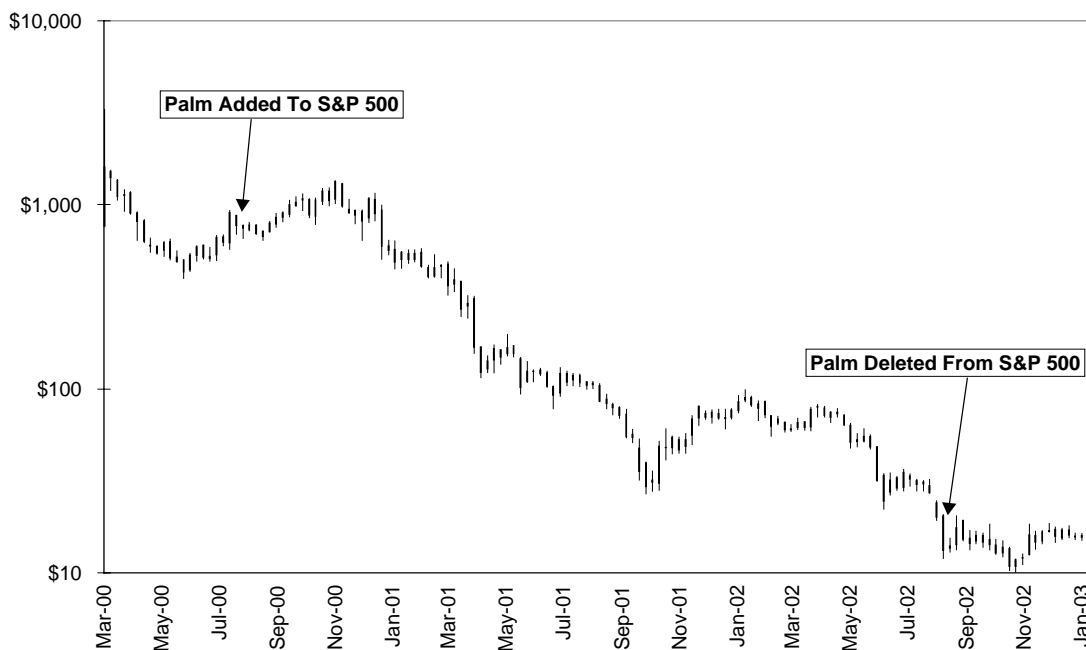


## Constitution And Reconstitution

Have you figured out from whence reality television came? If you said *Survivor* came from the survivor bias inherent in so many stock indices, you would be correct in spirit. The simple fact is stock indices are, by definition, composed of the survivors of business competition; no bankruptcies or acquired-in-merger firms need apply.

As the life cycles of firms in high-risk industries get shorter and shorter, we are going to be faced with firms entering indices at high ranking, staying briefly, and then getting booted unceremoniously. Palm, Inc., was born on March 2, 2000 in a spinoff from its parent, 3Com. It was added to the S&P 500 index on July 27, 2000 and removed from the benchmark index on August 13, 2002: Buy high / sell low. Its price history is presented on a semi-log scale to adjust for its wide range and its 1-for-20 reverse split on October 15, 2002.

**Palm, We Hardly Knew Ye**  
Adjusted For Splits



While the short, happy life of Palm as a member of the S&P 500 may be unusual, the indices are anything but constant. The number of changes per annum in S&P's U.S. indices over the past decade invariably surprises those who see the numbers for the first time. The changes are not limited to the large-cap S&P 500; the MidCap 400 and SmallCap 600 have high turnover as well. The year 2000 had the most changes for all three indices and is highlighted accordingly.

### Annual S&P Index Changes

	<u>500</u>	<u>MidCap 400</u>	<u>SmallCap 600</u>
1992	7	15	NA
1993	13	15	NA
1994	17	23	7
1995	33	37	45
1996	24	37	61
1997	31	54	86
1998	48	65	90

1999	42	70	102
<b>2000</b>	<b>58</b>	<b>90</b>	<b>143</b>
2001	30	54	77
2002	24	28	48

### Meet The New Index

These changes present index funds with a challenge. An index fund explicitly promises its investors it will passively match an index, which is fine for any individual fund but presents the problem of everyone trying to buy and sell the same stocks at the same time for index funds as a group. Absurdities such as those that occurred when Yahoo! was added to the S&P 500 in December 1999 (see "Two Sides of Different Coins," *Futures*, May 2002) and rose 20% in the final hour of trading, or when Worldcom was removed from the index in May 2002 and traded 670.5 million shares in a single day are bound to occur.

Single stock futures (SSFs) with exchange-traded funds (ETFs) as the underlying asset can provide a solution to this mess. Let's take the example of the Russell indices. The Russell 3000 (RAY) index while possessing 2,000 fewer members than the Wilshire 5000 - do the math - represents approximately 98% of the U.S. equity market. This very broad-based index is divided further into a value index (RAV) and a growth index (RAG).

The Russell indices are chosen and reconstituted mechanically on a June 30 cycle - check the rules on [http://www.russell.com/ww/indexes/index\\_recon.asp](http://www.russell.com/ww/indexes/index_recon.asp) - and with a longer lead-time than Standard & Poor's provides. The rule-based switching process for individual stocks between RAV and RAG has created a trade popular among hedge funds of buying the issues going from one to another. As of the June 30, 2002 reconstitution, nearly three times as many investment dollars were benchmarked passively to the RAV than to the RAG.

Just as issues move into and out of indices on the basis of size, they are shifted when their style designation changes as well. The unyielding mechanics of indexation demand it: Once a stock becomes part of a larger (smaller) index, fund managers will have to be net buyers (sellers). Therefore, if stocks are moved from the smaller RAG into the larger RAV, they will encounter net buying pressure. Conversely, stocks moving into the RAG will be subject to net selling pressure. Some hedge funds actually specialize in the trade of buying and selling the baskets of stocks involved in the reconstitution.

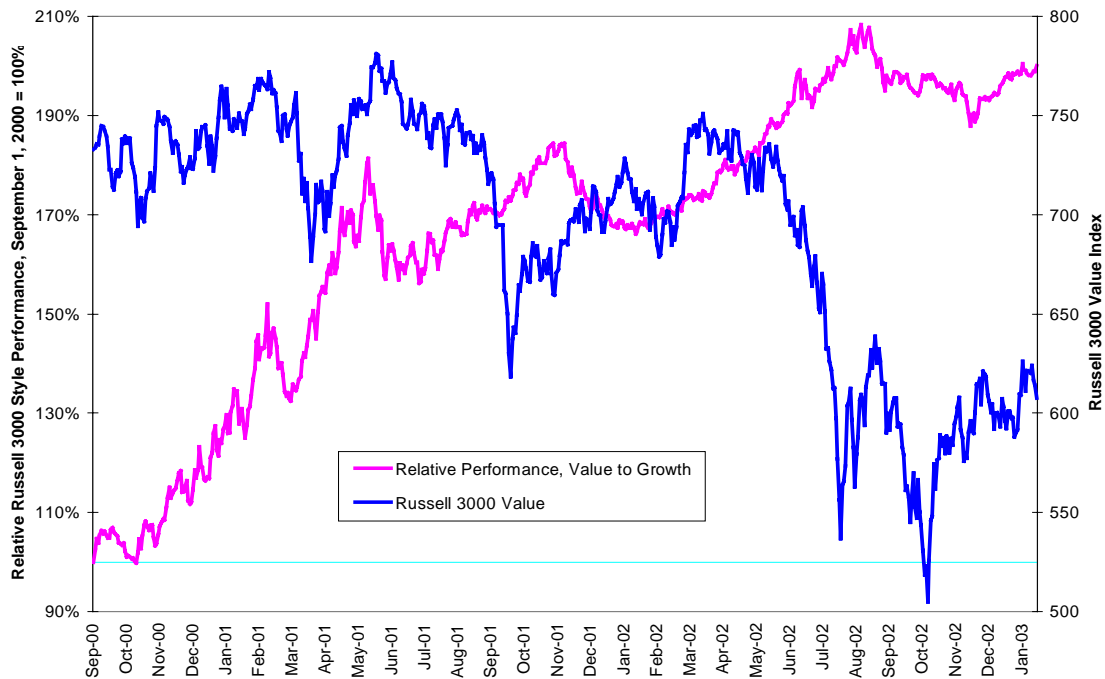
How can SSFs solve indexers' reconstitution trade problems? The answer is deceptively simple and elegant: As the Russell reconstitution takes place on June 30, an indexer can sell the June contract, which expires on June 20, 2003, and buy the July contract. The RAG or RAV shares delivered against the short June contract are the pre-reconstitution index, while the shares received against the long July contract are based on the post-reconstitution index. The index fund can either keep the ETF shares or swap them for actual shares of the constituent stocks.

Who will make a market in the July contract? The very same hedge funds presently involved in the trade, or anyone able to create and redeem the ETFs. ETFs are created and redeemed via an in-kind swap process. The deposit of a specified portfolio of stock closely approximating the composition of the relevant index and a specified cash amount creates a block of 50,000 shares with a trustee such as Bank of New York or Barclays Global. The trustee prior to the opening of trading each business day determines the shares of component stocks in these creation units. The required cash amount is determined on the same business day following the closing of trading. A detailed description of the index receipt process can be found on the National Securities Clearing Corporation's Web site, <http://www.nccc.com/factsheets/core/index.html>.

### The Growth/Value Spread

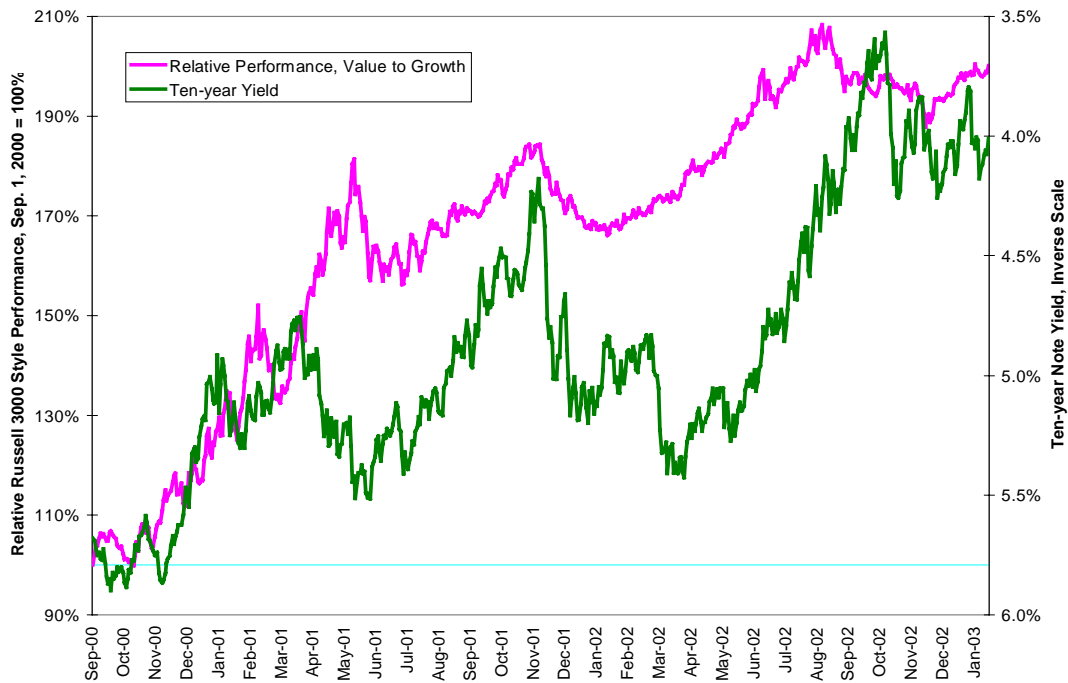
Regardless of the annual reconstitution trade, the RAV has been favored strongly over the RAG since the bear market began in earnest in September 2000 (both indices started on July 26, 2000). Even though value stocks have been roughed up during this never-ending bear market, their performance relative to their formerly high-flying cousins of the growth world has been stellar, a relative outperformance of nearly 100% by mid-January 2003.

### Comfort In Value: The Russell Indices In The Bear Market



While it may seem obvious that value would outperform growth during a bear market characterized by the hot and overvalued getting taken out and shot, this is counter to financial theory - just as was growth's dominance during 1999 and early 2000. Falling interest rates should favor growth investments, whose returns are going to occur far in the future, while the rising interest rates of 1999 should have favored the shorter-duration value stocks. That neither occurred can be explained simply by the stock market's earnings expectations (see "Trade A Sympathetic Market, Get Sympathy," *Futures*, February 2003).

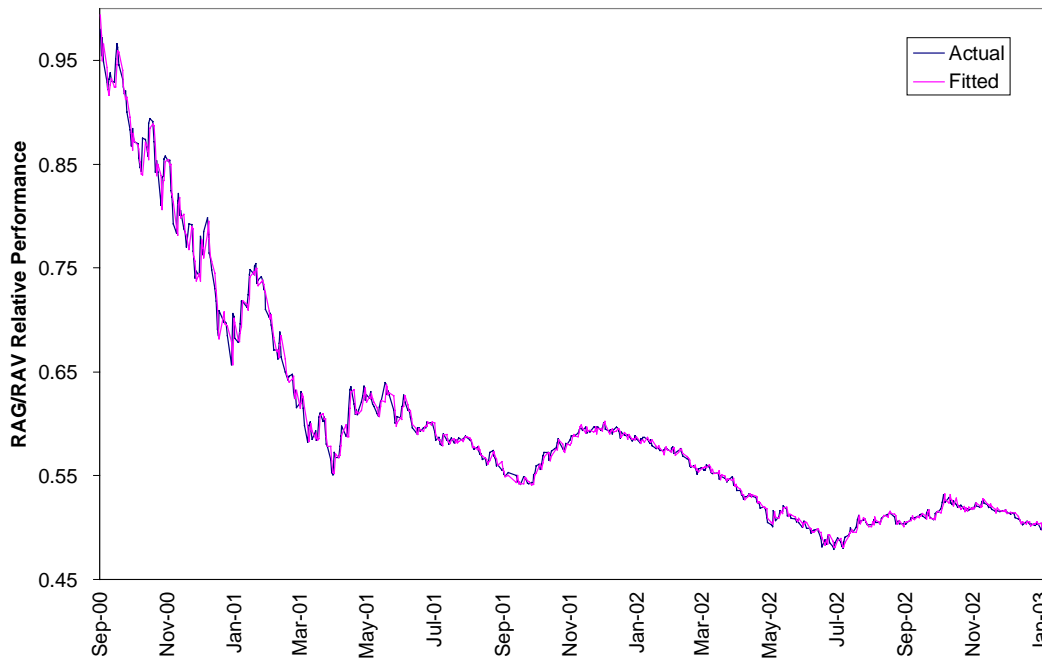
### Styles Yield To Yields



While the urge to explain equity market behavior with long-term interest rates is common, a cursory glance at this spread's relationship to ten-year note yields indicates something is missing. In reality, several common financial variables compete to explain the spread, including the trade-weighted dollar index, natural gas prices, crude oil prices and the forward rate between two-year and ten-year notes. The simplest and most robust model is a model with a first-order autocorrelation correction to account for the spread's natural momentum:

$$\text{Growth/Value Ratio} = .493 + 1.788 * \text{Two-year Notes}, (\rho=.984), r^2 = .995$$

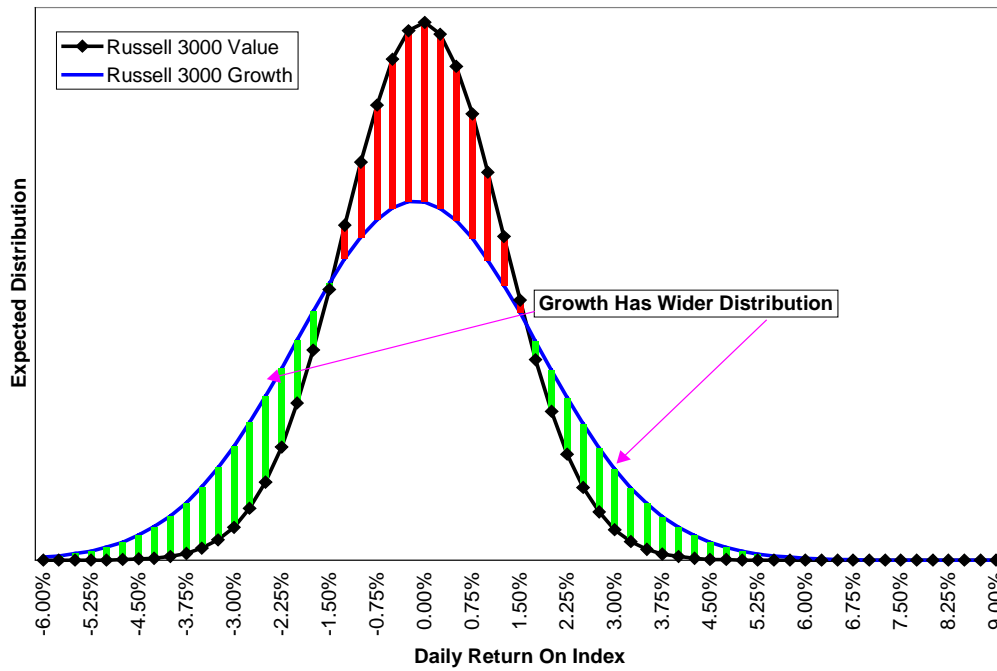
## A Simple Spread Model



### A Call To Action

One relationship that has held true to expectation has been the greater volatility of RAG relative to RAV. If we create histograms of daily returns for these two indices and overlay them, the contrast between the two indices becomes strikingly apparent. Moreover, an embedded option, or natural asymmetric distribution of returns, exists on both sides of the trade: Long RAG/short RAV is a call option on the market as a whole, while the opposite trade is a put option on the market.

### Relative Return Distributions For Value & Growth



All new futures contracts undergo an acceptance cycle wherein early adopters see them first as speculative playthings. Only later do more sophisticated commercial traders develop the workhorse applications that signal a futures' complete acceptance. The management of index reconstitution by index funds certainly fits this definition.