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Common Sense in Systematic Trading

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To avoid misunderstanding, I'll start at the beginning. I consider a system to be a set of rules which tells one when and how to enter and exit trades; for example, buy at the market when the price rises above the 100-day moving average, and reverse when the price drops below. One would also need volume rules, stop-out rules, etc. From my point of view, it would *not* be a system to say, for example, buy when the price rises above the 100-day moving average and the chart looks bullish. A system dictates what to do and leaves no room for discretion.

A system must be traded at a uniform volume or with a uniform amount of money at risk per trade. If you trade one contract when you don't like the system signal and 10 contracts when you do, you're not trading the system. Perhaps some traders improve their results by such techniques, but I think there are many more who underperform their systems.

The chief danger is that one day your instinct is right. The bonds really are about to tank, as you suspect, even as your system is telling you to buy. But if you disregard your system and make money by doing so, your approach to the markets suddenly changes. You begin to ask yourself more frequently what your opinion is, and we humans can always find an opinion in ourselves. You follow a hunch weaker than the one that saved money, and that proves costly, so then you disregard a stronger hunch, and that proves costly too. Soon it becomes impossible to judge how strong any

particular hunch is, and before long you're reproaching yourself for a string of missed opportunities. Distinguishing between your system and your hunches gives rise to a whole new layer of record-keeping. Perhaps you begin to distinguish among different types of hunches. Whatever you do, however, you'll probably find that you're underperforming your system. Perhaps you finally decide to give up on discretionary trading, but like a gambler, you first seek to undo the damage it has caused. This can be the most dangerous time of all! Some of this happened to me when I was starting out as a CTA, and I've known capable traders who spent years in this kind of purgatory.



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It takes a phlegmatic character to be a truly systematic trader, a nonchalance about making trades that are sometimes the exact opposite of what one feels is the right thing to do. But to be systematic, especially with short-term systems, does *not* mean one's systems or rules never change. If I have a strong hunch which goes against a system and which proves to be correct, you'd better believe that afterwards I'm asking

myself, what gave me that hunch? Is there some way I can quantify it, test it, and add it to my system? What I don't do are "this-time only" exceptions (unless there has been a truly dangerous extraordinary event, such as the outbreak of a war).

Of the many so-called systematic traders, only some are truly systematic. But certain mistakes are common even in

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this select group. Every trading system I have seen advertised for sale to the public boasts of great trades the system has produced. Even if some losses are included, one is being shown a tiny, hand-picked set of observations. A sensible person doesn't bet on something because it worked in 10 or 20 previous cases, especially when those cases were selected to advertise a product.

Professional traders don't make this particular mistake, but some of them make a similar one. There are traders with computers and charts who don't know statistics. When they quantify the performance of systems they are testing, they use only average profit per trade. But a system with an average profit of \$1,000 over 250 observations and a standard deviation of \$25,000 is not one that I want to trade. Such a result gives no real reason to expect future profit.

A more subtle mistake some traders make also has to do with the nature of statistics. Some traders run computer programs that effectively test thousands or millions of trading ideas, and pick out the best ones. Now such an approach may or may not uncover valid ideas (depending on the type of questions one's program asks), but it is certain to identify many ideas that aren't valid. The procedure could be compared to flipping a coin millions of times. There are bound to be runs of ten or more heads or tails in a row, as well as periods where other striking patterns emerge. Of course nobody sensible bets on a continuation of such a pattern. We all know the outcome of coin tossing is random, but we don't know that price fluctuations are, so we are more likely to be deceived in the latter case.

As it happens, I know one prominent trader who has employed this particular research technique. He's a smart fellow, and he has an argument for what he does. He believes that any other procedure intrudes too much human judgment upon the process of research. He believes that prejudice and error are endemic to human judgment, and that the wise researcher seeks in some sense to remove himself from the research process.

I believe this is a fallacy, though a revealing one. While I

agree prejudice and error tend to distort human judgment, I don't think they are altogether crippling. Perhaps more importantly, I don't think there is any way around human judgment. Computers are no more and no less than powerful tools in our hands. A research program is written by human beings, and asks questions ultimately devised by human beings. No fancy talk about "neural nets" or "artificial intelligence" can overcome this simple fact. There is no way for humans to form non-human judgments. (I think the desire to do so is more of a religious than a scientific impulse.)

Nonetheless, I agree the research process, like any form of observation, requires passivity. In my view, however, this means not blind faith in one's computer, but rather openness to the phenomena that present themselves. It means, in other words, common sense.

There is no way to eliminate the possibility that an apparently robust trading idea in fact reflects mere statistical noise. This danger is endemic to systematic trading, but it can be mitigated, above all through demanding that a trading idea make sense. Those massive computer runs often turn up sys-

tem ideas like the following: if soybeans are down over the past two months, and corn is up over the past six months, then buy copper on the last day of the month. Now what possible story can such a pattern tell? One tested so many ideas that one of them was bound to look great. Of course an apparently ridiculous pattern may occasionally contain the kernel of a valid idea, and if I can translate it into a form that makes sense, I might look into it further. In general, however, I'm willing to lose the occasional valid idea that didn't seem logical to me in order to avoid trading a host of ideas neither logical nor valid.

Another common mistake is to lose sight of correlation among trading ideas. Again, those massive computer runs are often the culprit. Perhaps one's program tests what is happening when the 50-day moving average is pierced, and then when the 75-day is pierced, and then the 100-day, and then the 125-day. It isn't hard to guess these four sys-



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tems are often responding to the same event. The basic idea is logical enough, but there's no logic in trading it four different ways, which means quadrupling one's exposure, and increasing one's volatility. What I try to do in such a situation is to isolate the core of the idea, and develop one system. If I find I have two distinct ideas with some overlap, then I develop both but reduce my trading volumes accordingly.

In general, I approach the research process as one of *interaction* between myself and my computer. I form an idea and I test it; I refine it on the basis of the initial output; I ask myself what the numbers are telling me, if there's something I'm missing, or some preconception of mine that doesn't really add anything. I ask myself if the emerging story makes sense, if I'm comfortable betting markets will behave in the future as they have in the past. Finally, I look very carefully to see the idea isn't effectively replicating a system I already have.

This brings me to the final danger I wish to discuss – “optimization.” If I keep adding and adding conditions while researching a system idea, I'm eventually going to pick out profitable past observations in a way that I cannot expect to replicate in actual trading. Each time one adds a parameter or rule to a system, one has effectively chosen it from a pool of many possible parameters or rules (e.g., a 150-day moving average rather than a 200-day or 100-day). Therefore if one constructs a system with ten parameters, one has effectively selected from hundreds or thousands of possible alternatives, so it's neither surprising nor necessarily meaningful that one finds statistical significance.

Optimization is another danger endemic to systematic research. Here too I believe the best solution, which is not a perfect or total solution, is common sense. Obviously the fewer the rules or parameters, the more the system is trusted. I wouldn't say one should never develop a system with more than a certain number of parameters; but one should always be wary of adding parameters, and one should keep the number as low as possible.

The best systems are simple, logical, and powerful across many commodities. Of course such systems don't grow on trees, if for no other reason than other traders are also looking for them. An idea detected by a large number of traders cannot be an effective idea, for everybody will buy when there's a buy signal, thereby raising the price, and everybody will sell when there's a sell signal, thereby lowering the price. So one must strive to be original, to go where no trader has gone before. (I myself wonder if long-term trend-following, which basically boils down to one idea which has been developed in many forms, is not being overtraded by systematic futures traders. Time will tell, but it is striking the returns achieved by this type of strategy have generally declined over the past generation.)

Therefore, I would never write or speak publicly about my systems in more than a general way. However, the financial markets constitute a very large sea, and there are many successful ways to fish in it. I see no harm in offering a few general remarks on my fishing technique, as long as I don't divulge where I cast my line. ■

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