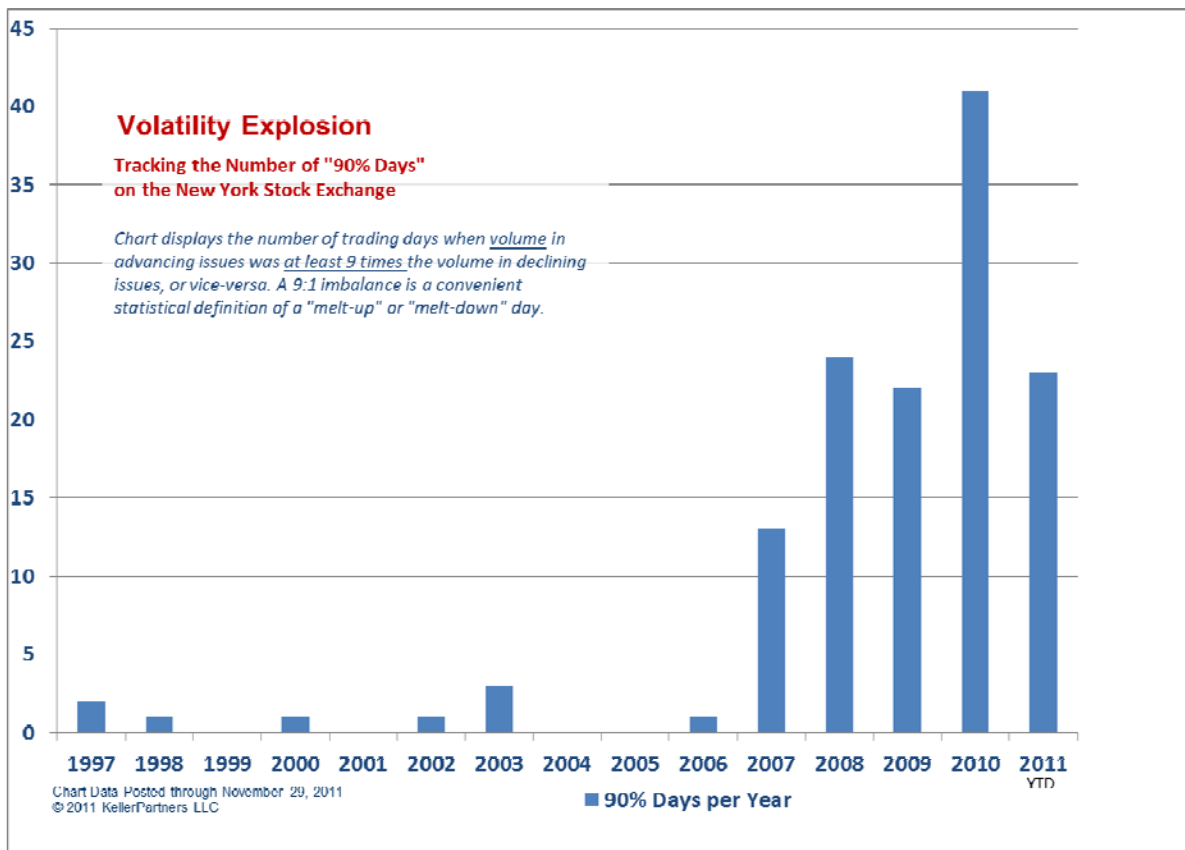




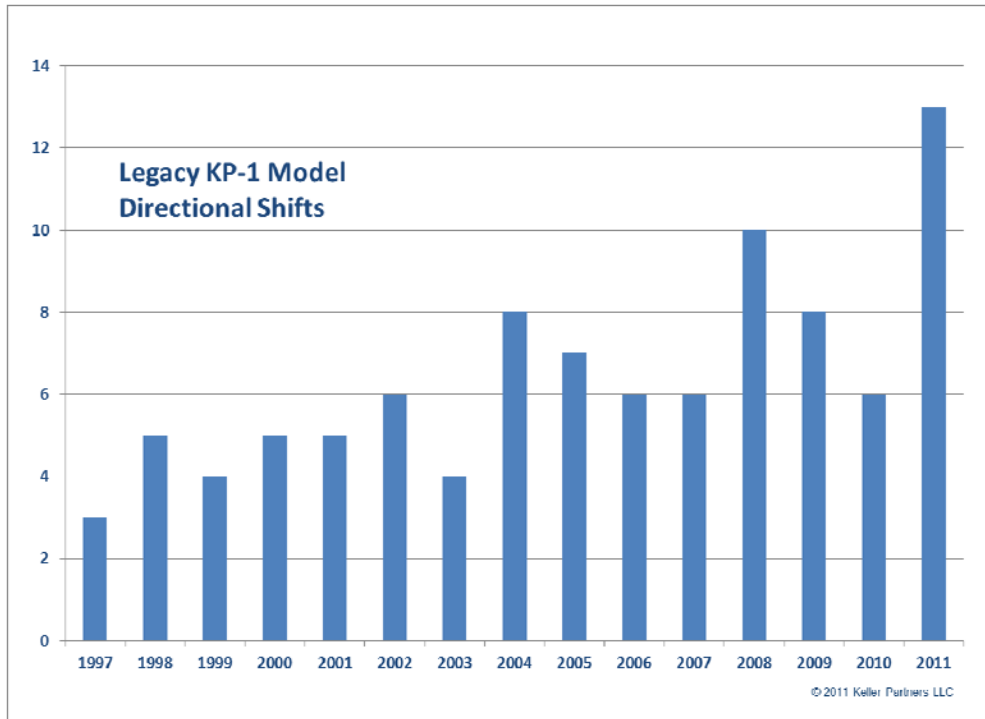
## Trend Model Revisions

We recently completed a top-to-bottom review of the KP Trend Model and have implemented several revisions, effective December 1, 2011.

**The Challenge: Dramatic Increase in Day-to-Day Financial Market Volatility.** It is now clear to us that the internal structure of the financial markets has changed dramatically in the last five years (chart below). The explosion of daily volatility has increased the frequency of our trend signals and adversely affected the performance of the Model. This re-evaluation process, together with a specific discussion of the changes we implemented, follows below.

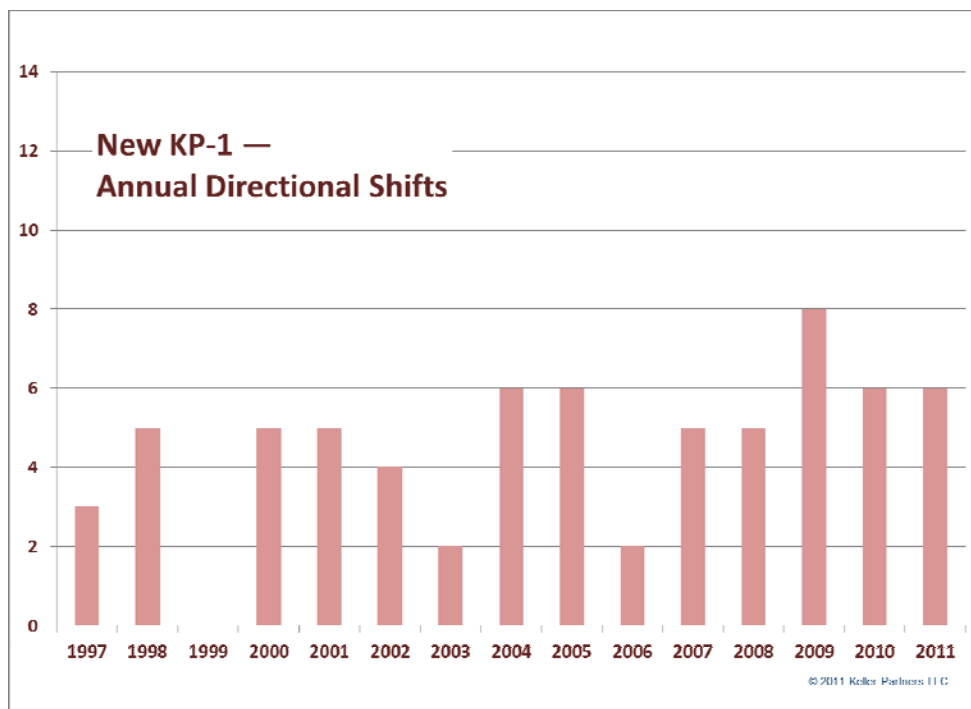


**Related Challenge: Increased Frequency of Model Trend Changes.** While there is considerable debate within the industry regarding the sources of this increased day-to-day volatility (and what should be done about it), it is unquestionably real and has generated 13 directional shifts for our model so far in 2011, more than double the historical average of six (see top chart, next page). These excess trades have impacted the Model's ability to add value, given the relatively slow-moving, trend-following nature of the underlying algorithm.



The chart above documents the impact of the greater market volatility on the previous KP Trend Model that ran in real-time since 2005. Given the inherent smoothing of raw market data that occurs inside any model of this type, there is an inverse relationship between trading frequency and performance. Accordingly, as we re-calibrated the structure of the Model, we always kept an eye on what the proposed changes would do to the annual trading frequency.

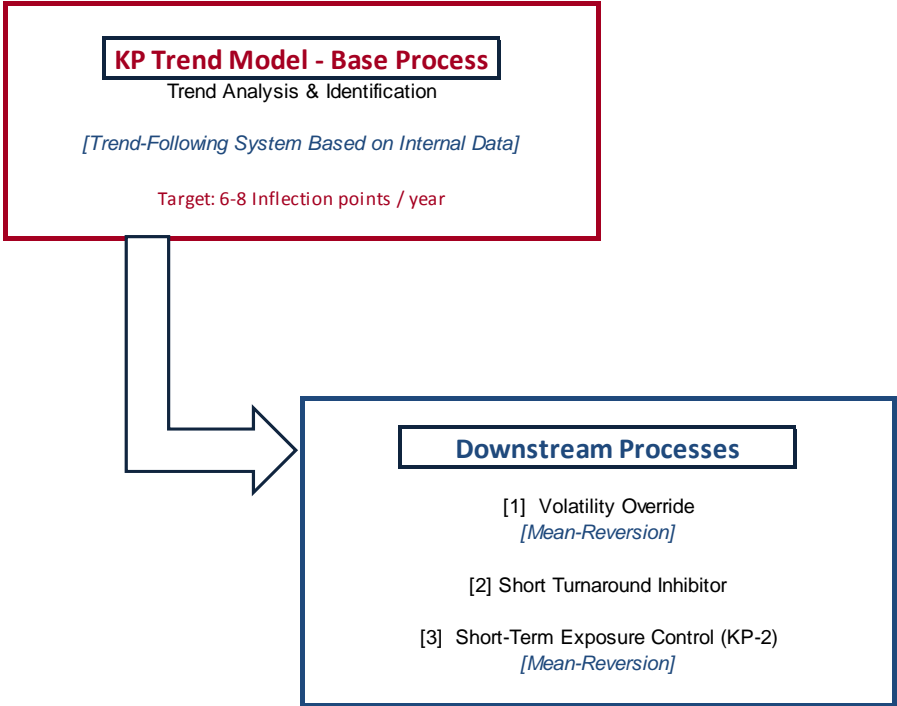
Here is the corresponding chart for the system after our recent adjustments:



It is helpful to visualize our trend analysis process as having two separate components:

- ◆ A trend analysis engine, with binary (long/short) output;
- ◆ Several additional processes (driven by short-term mean reversion) that enhance the performance or reduce the volatility of the basic trend model;

The chart below illustrates our conceptualization of this relationship.



Following is a summary of the changes we implemented on December 1:

**Trend Model.** We revisited all of the data inputs used by the model to persuade ourselves (again) that we were using only those market data series with the highest information content. The answer was yes, that we were not able to improve on the quality of these inputs, and that the performance of the model degraded significantly when we tried to substitute others.

By modifying only one of the five key parameters of the model, we were able to “slow it down” and retain good metrics for all three of the 5-year subsets of our database, particularly the most recent five years where HFT seems to have played an increasing role.

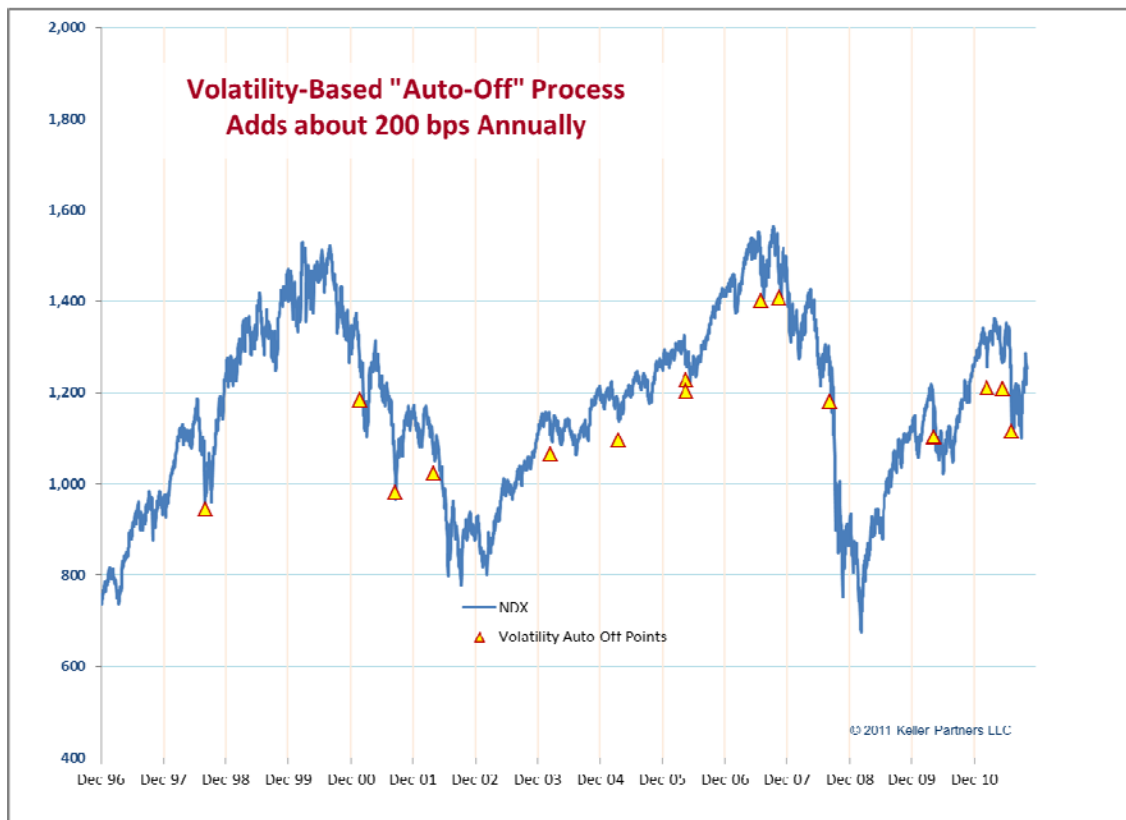
Our primary focus was to have the Model learn to manage the commodity-like swings of recent years, but we were also interested in seeing that the new parameters nevertheless added value in the previous two five-year periods of our database (1997 through 2001 and 2002-2006).

This requirement was our conceptual approach to minimizing the risk of data fitting. We also made sure that the Model's primary mission of being on the right side of all of the really major trend events was functional throughout.

We are not concerned that the revised Model's hypothetical returns for the earlier five-year periods degraded somewhat with the revised parameters, because the market environment has changed, and significantly. We shouldn't expect one size to fit all.

**Downstream Processes.** The KP Trend Model now has three "downstream" processes, in the sense that they are engaged after the trend decision has been reached:

**Volatility Override.** This is an enhancement that we have thought about for several years, as there is a recurring tendency for unusually high implied volatility levels (measured by VIX or VXN) to be associated with selling climaxes, which are then often followed by sharp oversold rallies. All of this ends up being very challenging for any trend following system and the best strategy is usually to just get out of the way (go to cash) for a while whenever the system identifies one of these fairly rare events. The following chart maps the trigger points of our new override algorithm over the last 15 years:



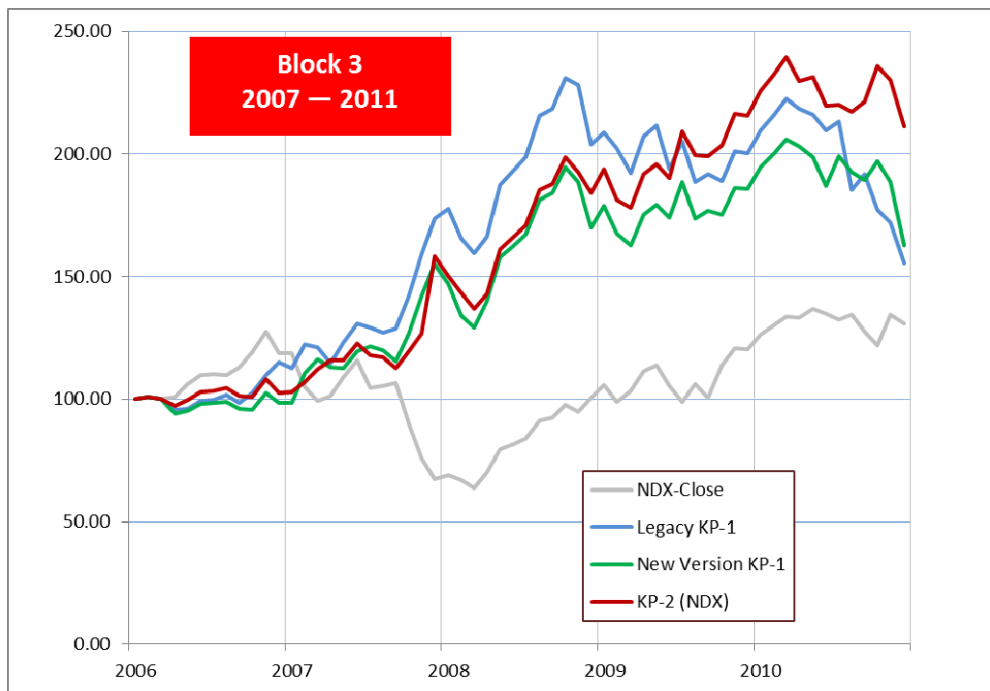
**Short Turnaround Inhibitor.** Several times in 2011, the Trend Model reversed itself after just one or two days in a new position, a very unwelcome event for clients whose mindset expects 5-6 directional shifts a year. We have now added a mechanical monitor that pushes the system

into a “cash” position for a predetermined “timeout” (currently set at four trading days), whenever such a rapid reversal occurs. As one might imagine, a mechanical speed bump of this type is likely to subtract from performance — and it does, but the performance restraint appears to be less than 100 basis points a year.

This inhibitor only operates when needed, and doesn’t extract a background performance penalty. Furthermore, as we have succeeded in slowing the signal frequency with our other changes, we expect that, going forward, we might see the speed bump invoked rarely and, in some years, not at all.

**Exposure Control [KP-2].** Short-term exposure control (based on mean-reversion studies) has significantly enhanced the performance, especially the Sharpe ratios, of the base Trend Model over the years. The offset for this benefit is greater trading activity since the risk positions are adjusted more frequently. As a general rule, the number of annual transactions generated by KP-2 is three times the number of annual trend changes that come out of the KP-1 engine (15-20 transactions vs. 5-7). However, we encourage our clients to continue to incorporate the additional value of these KP-2 shifts into their investment process whenever practicable. With these recent revisions, we have made KP-2 a bit more responsive, and both signals will continue to be a part of our daily e-mail updates.

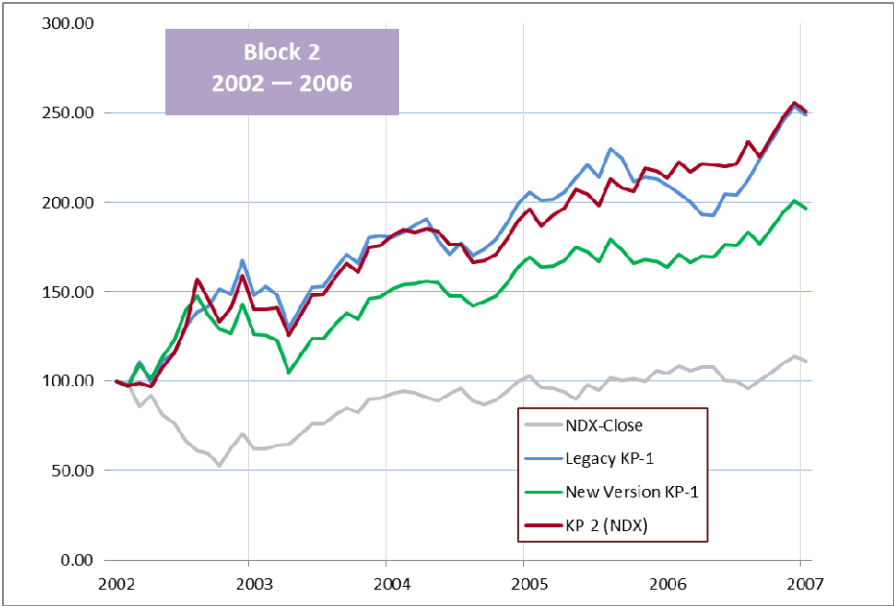
**Historical “What-If” Overview.** Finally, we present some mountain charts showing the equity curves for the new model (green) and the new KP-2 (red), side-by-side with the



existing (old) KP-1, as well as the relevant market index benchmark, in this case the Nasdaq 100 (NDX). In these “tests” of the Model, we assume an investment that is 100% long the

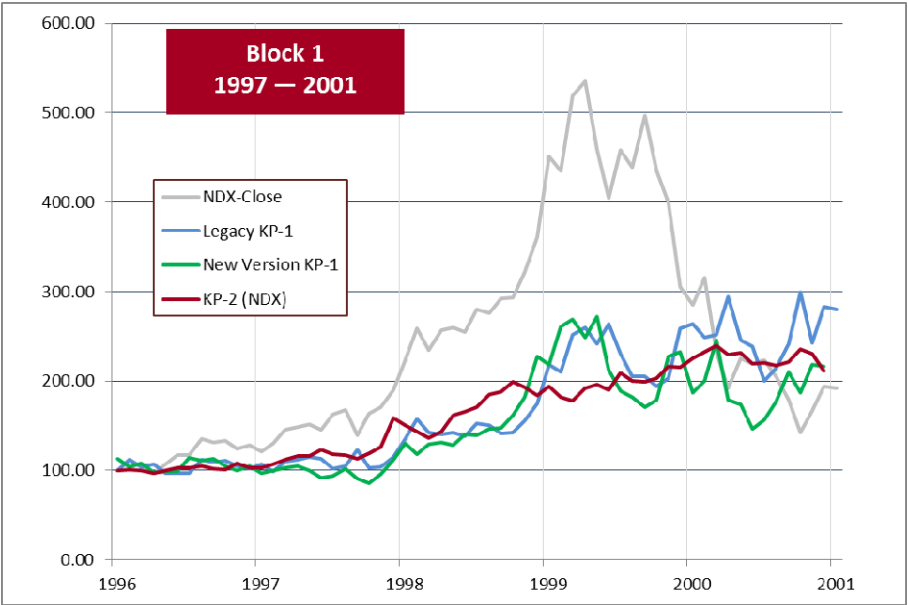
index when the Model is “long,” and 100% short the index when the Model is “short.” When our model is used by a manager to implement a hedge, these returns would obviously be blended with those of the underlying portfolio. The chart on the previous page shows the current, now almost complete, five-year period. The new KP Trend Model’s equity curve is the green line and the new KP-2 line is in red.

The new parameters proved quite workmanlike for the previous five-year period (2002-2006) as well, which included the last of the dot-com bear market, followed by an irregularly higher



trend. These years included the original calibration data set for the Model.

Finally, we were left with a somewhat less exciting fit of the 1997-2001 “block” (chart below), although the wealth gain only looks tepid relative to the volcanic rise and fall of the NDX in the dot-com boom / bust that took place during that period.



**Concluding Thoughts.** We are pleased with these recent adjustments, particularly since we didn't need to take the entire model apart and rethink it. To the contrary, we can say that the internal engine did not change much at all, rather, that we have swapped out some of the gears in the transmission. This probably validates the appropriateness of our input data set, as well as of the mathematical processes that we use to filter and smooth it. We were open to the possibility of much more radical surgery, and happy that, even with their new, angrier personality, the financial markets continue to be subject to analysis by our work.

When we inspect the previous two five-year "blocks," it appears that our models offer significant added value in both periods although, as we can all agree, the markets behaved quite differently then. For all three periods, the newly-adjusted model parameters manage to:

- (1) Identify, and participate in, all major trend events, in both directions;
- (2) Roughly double the test portfolio value over the five years (i.e., green and red lines go from an index value of 100 to 200 over five years), which corresponds to an IRR of about 15%.

As mentioned, the exposure control added by the short-term KP-2 process adds considerable value throughout and this additional model output should be taken into account whenever possible.

Also included with this e-mail, as a separate attachment, is an Excel spreadsheet with monthly returns for both the new and the legacy Models, as well as relevant performance metrics for those three 5-year periods.



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