terms) and in 1929-32, when earnings fell 75% (67% in real terms). For the ten years following these periods, earnings increased at an average annual rate of approximately 7% in real terms for both periods, and 12% and 10% in nominal terms, respectively. While earnings usually expand rapidly coming out of recessions because previously constrained consumers and corporations act on their pent-up demand to spend, we would expect earnings growth from this source to be relatively low, as there is little if any pent-up demand in the current environment of high consumer spending, low savings rates, and low capacity utilization.

² Eliminating the sharp decline in earnings in 2001 results in nominal earnings growth of 6.8% and real earnings growth of 3.7% on average.

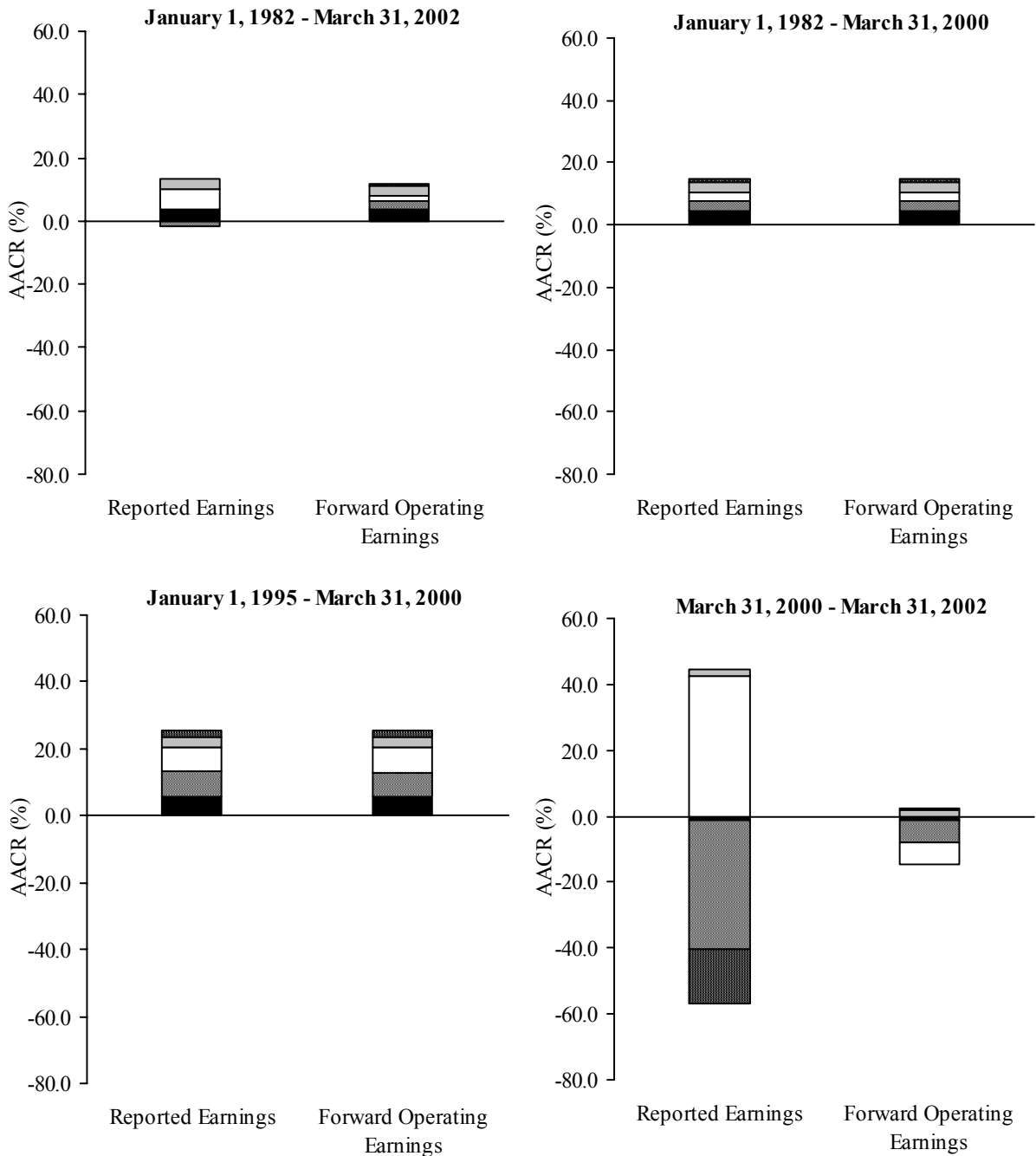
In short, the basis of our relatively pessimistic view of the U.S. equity market is that:

- Interest rates seem more likely to rise than to decline, unless the economy falls back into deeper recession.
- Inflation expectations are already low, with room for disappointment.
- Historically high P/E multiples—whether on trailing, forward, reported, or operating earnings already discount what may prove unrealistic earnings growth, and would seem more likely to contract than to expand in the coming years.

Table A

SUMMARY OF S&P 500 RETURN COMPONENTS

Based on 12-Month Trailing Reported Earnings and 12-Month Forward Operating Earnings



Change in Interest
 Change in Earnings
 Multiple Expansion
 Inflation
 Compounding

Table A (continued)

SUMMARY OF S&P 500 RETURN COMPONENTS

Based on 12-Month Trailing Reported Earnings and 12-Month Forward Operating Earnings

	Trailing Reported Earnings							
	Average Annual Compound Return (%)				Percent of Price Return			
	Jan 82- Mar 02	Jan 82- Mar 00	Jan 95- Mar 00	Mar 00- Mar 02	Jan 82- Mar 02	Jan 82- Mar 00	Jan 95- Mar 00	Mar 00- Mar 02
Price Return	11.7	14.7	25.3	-12.5	100.0	100.0	100.0	100.0
Price Return From:								
Change in Interest Rate	3.9	4.5	5.9	-1.0	33.7	30.6	23.3	8.1
Change in Earnings	-1.9	3.3	7.4	-39.1	-16.5	22.7	29.2	312.9
Multiple Expansion	6.2	2.8	7.4	42.5	52.7	19.0	29.2	-339.6
Inflation	3.2	3.3	2.6	2.0	27.4	22.7	10.2	-15.7
Compounding	0.3	0.7	2.0	-16.8	2.6	5.0	8.0	134.3

	Forward Operating Earnings							
	Average Annual Compound Return (%)				Percent of Price Return			
	Jan 82- Mar 02	Jan 82- Mar 00	Jan 95- Mar 00	Mar 00- Mar 02	Jan 82- Mar 02	Jan 82- Mar 00	Jan 95- Mar 00	Mar 00- Mar 02
Price Return	11.7	14.7	25.3	-12.5	100.0	100.0	100.0	100.0
Price Return From:								
Change in Interest Rate	3.9	4.5	5.9	-1.0	33.7	30.6	23.3	8.1
Change in Earnings	2.2	3.2	6.8	-6.7	18.7	21.9	27.1	54.0
Multiple Expansion	1.9	2.9	7.9	-7.0	16.2	19.8	31.3	55.9
Inflation	3.2	3.3	2.6	2.0	27.4	22.7	10.2	-15.7
Compounding	0.5	0.7	2.0	0.3	4.0	5.0	8.0	-2.3

Sources: Salomon Smith Barney, Standard & Poor's, U.S. Treasury, Thomson Financial, Thomson Financial Datastream, and *The Wall Street Journal*.

Notes: Interest rates used are 30-year interest rates, represented by a Salomon Smith Barney series from January 1983 through December 1986 and a Federal Reserve calculated series beginning in January 1987. The 30-year Treasury yield is an extrapolation of the Long-Term Average Rate series calculated by the Treasury following 2/18/02, when the Treasury ceased publication of the 30-year constant maturity series. The total price change is the *compound* sum of the return from interest rates, earnings, multiple expansion, and inflation (not the *arithmetic* sum). 2002 forward operating earnings are through February 26.

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