Crying Over Spilled Milk

Every self-satisfied sophomoric pseudo-intellectual – and you know who you are – recalls the exchange between Fitzgerald and Hemingway: "The rich are different from you and me." "Yes, they have more money." These two greats of American letters, one of whom drank himself to death and the other who blew his brains out, failed to add the following exchange: "Stocks are different from other markets." "Yes, we expect them to go up."

One Size Does Not Fit All

Technical analysts are (unintentionally) funny fellows. Like medieval alchemists, technicians are funded by otherwise sensible patrons to toil away at the impossible task of transforming leaden data into golden profits in the face of the manifest and demonstrable futility thereof. A central tenet of technical analysis is self-similarity. Born from fractals and chaos theory, this principle holds that market patterns derive from the constancy of human behavior and are independent of both the time frame over which they are measured and the underlying asset being traded.

Nonsense!

Human behavior may approach constancy for any given time horizon within a given market where we can attempt to quantify such concepts as economic utility, substitution preferences, time preferences, and risk aversions, but is there any reason to believe these factors are constant across markets with vastly different characteristics? Commodities whose production and consumption functions are influenced by short-term price expectations, such as crude oil, will prompt participants to behave differently than they would in a market such as gold, which is consumed only minimally and which has no price expectations in its forward curve. Or, we can have financial commodities such as short-term deposits and currencies whose markets exist not to accommodate consumption and production functions, but rather to reflect an array of market expectations and substitution functions. Since different market types produce different penalties and rewards and have different immediacies for their participants, there is no reason to expect similar behavior between different classes of markets any more than we should expect wrestlers and ballerinas to have the same physiques.

Forward Curve And Expectations

A market's forward curve provides as much of a window into its rhythm as does its price trend. We have exploited this characteristic in devising the Market Tension Index for storable physical commodities, (see "Measuring Market Tension," *Futures*, February 1996) and the EuroTension Index for short-term interest rates and by extension, currencies (see "Great Expectations," *Futures*, April 1997). Another tension index, the Livestock Tension Index, was introduced for non-storable physical commodities (see "All's Fair In Love And Livestock," *Futures*, September 1999).

We cannot and do not look at the forward curves for either bond futures or stock index futures since the costs of carry for both asset classes is a function of the short-term interest rate and the bond coupon rate and expected dividend rate, respectively. Any distortions in either forward curve would be arbitraged out quickly, and for that reason, both bond futures and stock index futures have only one active contract month.

While the forward curve for stocks does not reflect price expectations – the prices of the underlying stocks themselves do that – this hardly means the world of stock market investing is bereft of psychological considerations. As noted above, we do expect them do increase in value, and oddly enough, this expectation has been satisfied over long periods of time. We cannot find a physical commodity market with such a secular increase in value, nor can we expect bonds to grow in value or consistently produce a return greater than their coupon over long periods. Yes, stocks are different from other markets, they are a positive sum game in which we all can win by being on the same side of the market all of the time. Since the economy grows over time, passive investors can benefit from owning a piece of an expanding pie. This is strikingly different from other markets, and a one-size-fits-all approach that treats stocks as "just numbers" is condemned to "just losses."

More significantly, we count on this upward trend in wealth. In a psychological phenomenon known as anchoring, we measure our welfare not by an absolute level of wealth, but against our best previous state, our last new high, as it were. By the end of 2000, all but the most hapless equity investors had achieved absolute levels in their accounts far in excess of reasonable expectations from only a few years back. Were they happy? Not necessarily; most were licking their wounds from the NASDAQ's collapse from its unrealistic valuations of March 2000. There's just no pleasing some people, but this is representative of the human condition. We can quantify these wounds by a retracement of gain measure (GRR):

$$GRR \equiv \frac{High - Current}{High}$$

VIX Tricks

The GRR is consistent with all other observations of market behavior at extremes, be they the fat tails of a distribution of returns or the price spikes on a chart that mark when either buyers or sellers have capitulated and defined a short-term top or bottom, respectively. Since very few participants in the equity market are naturally short − another reason why stocks are so different − capitulating owners define the anxiety extremes in equities. Volatility is skewed, with the higher volatility readings occurring at the lower equity prices.

We can illustrate this with the VIX, or Volatility Index calculated by the Chicago Board Options Exchange on the S&P 100 (OEX) index (see "Nothing To Fear," *Futures*, May 1999). We should note from the start that the VIX is hardly the best indicator for extreme volatility changes; that dubious distinction goes to the various hypercharged Internet and NASDAQ indices. It is used here simply because it has the longest and most consistent record as a time series.

Volatility And Retracement of Gain:
S&P 100, March 1993 - November 2000
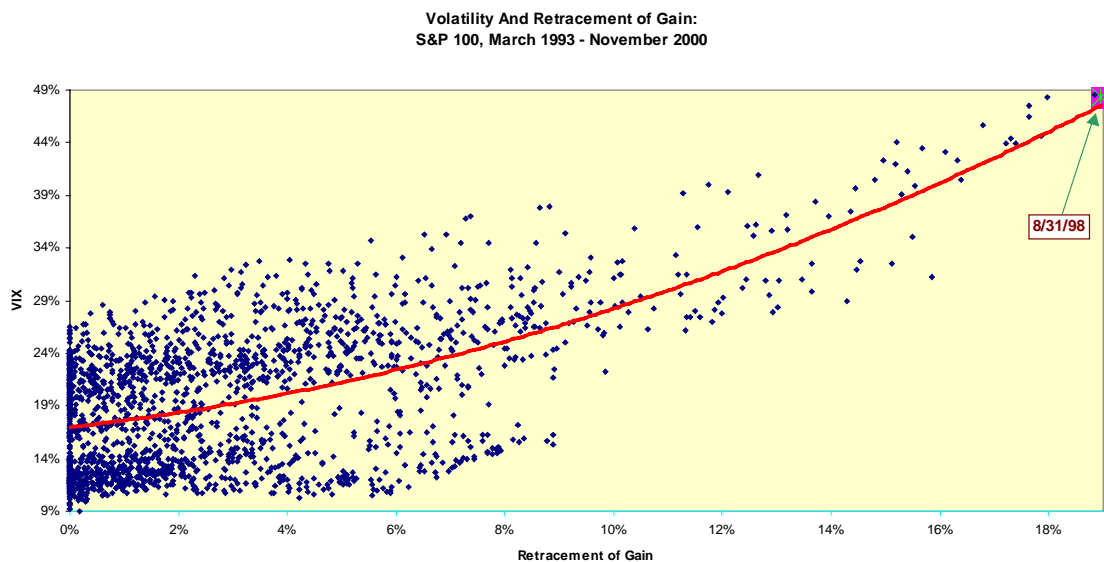
The VIX increases as a quadratic function of the GRR. With nearly 2,000 daily observations since March 1993, we can derive the following relationship:

$$VIX = .17 + .58 * GRR + 5.43 * GRR^2$$

The further equities retreat from their highs, the faster the anxiety level of weak longs increases. We can transform the data slightly to emphasize that it's not only the absolute levels of volatility that are important, as the VIX trended higher with the overall market level, but the jumps in volatility relative to recent trading

experience. If we compare a VIX reading to those of the previous week's and plot those against the GRR, many of the market's spike bottoms of recent years become quickly apparent.

Volatility And Retracement of Gain:
S&P 100, March 1993 - November 2000
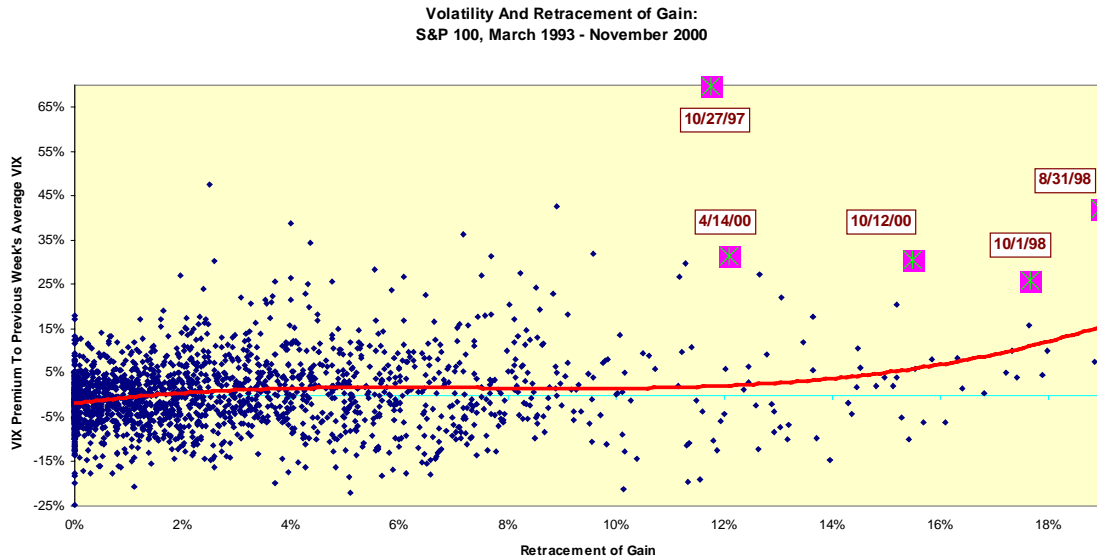
Moreover, the effect of the GRR now becomes cubic more than quadratic:

$$VIX = -.018 + 1.60 * GRR - 22.49 * GRR^2 + 99.67 * GRR^3$$

Toward An Equity Tension Index

All of the previous tension indices introduced in this series have had two components in common, the Adaptive Moving Average trend oscillator and the ratio of implied volatility to high/low/close volatility. To refresh, the N-day Adaptive Moving Average (AMA) is the number between 4 and 29 days that minimizes the following relationship

$$\frac{1}{N} * \sum_{i=1}^{N} \frac{N}{HLCVol^2} * \left| (P - AMA) \right| * \left| \Delta AMA \right|$$

high/low/close volatility is calculated

$$HLCVol \equiv \sum_{i=1}^{N} \left[\frac{\left[.5 * (\ln(\frac{\max(H, C_{t-1})}{\min(L, C_{t-1})}))^2 - .39 * (\ln\frac{C}{C_{t-1}})^2 \right] * 260}{N} \right]^{.5}$$

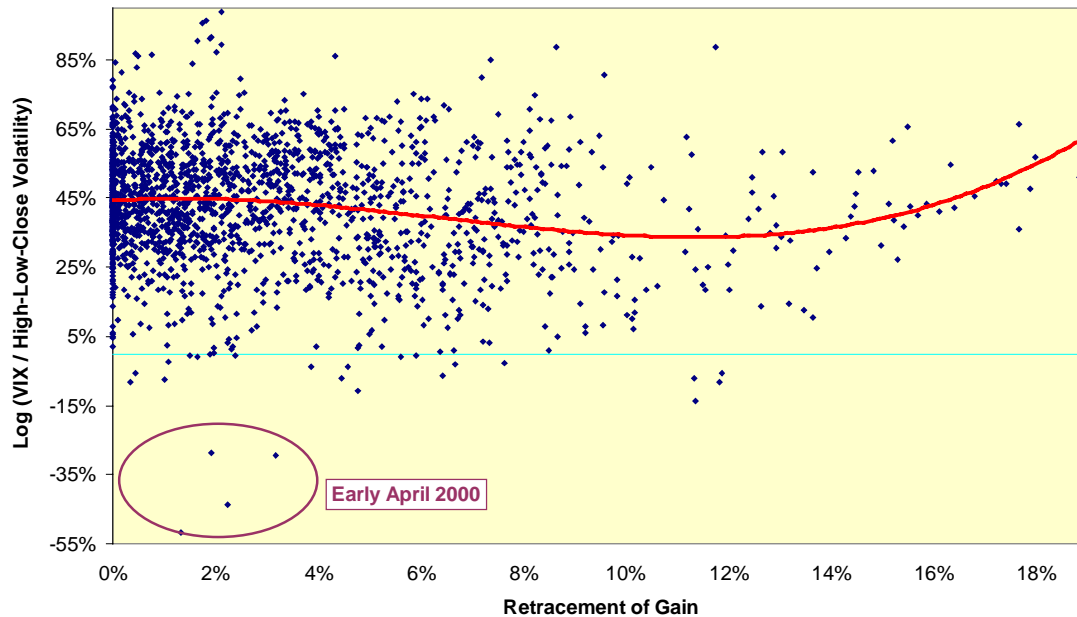and the trend oscillator is calculated

$$TR \equiv \frac{\left[\frac{P - AMA}{HLCVol} \right]}{P}$$

Unsurprisingly, both the volatility and trend oscillator components of the OEX series have a cubic relationship to the GRR

$$TR = .23 - 10.03 * GRR + 100.5 * GRR^2 - 333.2 * GRR^3$$

$$\ln\left(\frac{HLCVol}{VIX}\right) = .44 + 1.02 * GRR - 42.43 * GRR^2 + 222.6 * GRR^3$$

Excess Volatility And Retracement of Gain:
S&P 100, June 1993 - November 2000

An interesting cluster of points is visible for early April 2000, the days immediately before the big mid-April break. Whereas the VIX normally trades higher than the high/low/close volatility, here it is trading lower, an unusual complacency considering that the tech stocks were well into their rout. Somebody, somewhere must have been spinning a pretty good yarn about how well the Old Economy was doing.

The relationship between the trend oscillator and the GRR is noteworthy not only for its strongly declining cubic relationship but for how some notable spike bottoms stand out clearly via trend oscillator values of less than -.50.

Trend Oscillator And Retracement of Gain:
**S&P 100, June 1993 - November 2000**
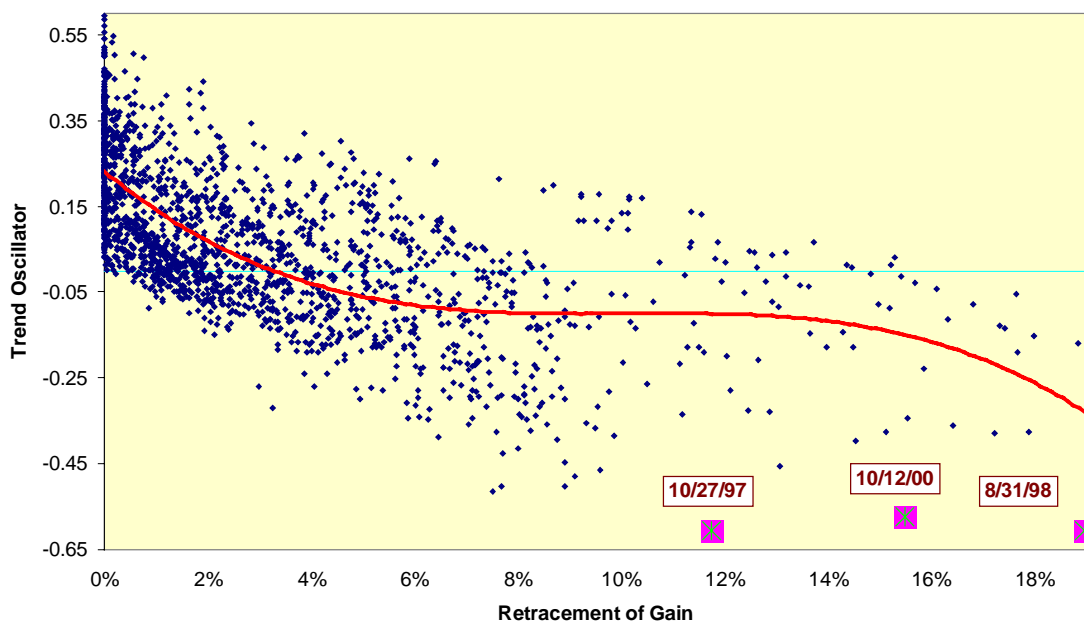
The Equity Tension Index

The purpose of an equity tension index (EqTI) cannot be the same as those of previous tension indices designed to look one day ahead for several reasons. First, while the GRR needs to be included in the EqTI to modulate our understanding of the equity markets, it clearly is not orthogonal to either the trend or volatility components of the index. Second, equities can take on the characteristics of both a positive and a negative sum game, positive in the expanding pie sense, negative in the panic-to-sell sense. Third, equities have many of the characteristics of an economically superior good: If soybeans jump in price, it's a bad day for the chickens, but if dot-com stocks jump in price, people line up to buy more. Fourth and finally, and certainly related to the third concern, equities don't have a market clearing price in the sense that higher prices for a given issue will not stimulate new supplies of that issue nor will investors switch to a substitute. You can switch from soybean oil to canola in some applications, but what's the substitute for a stock with a unique franchise?

These qualities that distinguish stocks from other markets place a unique reward on bottom picking, especially for fund managers far more obsessed with their relative performance than your absolute performance (see "Games People Play," *Futures*, July 1998). Does the EqTI succeed in this regard?

When Investors Panic: The Equity Tension Index
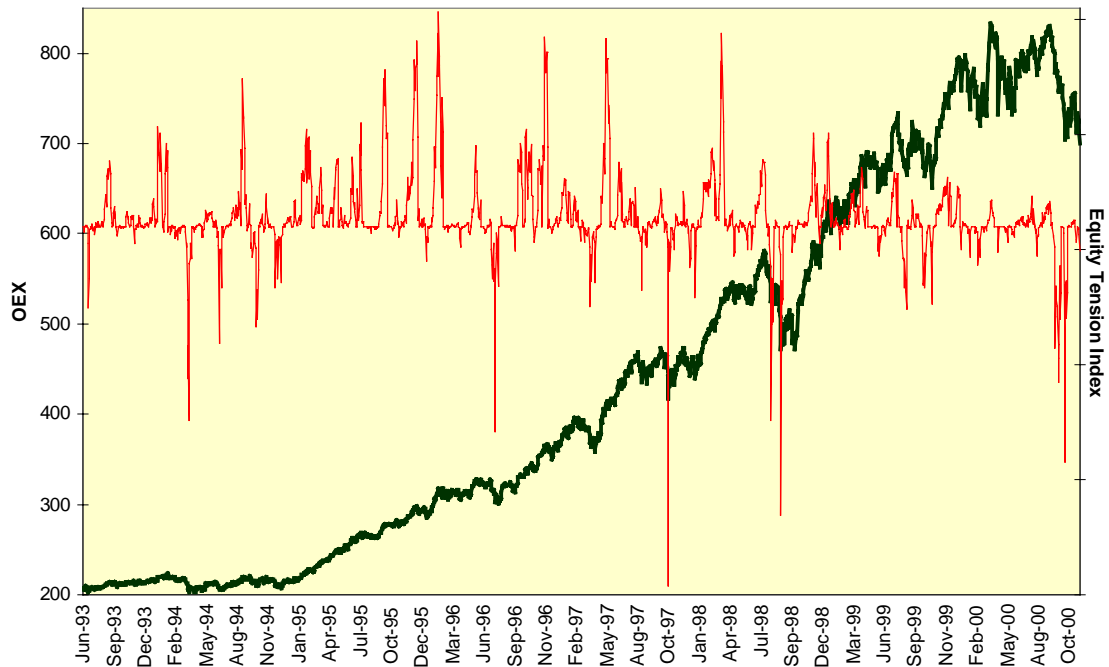
The visual observation answer to this question would appear to be affirmative, but this is somehow unsatisfying. After all, market panics are rare, we know them when we're going through them, and besides, stocks may have had spike bottoms during the long bull run, but will this prevail during the coming years? Our last protracted trading range following a bull market began in January 1973, and did not end until the S&P 500 made a new high during July 1980. We cannot construct a similar bottom picking history for that period.

Can the EqTI be used for daily signal generation? Would this question be posed if the issue were in doubt? While all simulations, backcasts, and hypothetical trading records must be taken with a massive grain of salt, the broad outlines of a successful system will emerge. We can throw the EqTI into the same signal generation matrix used for the other tension indices, and the following history of realized equity is generated.

Hypothetical Cumulative Realized Equity Of EqTI System
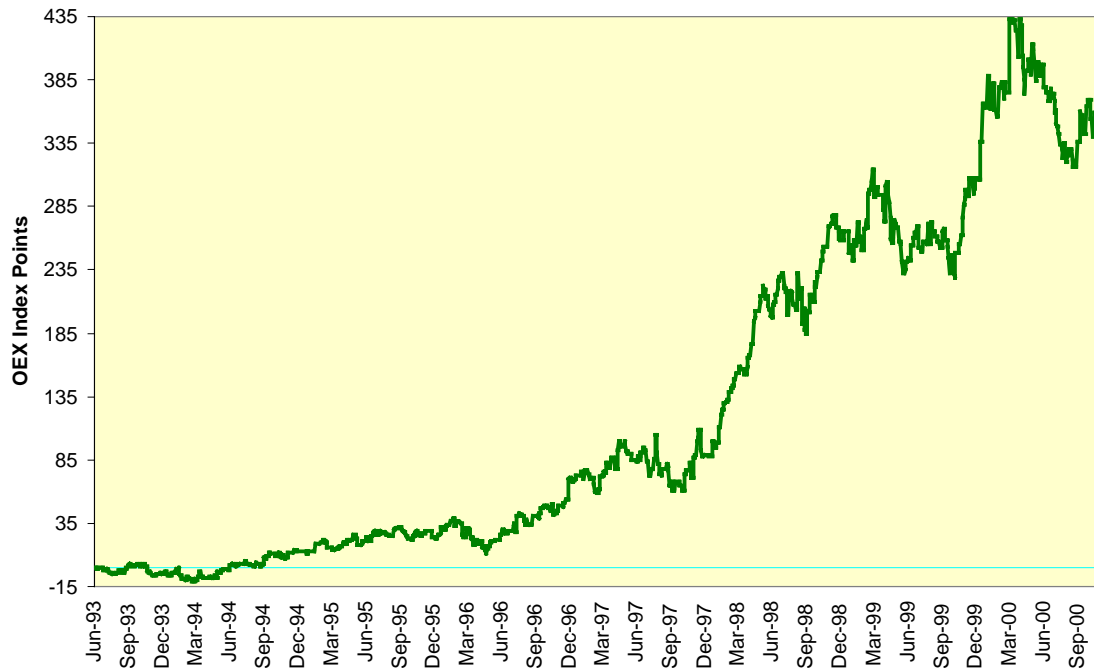
Ride The Wave

While we can and no doubt will debate the value of technical analysis in its various forms for as long as there are markets, we should be able to agree on one thing, and that is the value of learning which side is the most afraid of losing. Bet against these blokes, and the odds will forever be in your favor. This is the shared premise behind all of the tension indices.

And those black-box salesmen who insist one size fits all, and that each market is just numbers? "The louts are different from you and me." "Yes, they have less money."