UNIVERSAL ECONOMICS

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King's Law of Prices, 2001

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One of the theories that has been adduced to justify the unprecedented levels stock prices have achieved in recent years is based on the "baby boomer" phenomenon. The notion is that as a certain very large cohort of the population has moved through its life cycle, it has progressively created outsized demand for various goods and services. As this cohort reached its investment years, in the 1980s and 1990s, the demand for financial assets became overwhelming, thereby creating the historic bull market we have all so enjoyed--until very recently. We have always been interested in this argument, because the bullish projections it entailed closely parallel the bullish projections we made on the basis of Cycle Theory back in the late 1970s--well before the bull market began, and long before the "baby boom" explanation for it was even conceived. But despite the fact that our Cycle methodology yields conclusions which are congruent with those of the "baby boom" methodology, we feel that the demographic approach is flawed on both theoretic and empiric grounds. We do not believe that the price structure of the capital markets can be deduced simply from census data. But for the sake of argument, let us stipulate that the demographic argument *is* valid; viz.; that the "*demand for stocks*" *has* necessarily been growing apace due to the fact that the baby boomers have been aging. Even so, there is another major variable in the capital market equation that must be addressed simultaneously--and this is the "*supply of stocks*."

When speaking of the "capital market equation," we are of course speaking metaphorically. In actuality the capital markets are an incredibly complex visible manifestation of immaterial mental states, and thereby subject to the myriad rational and non-rational principles that inform human thought and that motivate human action. This being the case, market behavior can never be reduced to an equation, and those with the hubris to cling to such a notion are destined for disappointment. But with that disclaimer, various metrics and certain formulas *can* help provide a general perspective through with which to view capital and commodity market behavior. One of formula which has long interested us is an ancient algorithm known as "*King's Law of Prices*." This arcane 17th century mathematic exercise is of potential importance today because it supposedly addresses the vital, if commonly neglected, "*supply*" variable within the capital market "equation."

For a bit of background: At one point many years ago, when we traded Commodities fairly actively, one of the adages we heard was "a 10% drop in supply can cause a 50% rise in price." This formula was not, of course, to be taken literally. It was rather to illustrate the commonplace that a given percentage change in the *supply* of a commodity, will have a <u>disproportionate</u> effect on the prevailing price level of that commodity. This is why commodity traders typically obsess over "crop reports" and the like. Stock and bond traders, on the other hand, are much more likely to obsess over the "*demand*" side of the equation. For example, debt and equity investors typically study various measures of "liquidity," such as the money supply, mutual fund cash, short positions, net cash balances in credit accounts and in margin accounts and the like, so as to estimate the potential "*demand*" for stocks. These liquidity induced *demand* factors are certainly relevant to future capital market behavior. However, since the same "liquidity" can flow to many different places, it is probably fair to say that it has a somewhat *indirect* effect on the price of any specific entity. Changes in *supply*, however, logically should have a much more *direct* effect on the price of the affected entity. For example, a 10% increase in the money supply might, other things being equal, result in a 10% increase in the prevailing general price level. In such a case the price of Oranges, for example, might rise 10% along with numerous other prices. However, if all of the orange growing areas simultaneously suffered freezes that wiped out 10% of the total Orange crop, such a shrinkage in supply reasonably would be expected to boost the price of Oranges by significantly *more* than 10%.

This point regarding the puissance of supply changes is particularly important today because--after two centuries of an ever increasing supply of equities--recent years have seen an unprecedented <u>*shrinkage*</u> in the supply of equities. And it is our contention that this shrinking supply phenomenon has been a direct cause of our historic bull market. This shrinkage in the supply of equities has been partially a consequence of a record number of share buy-backs. But it is to an even greater extent, the result of a totally unprecedented Merger and Acquisition boom. For example, if one bank buys another bank for Cash, the prevailing supply of Stock outstanding immediately shrinks by, say, 400,000,000 shares. At the same time the former shareholders of the acquired company now have, say, a $20 billion Cash windfall to pour back into what is now a significantly reduced supply of available common stock. In recent years such deals have been totally unprecedented, with M&A activity soaring from a historic norm around 1% of GDP, to an unheard of 20% of GDP. In 1998, to give just one example, the Cash-only portion of M&A deals exceeded $700 billion, and share buy-backs exceeded $200 billion. By way of comparison, this $900 billion shrinkage in the supply of stocks was more than five times as great as the net cash inflow into mutual funds--which was $179 Billion. So recently the dollar value of *supply* shrinkage has dwarfed the increase in *demand* represented by mutual fund cash inflows. And furthermore, it is our belief that each dollar reduction in the "supply" of equity has an exponentially greater effect on stock prices than each dollar increase in "liquidity." Hence this supply phenomenon almost certainly has been exerting very powerful upward pressure on the price structure of the stock market in recent years.

This being said, it is admittedly difficult to conceive of how to put a specific *number* on this phenomenon. This is why we find "*King's Law*" is so appealing: This ancient algorithm supposedly quantified the effect which various shortages in the supply of grain should have on the prevailing price level of that commodity. Gregory

King, who was Advisor to the Crown in the mid to late 1600s, studied the behavior of English and Continental grain prices from 1360 to the middle of 1600s. And from these studies he developed a formula that predicted the market price of grain based on how much above or below trend the contemporaneous crop harvest happened to be. This formula became known as "*King's Law of Prices*" and is stated as follows:

We take it that a defect in the market may raise the price of corn in the following proportions:

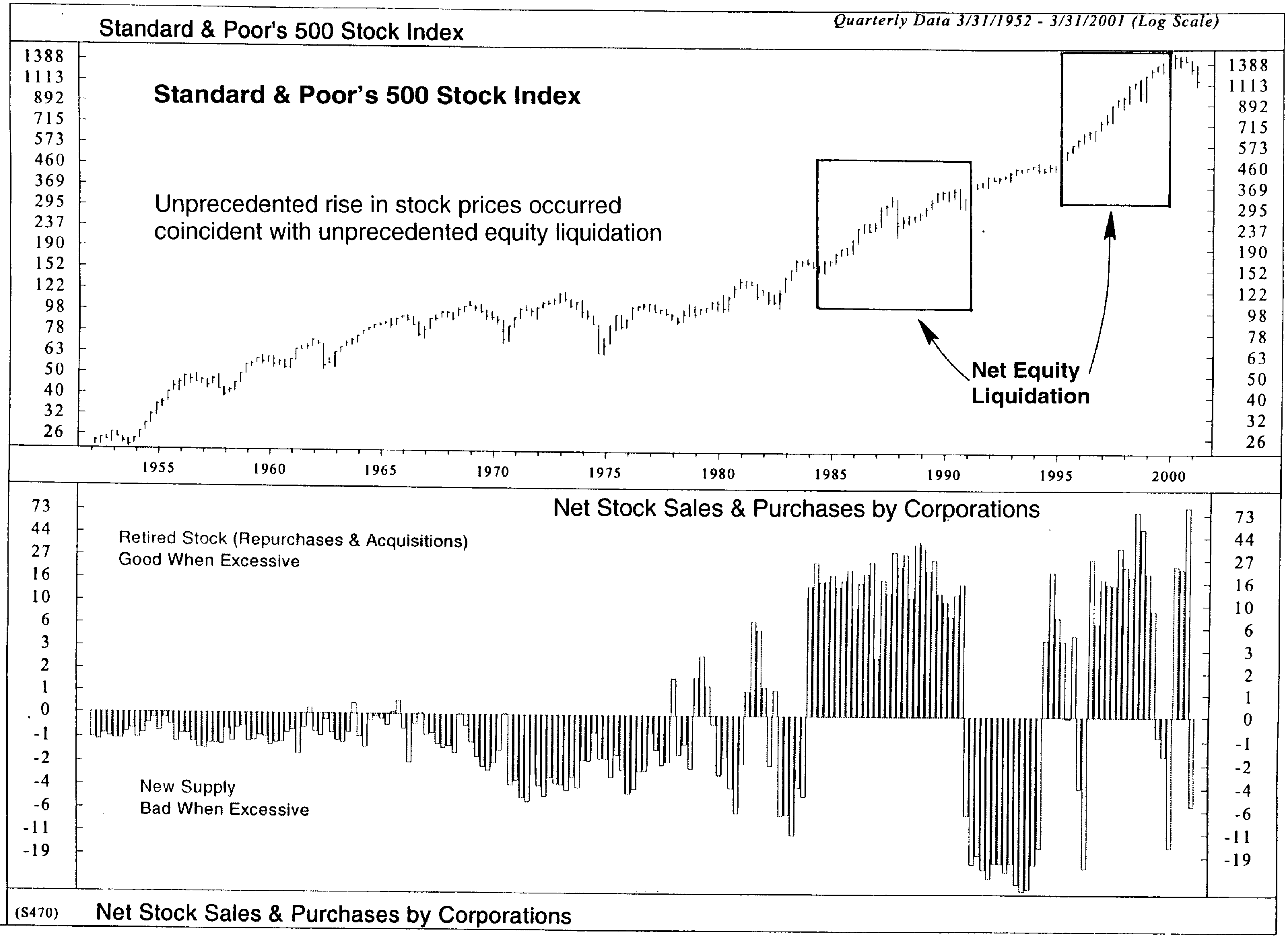
Defect	*Above the Common Rate*
1 tenth raises the price	*3 tenths*
2 tenths raises the price	*8 tenths*
3 tenths raises the price	*16 tenths*
4 tenths raises the price	*28 tenths*
5 tenths raises the price	*45 tenths*

Translated into more contemporary parlance, *King's Law* would predict, for example, that a 10% *surplus* in corn crop should lead to prices which were 77% of normal, a 30% surplus to prices 39% of normal, etc. A 10% *shortage* in supply on the other hand should lead to prices 130% of normal, a 30% shortage to prices 260% of normal, etc. In modern mathematic notation the formula for supply shortages is: *relative price=[.98807915 x quantity]*$^{-2.69138}$. From the first quarter of 1984 to the present there has been an unprecedented "defect," or net disappearance, in *New York Stock Exchange* listed equities. Therefore we thought that it might be very interesting to ascertain what effect this unique development should have on the prevailing level of stock prices according to *King's Law*. The relevant calculations appear on the following table:

Year	Mid Year NYSE Value $ Billions	Net Supply Change $ Billions	Supply Reduction As a %	Predicted Price Gain Annual	Predicted Price Gain Cumulative
1984	1463.3	-72.6	4.96	18.4%	18.4
1985	1812.4	-71.4	3.94	15.1%	36.3
1986	2289.3	-69.8	3.05	12.3%	53.0
1987	2718.5	-64.0	2.36	10.1%	68.5
1988	2456.5	-106.6	4.34	16.4%	96.1
1989	2771.5	-102.6	3.70	14.3%	124.2
1990	3045.5	-45.7	1.50	7.6%	141.1
1991	3216.2	+72.3	-2.25	-2.7%	134.6
1992	3712.8	+99.6	-2.68	-3.8%	125.6
1993	4291.1	+133.0	-3.10	-4.9%	114.6
1994	4375.8	+12.8	-0.29	2.5%	119.9
1995	5296.1	-15.7	0.30	4.1%	129.0
1996	6647.9	-5.9	0.09	3.5%	137.1
1997	8630.7	-84.0	0.97	6.0%	151.4
1998	10793.3	-173.0	1.60	7.9%	171.1
1999	12670.7	-26.7	.21	3.9%	181.6
2000	11871.2	-116.5	.98	6.1%	198.7

Data graciously provided by *Ned Davis Research*

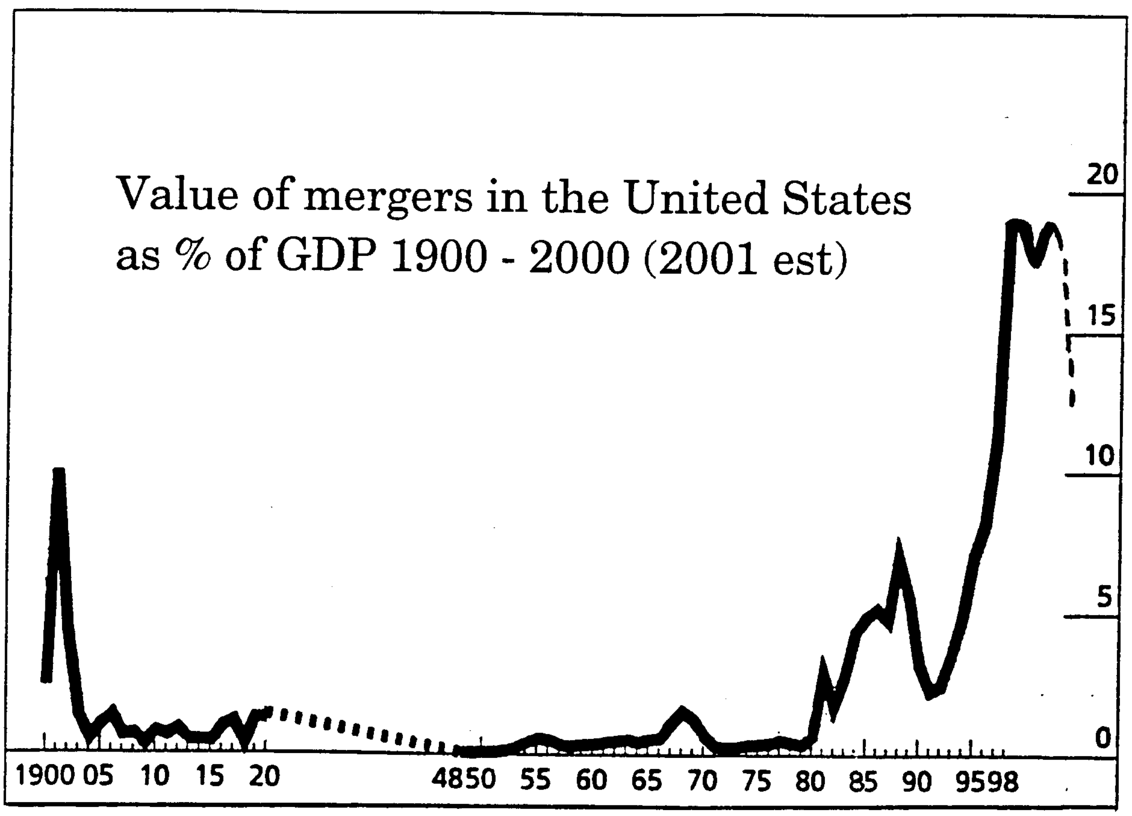
Theoretic average annual gain = 6.65% above norm



Standard & Poor's 500 Stock Index
Quarterly Data 3/31/1952 - 3/31/2001 (Log Scale)
Standard & Poor's 500 Stock Index
Unprecedented rise in stock prices occurred coincident with unprecedented equity liquidation
Net Equity Liquidation
1388 1113 892 715 573 460 369 295 237 190 152 122 98 78 63 50 40 32 26
1955 1960 1965 1970 1975 1980 1985 1990 1995 2000
Net Stock Sales & Purchases by Corporations
Retired Stock (Repurchases & Acquisitions)
Good When Excessive
New Supply
Bad When Excessive
73 44 27 16 10 6 3 2 1 0 -1 -2 -4 -6 -11 -19
(S470)
Net Stock Sales & Purchases by Corporations

Thus according to this ancient algorithm, net *NYSE* equity reductions from 1984 to the present, *by themselves*, theoretically have been sufficient to lift stock prices dramatically above trend. The theoretic effect of this phenomenon has been to add roughly 6½% to average annual stock returns. This is admittedly speculative concept--and we appreciate the fact that correlation does not necessarily imply causation--but as can be seen on the Ned Davis chart on page 4, the times of greatest equity liquidation *have* been congruent with the times of greatest stock market appreciation. Furthermore, stock market returns over the last decade and one-half, *have* averaged roughly 6½% above the century's norm. And this is almost exactly the amount of excess return that *King's Law* predicted stocks would deliver--as shown by the table on page 3.

Now admittedly, it would seem that a simple price formula such as *King's Law* should work best when the price structure itself is simple. For example, in the late Middle Ages the supply of money was essentially fixed, and the demand for food was inelastic. Such a market would seem more amenable to simple formulaic constructs than the price structure of today's infinitely complex equity market. However, while the differences are certainly real, they are much more a matter of degree than of kind, as the stock market has progressively become more "commoditized" in recent years. Consequently, we feel it is valid to apply *King's Law* to today's stock market, with its M&A Boom and attendant equity liquidation. And we conclude that equity liquidation has been a very significant cause of the recent gigantic bull market.



Even assuming that our hypothesis does significantly explain recent capital market anomalies, how to profit from this knowledge remains problematic. As the page 4 chart shows, massive equity liquidation *does* seem to correlate with rising stock prices. But these data are reported coincidently at best: more typically they are reported with a considerable lag. Nevertheless, our educated guess is that the years of shrinking equity supply, which fueled our long bull and historic market, are now ended. This is only a guess, but for one thing, after 28 straight quarters of equity *liquidation* in the mid 1980s to early 1990s--and after twelve straight quarters of equity *liquidation* in the mid to late 1990's--apparently five out of the last eight quarters have seen a net new *supply* of stocks. In the second place, the incredible merger and acquisition probably is likely to be ending. (In this country anyway--the game in Europe and Japan probably has further to go). For one thing, it is mathematically impossible for M&A activity to continue for very long at 20% of GDP. And mathematics aside, last weeks' giant *GE/Honeywell* failure and the huge *United/US Air* failure, may be markers indicating that the flood tide of domestic deals is now ebbing. And finally, the current surge in insider selling is worrisome. While we often look at industry specific and company specific insider activity, insider behavior in general is *usually* minimally successful at timing the broad equity market. Nevertheless, it *is* a fact that insider sales/purchases ratios are today at multi-year highs. And it is also a fact that, according to *Investors Intelligence,* twenty-three groups are currently showing their worst pattern of insider activity in years, whereas only one group is showing its best pattern. The reason today's insider behavior concerns us relates to the fact that recent years have been characterized both by an unprecedented *liquidation* of *equity* securities, <u>and</u> a record *issuance* of *debt* securities. This is the opposite of what one would expect given that the cost of debt capital has been extremely low relative to the cost of equity capital. This being the case, it may be that much investment banking activity in recent years was not the result of prudent balance sheet management, but instead reflects dubious "financial engineering." It would be ominous if the current spate of insider selling means that the very people responsible for the financial circus of recent years, are now leaving the tent. In any event, it appears from supply/demand analysis that we have lost one of the staunchest supports within our generational bull market.

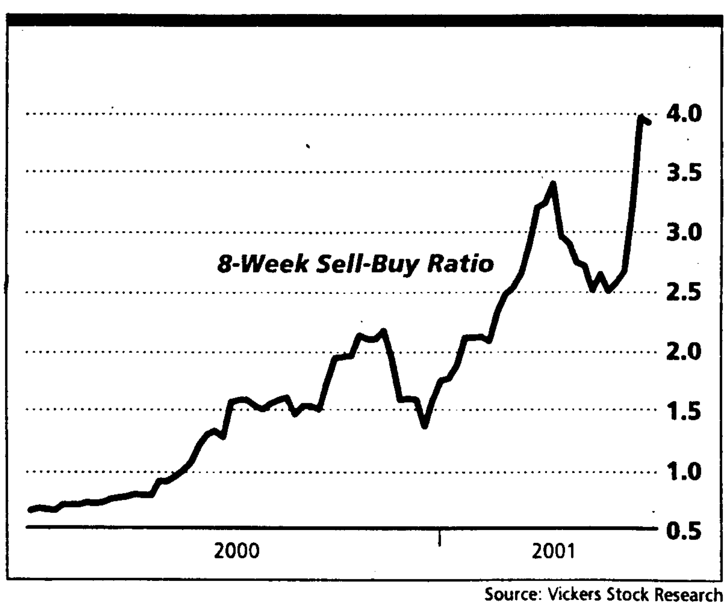


Chart courtsey of **Barron's**
June 9, 2001