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U.S. MARKET COMMENT: MOTHER GOOSE REVISTED

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Mother Goose Revisited: Humpty Dumpty Bumps Goldilocks

If Goldilocks was the presiding genius of the fabled new economy of the roaring nineties, Humpty Dumpty may be more appropriate to the current situation—the economy has ground to a halt, corporate profits are in free fall, and stock prices have retreated to their 1998 levels. All the Fed's horses and all the President's men are working to put the U.S. economy back together again, but their conventional tools may prove inadequate.

The Great Fall

During 2001, most economic indicators plummeted. GDP officially fell into recession, capital spending dropped 7.3% over the first three quarters, industrial production fell 6.1%, unemployment rose to 5.8%, and corporate profits fell 20%. Consistent with their customary optimistic bias, analysts began 2001 expecting S&P 500 earnings to grow 5.7%. As the year progressed, they continually ratcheted down their forecasts, and the year ended with the consensus expecting earnings to *fall* 19.0%—an overestimation of 22.4 percentage points. Undeterred, analysts have rung in the new year predicting S&P 500 earnings to grow 15.8% in 2002, snapping back smartly from last year's depressed level.

Climbing Back on the Wall

The bull's case for economic recovery is built primarily on the Federal Reserve's aggressive reflationary policies and the administration's fiscal stimulus. Over the course of 2001, the Fed lowered interest rates 11 times by 475 bps to 1.75%, down from 6.5% at the beginning of the year. Monetary growth has exploded in recent months, with money aggregates M3 and MZM growing at their fastest rates since at least 1983.

The bears argue that conventional monetary policies will be less effective in reflating the economy because the current cycle is quite different from other postwar contractions. First, the current U.S. recession is part of a synchronous global slowdown. Global trade can normally cushion the effects of a downturn for one economy because lower exchange rates usually boost exports. When all countries are struggling, however, this automatic stabilizer is disabled as global trade simply contracts, to everyone's detriment.

Second, unlike other U.S. recessions in the postwar period that were triggered when the Federal Reserve raised interest rates in order to curb inflationary pressures, the current downturn was caused by an investment bust. As a consequence, merely lowering borrowing costs or eliminating excess inventories

(as firms did in record levels during the fourth quarter 2001) may not suffice to end this recession. Excess capacity and strained balance sheets continue to pressure margins and limit capital spending in many industries. Whatever vigor and staying power the future recovery can muster depends on demand from households and corporations—and their mountains of debt dim the prospects for sustained spending growth.

Third, the very same characteristics that have blunted the force of this recession may also serve to moderate the recovery. Typically, pent-up demand boosts growth as the economy emerges from recession, but the current downturn has been tempered by surprising resilience among consumers, particularly in the housing and auto markets. Therefore, households do not have pent-up demand that would otherwise propel a recovery to its next phase.

Nevertheless, current market sentiment reflects the view that priming the monetary and fiscal pumps will prove effective. From the September 21 trough through year-end, the Nasdaq Composite has surged 37% and the S&P 500, 19.3%, while interest rates have climbed 50 to 60 bps from their lows in early November and the yield curve has steepened sharply.

Do and Re-Do the Math

As of year-end 2001, the S&P 500 is somewhat more overvalued than it was at this time one year ago and is nearly as overvalued as it was at the market peak on March 24, 2000, despite price declines of 13.0% for the year, and 24.8% from its peak level. Stock prices are influenced by three key drivers: earnings growth, discount rates (the risk-free rate plus the equity risk premium), and valuation multiples. Between March 2000 and year-end 2001, the risk-free interest rate, as represented by 30-year Treasury yields, decreased, while earnings plummeted and valuation multiples contracted, then expanded again. The 30-year Treasury yield fell from 5.84% to 5.46% between March 30, 2000 and year-end 2000 and remained virtually unchanged through the end of 2001, increasing slightly to 5.48%. Operating earnings, as estimated by Thomson Financial, decreased nearly 20%, while reported earnings more than halved, with most of the decline occurring over the last year. Valuation multiples contracted between March and December 2000, but P/E multiples expanded in 2001, as earnings contracted faster than prices. Price-earnings multiples (based on trailing reported earnings) fell from 29.4 on March 24, 2000 to 26.4 on December 31, 2000, but then soared to uncharted territory, reaching 48.9 by year-end. However, P/E ratios based on trailing and forward operating earnings are close to their market-peak levels.

Valuations for the S&P 500 are also high relative to historical averages. Table A provides a summary of various types of market valuations as of year-end 2001 relative to their historical averages

since 1960. The most extreme example is the 12-month trailing P/E ratio of the S&P 500 of 48.9, which is well above the average multiple of 16.8 since 1960, and is the highest P/E multiple on record. Assuming no change in earnings, reversion of the P/E ratio to its long-term average would entail a decline of more than 65% in the S&P 500. Even the 25.3 P/E ratio based on trailing operating earnings implies that the index value would need to fall nearly 30% more for the ratio to revert to its long-term mean of 18.3. Similar observations can be made about price-forward earnings ratios, dividend yields, price-to-book ratios, and ratios of stock yields to bond yields.

Dividend Discount Model Valuations

For the last two years, we have presented an optimistic base-case valuation of the S&P 500 based on our dividend discount model, to subject the index to a series of logic tests regarding the viability of the assumptions required for the market to be fairly valued at current market prices. The index failed to pass these logic tests both years, and therefore we characterized the market as overvalued. The index failed to pass these tests again this year, and remains nearly as overvalued as it was in March 2000. The optimistic base-case assumptions used operating earnings, annual earnings growth of about 7%,[1] a more normal 5% growth in perpetuity thereafter, and discounted this back to the present using the 30-year Treasury bond yield plus an equity risk premium of 2.0%. In March 2000, when the S&P 500 Index price was $1,499, the fair market value of the index under these assumptions was $1,160 indicating 29% overvaluation. Using the same methodology this year, the fair value of the S&P 500 is $975, indicating the market is 18% overvalued, with more conservative assumptions leading to significantly higher overvaluation readings. While overvaluation of 18% is not particularly alarming given the high sensitivity of dividend discount models to their input assumptions, it is worrisome given the optimistic nature of the underlying assumptions. For example, using reported earnings instead of operating earnings, the base case assumptions imply the market is 87% overvalued today—well above the 29% overvaluation reading using reported earnings in March 2000. However, reported earnings today likely understate corporate earnings over the last 12 months, as they are loaded with write-offs for past and future charges, which was not the case in March 2000.[2]

Table B provides a sensitivity analysis of S&P 500 valuations under differing equity risk premium and earnings growth assumptions, which indicates that the market still appears overvalued under most

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[1] We continue to use 7%, the average annual growth rate of earnings from 1960-2000, as our base-case earnings growth assumption, rather than the average growth rate of 5% through 2001, to keep our analysis consistent with that of previous years.

[2] See our November 2001 report, *U.S. Market Comment: Writing Down Current U.S. Equity Valuations*, for more discussion on the difference between reported and operating earnings.

plausible scenarios. Basing the analysis on operating earnings, with an equity risk premium of 4%, earnings growth over the next ten years must be at least 16.5% before stocks can be considered fairly valued, at least 13.0% with an equity risk premium of 3%, and at least 8.7% with an equity risk premium of 2%. If the earnings growth rate of the S&P 500 were below average, or negative, over the next ten years, the equity risk premium of the market would have to be less than 1% in order for the market to be fairly valued at today's prices. The assumptions required to consider the market fairly valued are even more stretched if the analysis is based on reported earnings, which requires earnings growth over the next ten years to be at least 22.6% with an equity risk premium of 4%, 18.9% with an equity risk premium of 3%, and 14.3% with an equity risk premium of 2%.

Earnings Growth. An earnings growth assumption of 7% is equal to the average annual compound earnings growth rate for the last 40-year period ending in 2000, but is high by historical standards. In addition, the I/B/E/S earnings growth consensus estimate of 14.6% growth over the next three to five years is well above reasonable expectations, as it is slightly greater than the highest ten-year average annual earnings growth rate of 14.2% experienced in the twentieth century, which occurred in the period ending in 1955 as earnings expanded in response to exploding postwar demand.

Since 1926, net income has grown an average of 5.3% over rolling five-year periods, and 5.8% over rolling ten-year periods. In real terms, earnings have grown an average of 1.9% over five-year periods and 2.1% over ten-year periods. Earnings growth of 10% or greater over ten-year periods has only occurred in nine of the 66 rolling ten-year periods. Adjusted for the roughly 1.5% inflation expectations priced into the bond market for the next ten years, earnings would need to grow 8.5% in real terms, which only occurred in two ten-year periods since 1926.

However, this type of earnings growth has occurred following significant declines in earnings. Net income declined an estimated 56.3% from its high on September 30, 2000, through year-end 2001. This magnitude of earnings decline has been exceeded 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, it is clear that there is little if any pent-up demand in the current environment of high consumer spending, low savings rates, and low capacity utilization. The economic downturn would have to be more severe or protracted than currently expected by most market analysts in order for this to occur.

Equity Risk Premium. Because investing in stocks is more risky than investing in bonds, equity investors should expect to earn more for assuming this greater risk. The most common definition of the equity risk premium is the excess return earned over 30-year or ten-year Treasuries, and can be calculated on both an ex-post and an ex-ante basis. Historically, stocks have returned 4.6% more than bonds since 1900, and 4.1% more since 1980. Ex-ante, we can solve for an equity risk premium that results in the S&P 500 being fairly valued, given various earnings growth rates. Assuming use of operating earnings and the long-term average earnings growth assumption of 7.0%, this calculation results in an equity risk premium of 1.6% at year-end—about the same as the 1.7% premium implied in the market at this time last year, but well below historical averages. Furthermore, using reported earnings results in an implied equity risk premium of only 0.8%. We have observed that arguments for a lower ex-ante risk premium assumption have always been most vociferous when stocks have performed unusually well, and have been muted when they perform badly. Today, most market analysts would agree that an equity risk premium below 2% is not sufficient to capture the relative risk of stocks to bonds, while the more conservative would support use of a premium greater than 2%.

Measuring Market Extremes—Technology Stocks

Valuations for technology stocks are still at astronomical levels, even though the Nasdaq returned -39.3% in 2000 and -37% in 2001. As of year end, the S&P Technology sector had a P/E ratio of 72.5 on 2001 estimated operating earnings. If we continue to assume an equity risk premium of 2.0%—which arguably should be higher since technology stocks are more volatile than those of more mature industries—and a long-term earnings growth rate of 5%, earnings would have to grow at 20.9% over the next ten years, or 13.3% per year over the next 20 years, in order for current prices to be justified. Such growth rates are implausible over an extended time horizon, and have only been achieved by the most successful technology stocks of the last 20 years. The average annual earnings growth of the most prominent technology survivors over the last 20 years—IBM, Motorola, Hewlett Packard, and Texas Instruments— has been approximately 10% in the 1990s and 12% for the period 1983-2000. Hewlett Packard experienced the highest average annual earnings growth since 1990, reaching 17.0%, while Texas Instruments experienced the highest earnings growth since 1983, at 18.6%. It is eminently unreasonable to assume that the entire sector can grow its earnings at rates only experienced in the past by the single most successful surviving technology companies.

The Forgotten "E"

In summary, without great fanfare and investor anxiety, valuations of the S&P 500 have quietly approached their manic levels of March 2000. By discounting an incipient recovery and aggressive

growth for the next ten years, investors are assuming that equity prices will advance in conjunction with an economic rebound. Weak pricing power, soft export markets, and over-burdened balance sheets, however, may conspire to pressure corporate profits. Although the bulls are right in contending that high valuations will not necessarily impede higher equity prices, in a world more attuned to valuation than several years ago, such eye-popping multiples are more likely to cap equities' upside potential. They certainly mean that any earnings disappointments will likely result in savage punishment.

Table A

U.S. STOCK MARKET VALUATIONS

January 1, 1960 - December 31, 2001

	S&P 500 Peak 03/24/2000	S&P 500 12/31/2001	Average (to 12/31/2001)	Ratio of Peak to Average	Ratio of 12/31/2001 to Average	Percentile Ranking of Peak Valuation	Percentile Ranking of 12/31/2001 Valuation	% Decline in Price Required to Reach Average Valuation
Price-Earnings								
12-Month Trailing Reported Earnings	30.0	48.9 (P)	16.8	1.8	2.9	4%	0%	-65.7%
12-Month Trailing Operating Earnings	28.7	25.3	18.3[1]	1.6	1.4	3%	14%	-27.4%
12-Month Forward Operating Earnings	25.4	21.9	13.3[2]	1.9	1.6	1%	11%	-39.1%
Dividend Yields	1.1	1.4	3.3	0.3	0.4	0%	7%	-59.0%
Price-to-Book	7.5 (P)	5.3 (P)	2.2[3]	3.3	2.4	0%	9%	-60.0%
Ratio of Earnings Yields to 30-year Treasury Yields	0.6	0.4 (P)	1.0	0.6	0.4	7%	0%	-61.5%
Ratio of Dividend Yields to 30-year Treasury Yields	0.2	0.3	0.5	0.4	0.5	1%	7%	-47.9%

Sources: Datastream International, I/B/E/S International, Inc., Salomon Smith Barney, Standard & Poor's, Standard & Poor's Compustat, and *The Wall Street Journal*.

Notes: (P) Preliminary. Data for March 24, 2000 were created by using the closing price on that day. Earnings, dividends, book value, and 30-year Treasury yields are from March 31, 2000. Average valuations and percentile rankings are based on quarterly data.

[1] The average is taken from September 30, 1985.

[2] The average is taken from September 30, 1978.

[3] The average is taken from March 31, 1963.

Table B

S&P 500 DIVIDEND DISCOUNT MODEL VALUATIONS UNDER VARYING ASSUMPTIONS

S&P 500 Fair Value and Percentage Over- (Under-) Valued
EARNINGS GROWTH FOR NEXT TEN YEARS

Valuations Using 12-Month Trailing Operating Earnings of $46

Equity Risk Premium	Worst Historical Ten-year Period	90th Percentile Ten-year Period	AACR 1960-2000	Best Historical Ten-year Period	I/B/E/S Expectations	Fair Value with Earnings Growth Rate of:
	-5%	1%	7%	14%	15%	
1%	550	937	1637	3104	3210	2.8%
	109%	22%	(30%)	(63%)	(64%)	
2%	346	572	975	1811	1871	8.7%
	231%	101%	18%	(37%)	(39%)	
3%	259	416	693	1263	1304	13.0%
	343%	176%	66%	(9%)	(12%)	
4%	210	329	537	961	992	16.5%
	446%	249%	114%	19%	16%	
Fair Value with ERP of:	0.2%	0.7%	1.6%	3.3%	3.4%	

Valuations Using 12-Month Trailing Reported Earnings of $23

Equity Risk Premium	Worst Historical Ten-year Period	90th Percentile Ten-year Period	AACR 1960-2000	Best Historical Ten-year Period	I/B/E/S Expectations	Fair Value with Earnings Growth Rate of:
	-5%	1%	7%	14%	15%	
1%	346	589	1029	1951	2018	8.0%
	232%	95%	12%	(41%)	(43%)	
2%	218	360	613	1139	1177	14.3%
	427%	219%	87%	1%	(2%)	
3%	163	262	436	794	820	18.9%
	605%	339%	163%	45%	40%	
4%	132	207	338	604	624	22.6%
	769%	454%	240%	90%	84%	
Fair Value with ERP of:	-0.1%	0.3%	0.8%	2.0%	2.1%	

Other Key Assumptions: Long-Term Earnings Growth of 5.0%, Risk-Free Rate of 5.48%, the yield on the 30-year Treasury on December 31, 2001.

Sources: Datastream International, I/B/E/S International, Inc., Standard & Poor's, and Standard & Poor's Compustat.