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RECENT ANOMALOUS STOCK MARKET BEHAVIOR: POSSIBLE EXPLANATIONS AND IMPLICATIONS FOR THE INVESTMENT PROFESSION

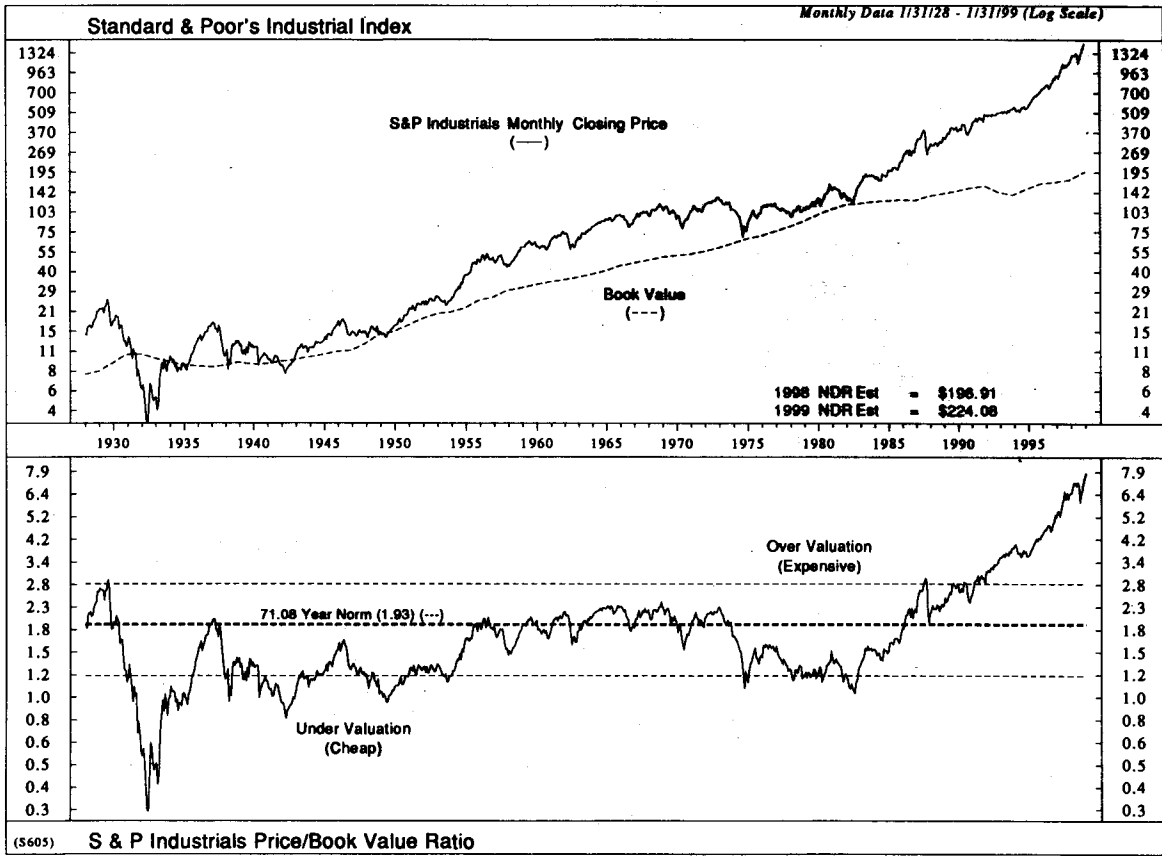
Part A: Possible Explanations

The year just ended witnessed the eighth consecutive year of higher stock prices, and the fourth consecutive year of total returns in excess of 20%. These are but two of numerous measures that could be adduced to show that in terms of both longevity and profitability, the recent performance of our equity market is totally without precedent. Given the extraordinary extent and duration of recent gains, it is not surprising that stock prices arguably have reached historic levels of overvaluation. For example, during the course of this century the stock market has generally sold for less than two times its book value. Today, however, the market is selling--depending upon the measure--for 6 to 8 times book. Additionally, during the course of the last two hundred years, the stock market has sold at an average of roughly 22 to 25 times the cash dividends it pays--which is to say that the average dividend yield has been between 4% and 4½%. Today, however, the market is selling--again depending upon the index--at an all-time high of between 60 and 90 times dividends, providing a yield of only 1% to 1½%. While it has been argued that dividends are not relevant today, even granting this revisionist thesis, alternative measures of 'corporate income--such as earnings, cash flow, operating earnings, gross sales, etc.,

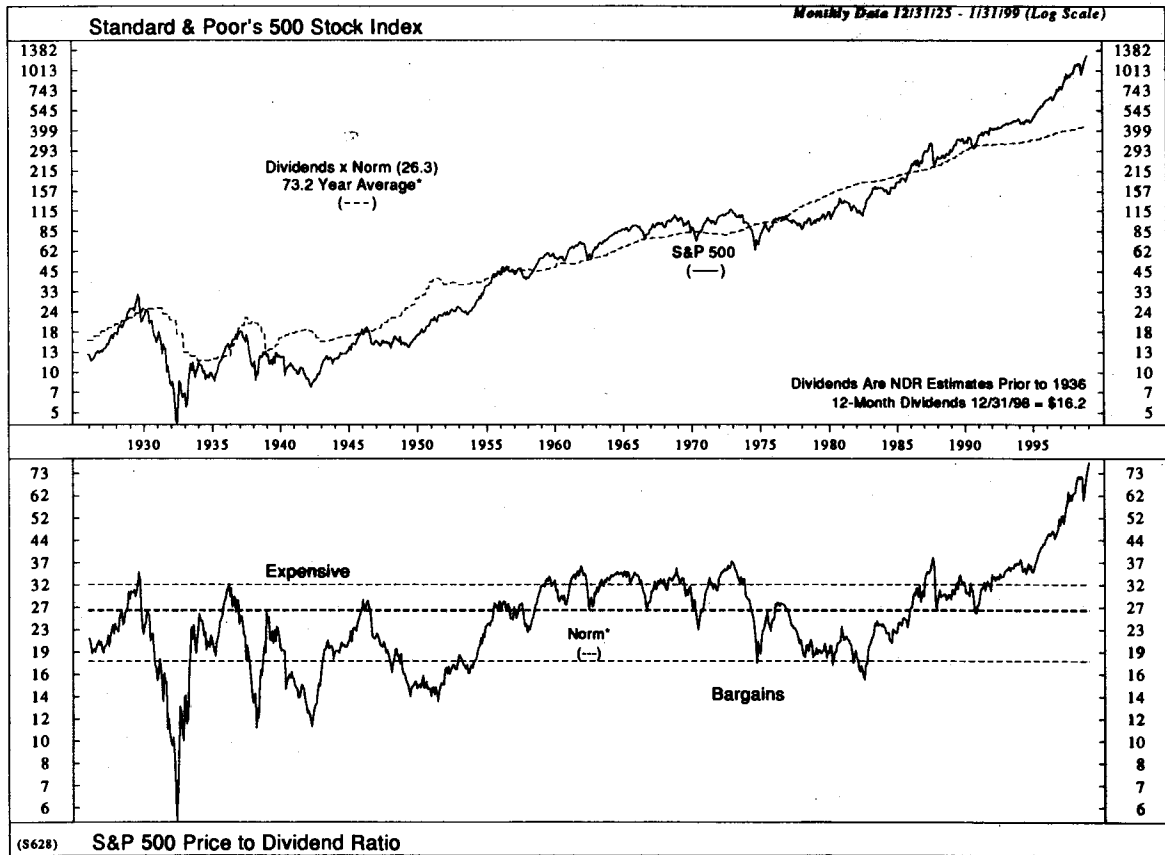
also indicate stocks to be at unprecedented levels. According to these measures equities are not as dramatically overvalued as dividend yields alone would suggest, but they nonetheless are well above the levels from which crushing bear markets often have begun in the past.

As a consequence of this long bull run, stocks appear to be overpriced, not just relative to their own past, but relative to alternative investments as well. For example, historically the earnings yield on stocks and the coupon yield on bonds averaged a relationship of roughly one-to-one. Today, however, equity prices have risen to the point that the earnings yield on stocks is barely half the coupon yield on bonds. Additionally, the relationship of bond yields to cash dividend yields is now, again depending upon the indices used, four or five to one--which is twice or thrice the historic relationship.

There are precedents for stock prices dramatically outrunning book values, dividends, earnings, bond prices, etc. Japan in the late 1980s comes to mind, as does the dramatic example of Weimar Germany in the early 1920s. However, that latter experience was caused by a devaluation in the contemporaneous unit of account--viz., the reichsmark--which by definition elevated the price of gold, commodities, real estate,



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foreign exchange, etc; and the stock market, representing a proportionate ownership of bricks and mortar, land, equipment and inventory, naturally skyrocketed, sending the stock/bond relationship to infinity. But such clearly is not the case today inasmuch currently it is stock prices alone that have soared. These other asset categories have been stable to weak.

One often heard explanation of today's anomalous capital and commodity market behavior is that stock prices are in fact acting quite rationally given that we have entered into a grand "new era" wherein the old measures of value are irrelevant. The triumph of capitalism and freedom over the forces of communism and slavery has created an environment wherein billions of people and trillions of dollars that previously were dedicated to destroying each other, are now devoted to providing goods and services and markets for each other. Also the revolution in Information Technology is bringing positive changes comparable to those brought by moveable type, the Industrial Revolution, and the discovery of electricity. So in today's hospitable environment, business enterprise is in fact worth significantly more than it was worth under former, less happy conditions. For example, if one can do as much business today with a \$1000 desk-top and a \$600 web-site, as one could do yesterday with a multi-million dollar mainframe or a bank of blast furnaces--stocks *should* sell at much higher multiples of book today than they did in the past. And the flood of money into the baby-boomers' 401k plans assures that stock prices *will* reach lofty levels. But while such explanations

undoubtedly have merit, for those of us within the profession simply to call this a "new era" and let it go at that, is to substitute a shibboleth for our analytic responsibility. Therefore, we prefer to begin with the assumption that today's stock market is neither disorderly nor discontinuous, but that it is still behaving according to time-honored principles. Pursuing this premise, the problem then becomes to identify these posited first principles and to assess their current influence.

In this regard it may be helpful to recall that economic behavior is necessarily a sub-category of human behavior; and human behavior--especially very complex activities such as trafficking in financial instruments--simultaneously involves innumerable, vastly different, often competing, operational principles. Consequently, it is very likely the case that no single principle or simple equation can ever adequately describe the stock market. Because it reflects the infinite variety of the human psyche, in order to describe equity market behavior one must not only assess numerous "rational" factors--such as fundamental, monetary, and economic conditions--but numerous "non-rational" factors as well--such as technical, cyclical, and psychological conditions. Furthermore, as empiric observation makes maddeningly clear, the influence which each these numerous rational and non-rational factors has on the contemporaneous price structure is not *constant*--as is the case with physical systems--but is instead, highly *variable* through time.

Given the unique nature and complexity of the problem, the stock market will always be an analytic

Gordian Knot. And there always will be times when the market "is not following the fundamentals"--or "the technicals" or whatever. But recent market action is particularly puzzling because *no* combination of the usual principles seems to explain the current price structure. And it is this failure which underlies the notion that today's market is "irrational;" or that this is a "new era" wherein the old principles no longer apply. Our contrary view is that the market is continuing to follow established principles; but that several factors which currently have a *major* influence on the price structure, typically have had only a minor or brief influence. Therefore these factors are quite easy to overlook. For the present purposes these closely related principles will be artificially segregated and identified as: (1) "*The Rule of Comparables*;" (2) "*The Law of Increasing Returns*;" and (3) "*King's Law of Prices*".

More specifically: the real estate business generally uses valuation techniques similar to those used in stock market analysis. For example, appraisers use the "replacement cost" method, which is similar to book value analysis; and they use the "discounted cash flow" method, which is similar to income analysis. But there is a third major appraisal technique which is *not* a standard of stock market analysis, and that is the "appraisal comparable" method--or "*What has similar property recently sold for?*" The unremarkable theory behind this "*Rule of Comparables*" is that the value of the subject property should reflect recent transaction prices of similar properties. Now this method is somewhat anti-intellectual in that it implicitly assumes

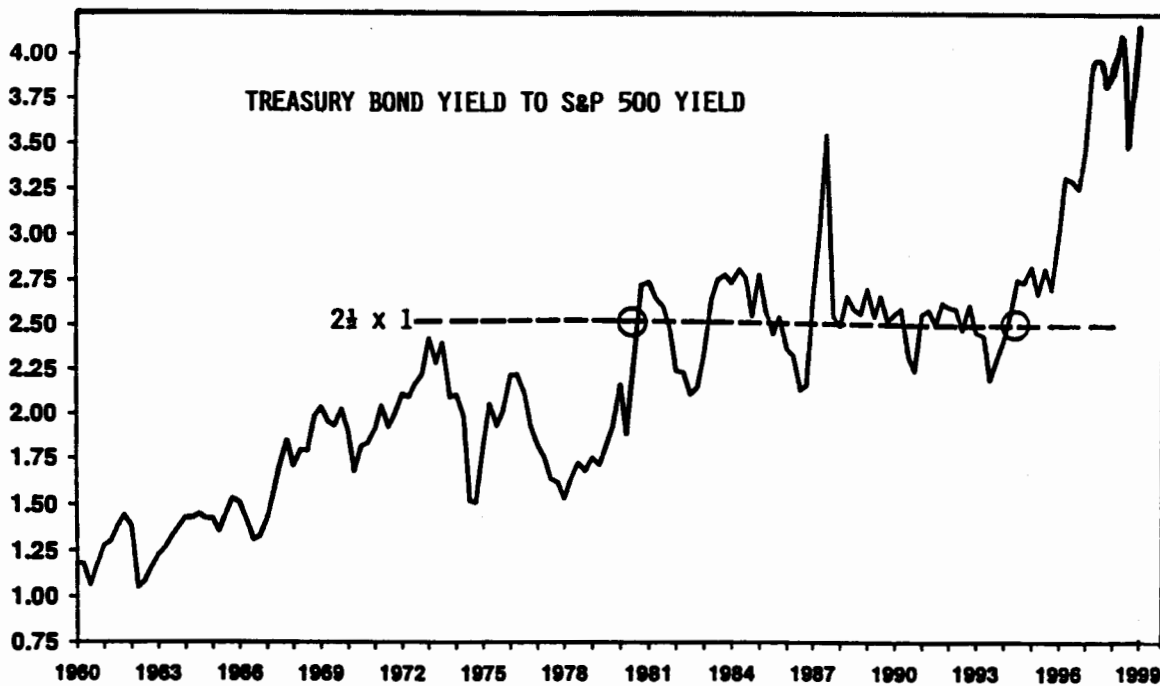
that whatever price a transaction occurred at was the "proper" price. However, the technique is eminently practical--*up to a point*--and this "*comparable*" factor may explain a significant amount of current stock market behavior which standard security analysis does not explain.

For example, recent months have witnessed an orders of magnitude increase the amount of merger and acquisition activity among publicly traded companies. And each time there is a transaction of this nature, that transaction becomes a "comparable" for all similar companies, thereby biasing their market prices in the direction of that deal. For example, if *Commerce Bank* stock is selling for 2½ times book, *BBT Bank* might have to offer 3 times book to take over that company. And when it does so, Mr. Market might begin to price other banks, which are now viewed as potential take-over targets, closer to 3 times book. As a consequence of this repricing, *Wachovia* might then have to pay 3½ times book to acquire *Jefferson National* or *Central Fidelity*. And once these latter two transactions are actualized, they constitute even higher comparables, perhaps forcing *NationsBank* to pay 4 times book for *Barnett Banks*. And once there is a major new comparable at 4 times book, the price *First Union* will have to pay to acquire *CoreStates* might rise to 5 times book. These prices and sequence of events are not literally precise, but they help illustrate how the *Rule of Comparables*--a standard valuation methodology--can create a positive feedback loop, lifting prices well above their "fundamental value." For example, using a "dividend discount model" or a "replacement

cost model" it might be hard to justify paying 5 times face value for a portfolio of loans--which is what many banks essentially are--but if one were to appraise banks using the "comparable method," recent stock prices are rational. Comparables is not a method by which stocks are typically valued, but then neither is a merger or acquisition a typical business operation, because in normal times major restructurings are fairly rare. But recently, as noted, there has been an unprecedented explosion of mergers and acquisitions. For example, in 1997 there reportedly was more than \$1¼ trillion in domestic merger activity. This was nearly twice the previous (1996) record, and involved between 15% to 20% of all the companies extant. And while the figures for 1998 are highly tentative, apparently M&As were some 50% greater than in 1997--totaling nearly \$2½ trillion worldwide and involving more than a quarter of the companies outstanding. So given today's unprecedented M&A activity, virtually every stock is now a potential "transaction." And as long as every stock is a "subject property" sitting on the auction block, it is rational and proper to price stocks according to the "comparable" method. This method currently assigns stocks higher assessed valuations than the usual fundamental methods assign them.

A second time-honored principle that may partially explain today's stock market is "The Law of Increasing Returns." Typically economic activity is governed by the "Law of Diminishing Returns," which holds that (after a point) an increase in prices causes a decrease in demand, resulting in lower returns to the businessman and/or investor. It is

this sort of negative feedback that works to keep all free markets efficient and in equilibrium. But in very rare instances negative feedback does not work properly. In fact it actually works backwards, as increasing prices actually increase demand. This positive feedback phenomenon is called *The Law of Increasing Returns*. In actual practice this principle is rarely operative in the marketplace, however one venue where it is often predominant is the commodity, or futures, market. Because half of the players in this venue are necessarily short--and almost all of them are highly leveraged--when prices rise, instead of demand decreasing as is typical in most markets, demand often actually increases. This is the case because leveraged shorts are forced to buy in order to stem their losses and to answer their margin calls. Similarly, falling prices can actually stimulate additional supply, as long side investors are forced to liquidate under-margined positions--irrespective of how "cheap" prices may have become. Now for whatever reasons, this phenomenon of positive feedback, or *The Law of Increasing Returns*, seems recently to have expanded from the commodities market into today's stock market. Part of this phenomenon may be due to the explosive growth in "derivatives"--stock index futures, options, program trading, etc.--which are now inducing some of their own peculiarities into the "real" stock market from which they were derived. But there seems to be more to it than this. For example, when the price of a stock or bond rises, its yield falls, and as a consequence of this lower current return, the demand for that security typically decreases, and investment



capital moves towards more favorably priced markets. This is the way things should under the *Law of Diminishing Returns*; and this is essentially the way the capital markets *did* work, for example, from the early 1970s until the mid 1990s, during which time bonds yields and stock yields moved back and forth, one against the other, in a range around $2\frac{1}{2}$ to 1 (see chart). But beginning in 1994 something very different began to happen. That year bond prices underwent one of the largest declines in decades, but instead of money moving into bonds--which had become cheap relative to stocks--large amounts of money apparently *left* the bond market and went into the stock market. This re-allocation put further downward pressure on bonds and further upward pressure on stocks, creating a positive feed-back loop. Some evidence supporting this positive feedback thesis lies in the fact that 10 years ago 90% of mutual fund assets were dedicated to bond funds, whereas recently roughly 90% of all mutual fund contributions were dedicated to stock funds. This

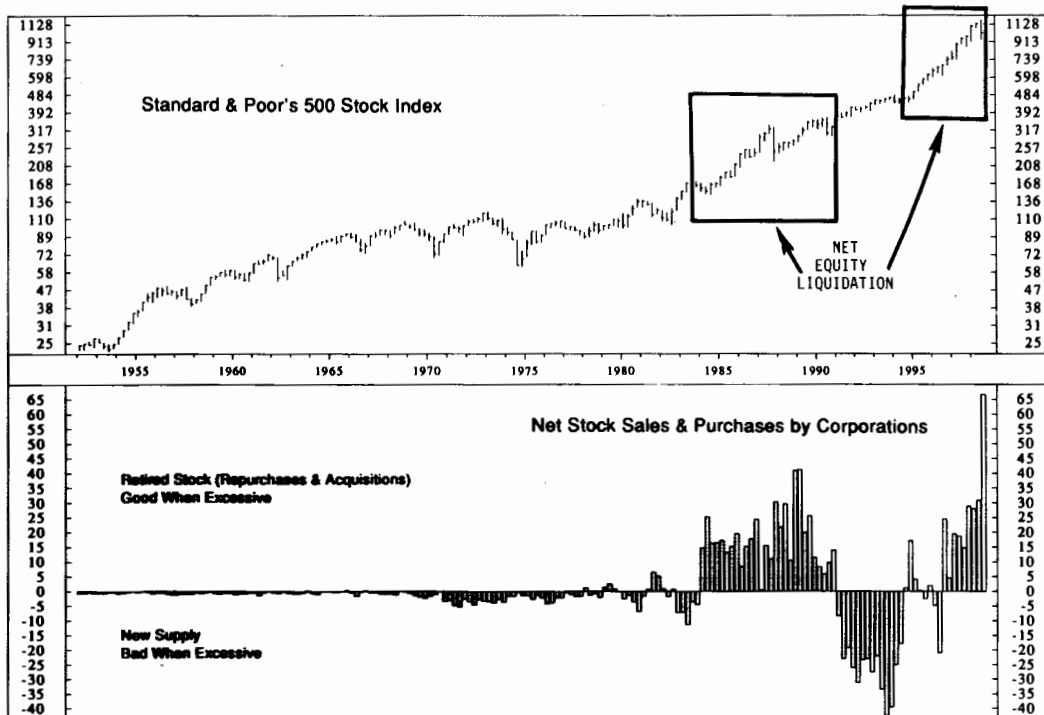
decision to direct 90% of new investment to the stock market cannot be based on current yields or on any other normal analytic methodology. It seems to derive **exclusively** from recent *past* returns. And this phenomenon is not **limited** to the public, as indexing, "closet indexing" and "momentum investing" currently enjoy record popularity among professional investors. One never knows how long a virtuous circle of increased stock prices causing increased demand can last; but that is what we have now, and while it continues, it appears to be a classic case of the Law of Increasing Returns.

The final ancient principle which is a significant factor in the current stock market is "*King's Law of Prices*." This principle was named after Gregory King, an advisor to the Crown in the 1600s who devised a rule for estimating how a given shortage in the Corn crop should impact prevailing market prices. This law holds, for example, that a 10% reduction in supply will cause a 30% gain in prices; and that a 20%

reduction in supply will cause an 80% gain in prices, and so forth. The reason that this ancient commodity market rule might be pertinent to today's stock market is because beginning in the mid 1980s and continuing through today, for the first time in history there has been a major reduction in the supply of stock. For nearly 200 years the primary function of Wall Street was to create securities; and while the issuance of new stocks and bonds is continuing as always, mergers and acquisitions and share buy-backs have been so massive that they have caused an actual *net shrinkage* in the amount of common stock outstanding. The overall shrinkage is small--often only a percent or so a year--however, the effect is cumulative. Also, *King's Law* holds that any reduction in the supply of a commodity has a disproportionately powerful effect on the prevailing market price of that commodity. So in theory this phenomenon might help explain today's highly priced stock market. This is admittedly a very speculative notion, but in the mechanics are fairly straight forward. For example, if *First Union* buys

CoreStates for cash, the supply of stock outstanding immediately shrinks by 200,000,000 shares--which in and of itself puts upward pressure on the smaller pool of common stock that is left. Furthermore, the previous stockholders of *CoreStates* now have a \$17½ billion cash windfall to pour back into this reduced pool of stock. Thus there is a double-barreled effect of reduced supply and simultaneously increased demand. *CoreStates* was not an all-cash deal, but reportedly the cash portion of M&A deals was nearly \$700 billion last year; and the cash from share buy-backs was more than \$200 billion. These figures compare with \$179 billion cash inflow into mutual funds--a popular suspect for today's soaring stock prices. Not only has the dollar amount of share liquidation far exceeded net mutual fund inflows; but each dollar's worth of stock liquidation has an exponentially greater *effect* on prices than each new investment dollar has.

One can not *prove* this factor is responsible for today's excess returns, but the following chart shows that the most dramatic gains in the stock



market have occurred coincident with the largest waves of equity liquidation. Furthermore, if one converts *King's Law of Prices* to modern mathematical notation and applies it to the supply of common stock listed on the NYSE, the recent shrinkage in shares outstanding theoretically could have lifted stock prices 6% or 7% a year above trend (see below). Since the norm has been a total return of about 10% a year; and since recent returns have been about 17% a year, today's excess returns may largely be due to the recent liquidation of equities.

So in summary, while today's stock market may be totally unprecedented in many respects, it is not

necessarily irrational or disorderly—nor are we necessarily in some sort of "new era" wherein all the old rules are irrelevant. It may in fact be following "the old rules" quite well. The problem is that certain very familiar fundamental factors are not currently having as much influence on stock prices as they normally do. And conversely, several factors whose influence on the price structure is typically very modest, temporarily are carrying a great deal of weight. These several factors, better known to real estate and commodity investors, are "The Rule of Comparables," "The Law of Increasing Returns," and "King's Law of Prices. Some possible implications of these recent developments will be explored in Part B.

APPENDIX: KING'S LAW OF PRICES was originally stated as follows: "We take it that a defect in the market may raise the price of Corn in the following proportions:"

| <u>Defect</u> | <u>Above the Common Rate</u> |
|---------------------------|------------------------------|
| 1 tenth raises the price | 3 tenths |
| 2 tenths raises the price | 8 tenths |
| 3 tenths raises the price | 16 tenths |
| 4 tenths raises the price | 28 tenths |
| 5 tenths raises the price | 45 tenths |

If this ancient algorithm is converted into modern mathematic notation, the formula becomes the following: "relative price = (.988707015 x quantity)^{-2.69136}". Applying this formula to the ebb and flow of NYSE listed equity, the conclusion is that net equity liquidation theoretically might have lifted stock prices a (simple mean) average of 6.63% a year above the prevailing norm. Calculations are shown in the following table.

| <u>Year</u> | <u>Mid Year NYSE Value \$ Billions</u> | <u>Net Supply Change \$ Billions</u> | <u>Supply Reduction As a %</u> | <u>Predicted Price Gain Annual</u> | <u>Predicted Price Gain Cumulative</u> |
|-------------|--|--------------------------------------|--------------------------------|------------------------------------|--|
| 1984 | 1463.3 | -72.6 | 4.96 | 18.4% | 18.4 |
| 1985 | 1812.4 | -65.0 | 3.59 | 14.0% | 35.0 |
| 1986 | 2289.3 | -65.9 | 2.88 | 11.7% | 50.8 |
| 1987 | 2718.5 | -57.2 | 2.11 | 9.4% | 64.9 |
| 1988 | 2456.5 | -102.8 | 4.19 | 15.9% | 91.1 |
| 1989 | 2771.5 | -98.0 | 3.54 | 13.8% | 117.4 |
| 1990 | 3045.5 | -37.8 | 1.24 | 6.8% | 132.7 |
| 1991 | 3216.2 | +76.9 | -2.39 | -3.1% | 125.1 |
| 1992 | 3712.8 | +104.4 | -2.81 | -4.1% | 115.7 |
| 1993 | 4291.1 | +137.7 | -3.21 | -5.1% | 104.6 |
| 1994 | 4375.8 | +24.6 | -0.56 | 1.7% | 108.2 |
| 1995 | 5296.1 | -3.5 | 0.07 | 3.5% | 115.4 |
| 1996 | 6647.9 | -3.4 | 0.05 | 3.4% | 122.8 |
| 1997 | 8630.7 | -81.8 | 0.95 | 6.0% | 136.1 |
| 1998 | 10793.3 | -154.3 | 1.43 | <u>7.4%</u> | <u>153.4</u> |

15 year mean 6.63% predicted excess annual gain

Data used throughout was graciously provided by Ned Davis Research, the New York Stock Exchange and Mario Gabelli of the Gabelli Funds in Rye, New York.