



Feature Insight

The case for systematic investment management: Basics and Biases.

NVAM utilizes a rigorous systematic approach to designing investment strategies and implementing them in the Criteria Investment Partners LLC Fund. This is the first of a three part series discussing systematic approaches to investment management.

Systematic investment managers will explain to you the important advantages they have over more “traditional” managers – such as having a process that:

1. Is definable and repeatable – in contrast to results which were a function of some “good calls” – which may be difficult to repeat – and which may require greater resources with less continuity.
2. Possesses a large breadth of coverage – a systematic process can readily evaluate, say, the largest 2000 companies. This is not possible with a more traditional in depth research approach. This allows the systematic manager to be able to buy (or sell short) only “extremely” attractive (unattractive) stocks – say the top and bottom 2%, while still maintaining adequate portfolio diversification.
3. Is free of our emotional and other biases. Numerous studies demonstrate that we are our own worst enemy when making investment decisions, especially when stress levels are high. A research, rules-based approach relieves these tensions and allows for more effective decision-making.
4. Addresses some of our human limitations. For example, we can only think about one thing at a time. We can “forget” something we previously knew. We can also be distracted by the events of life itself. In contrast, “models” efficiently incorporate our past knowledge and research. They don't forget and they don't “have a bad day”. They also can “think simultaneously”, combining several different

methods of security or market selection in one calculation.

5. Uses generally available ideas more efficiently, thus not losing any “edge” through ad-hoc applications.
6. Has well defined risk and return objectives that provide context in which to evaluate current volatility and drawdown objectives.

Such managers will usually present you with simulations of attractive historical results. We all know we should be suspicious of such historical “paper” results. After all, who has seen a presentation of a simulation with a poor outcome? Therefore, we should take the time to consider many of the possible biases which could be overstating results relative to what we should expect in the future. On the positive side, such results can provide validation of a concept or idea and an understanding of the strengths and weaknesses of a methodology in different market and economic environments. Thus we should welcome such perspective. And an awareness of such biases can actually increase our confidence in a systematic manager if these possible biases have been at least understood and addressed to the extent possible.

What are some of these biases? In this piece we will describe two:

Hindsight (Data Mining) Bias-

We know what we know. This "bias" we can't avoid. However, in performing research on historical relationships between variables and future returns, there results are often overstated for additional reasons:

The data may be overfitted to a history which will not be repeated going forward. Be wary of systems which say things like "I buy when X occurs and sell 8 trading days later" or "I buy a stock when the P/E is below 12 and sell it when the P/E is above 19". "I buy when the 9 day moving average crosses the 21 day moving average." Such "optimized" (fitted) numbers may have produced good results over a particular period which are unlikely to be repeated.

Similarly, the researcher may have tested many different indicators, methodologies, etc. Hence, given a sufficient number of indicators tested, the researcher would likely to be able to find patterns or relationships which seems "significant" but which are, in reality, random. In the literature, this is called a "false positive".

These "hindsight" biases can be addressed by:

Requiring performance results over an "out-of-sample" period. Out-of-sample testing shows results based on the parameters which would have been used historically – based on what the relationships were at the time – not what you know today. The longer the out-of-sample period the better.

Requiring parameter stability. A method's results should not be overly sensitive to the parameters being used. If parameter stability is present, the concept is "robust". If not, the results are more likely to be "data-mining" (the results of chance). In the example used above (buy when the 9 day moving average crosses the 21 day moving average), results must be required to be similar if you were to use 10 and 20 days, 8 and 22 days, etc. That is, it is the concept which is working, not the specific parameter which is being used.

Most importantly, qualitatively evaluate whether the investment concept makes sense and why it should continue to be effective. Indeed, you might be willing to accept a method which has only, say, three years of results if you: (a) think it is relatively unique (b) understand why it should "work" (c) believe the investment rationale for the factor will likely persist.

Look-Ahead Bias-

Look-ahead bias refers to data inaccuracy because it does not accurately reflect the data as it existed historically, thus distorting results. Examples:

When using accounting data for fundamental evaluation of securities, the data must be lagged appropriately. For example, A December earnings report often is not available until the following February. Accounting data can also be restated after the fact.

When using economic data, the data must also, of course, be lagged appropriately. Economic data is also often subject to significant revisions, making it difficult to replicate the "facts" as they were known at the time.

Thus it is important to use proprietary data or data vendors who use data which does not have these "look-ahead" biases.

Summary:

There are substantial benefits to a systematic approach to investing. However, such practitioners, as well as their clients and prospects, can often have a false sense of comfort created by the precision with which historical results are presented. Therefore, it is important that all involved are aware of and address the biases, some clear – some more subtle – which history may reflect. By doing so, future results are less likely to be disappointing.

In the end, an investment approach is most credible if it is based upon solid underlying premises, i.e. – "it makes sense". All the "numbers" are available simply to validate the concepts being used and to provide historical perspective. Real-time investment returns are also obviously helpful –as they are free of some (but not all) of the biases discussed.