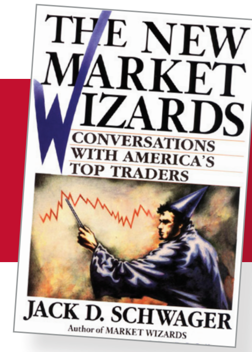
William Eckhardt is featured in
The New Market Wizards



APM Interview with

William Eckhardt

William Eckhardt can be considered a living legend in futures trading. Over the past 35 years, he's traded in nearly every economic environment, and his firm, Eckhardt Trading Company (ETC), now manages in excess of $600 million. Based in Chicago, the firm specializes in trading commodity and financial futures contracts on U.S. and non-U.S. exchanges. Currently these markets include U.S. and international interest rates, stock indices, currencies and cross-rates, metals, energy products, grains, and soft markets.

Today, Eckhardt is broadly recognized as one of the early pioneers of trend following: the use of directional trading strategies with the goal to exploit market trends. Recently, we spoke with Bill regarding the firm's investment philosophy, its methodology, and what he calls "the science of trading."

APM FUNDS: Bill, can you explain your emphasis on a scientific approach to trading?

WILLIAM ECKHARDT: When I started trading seriously, which would've been in 1973, one of my aspirations was to create a science of trading. Now at ETC, we strive for a scientific approach. We're very concerned with what kind of inferences are warrantable. What kind of conclusions can be drawn from the data? Which statistical techniques are appropriate to the kinds of problems at hand? The kinds of problems we deal with in futures trading are fairly unique because price series are almost completely dominated by noise. They're almost all static, if you will. So, a lot of the techniques that work throughout science don't work in this environment. You have to start from scratch and develop new techniques, which is what we've tried to do.


William Eckhardt, Founder
Eckhardt Trading Company

APM: With that emphasis as a backdrop, how do you go about developing and testing new ideas?

ECKHARDT: There are two parts to the process. The first part is to develop a coherent portfolio theory: how to structure your trades, how to manage risk, etc. That truly is a scientific project in which you're trying to develop things from first principles. The second part is brainstorming for new trading ideas. It usually takes 70 to 100 false starts before we get something that we can use. I tell people that if you're close to the North Pole, every direction you go in tends to be south. We've been doing this for a long time, so at this point, most things we test degrade our system. But every year or two, we'll find something that actually improves it.

APM: What kind of new ideas are you looking for?

ECKHARDT: The kind of innovation I'm talking about is inventing some new way of looking at the trend or the components of the trend, such as volatility. Even if it's only a slight improvement, it can change all your systems. For example, estimating volatility determines to a large extent what your position sizes should be. In our case specifically, we have an erraticness filter which is influenced by volatility. A slight improvement in our volatility estimators can potentially produce a significant long-term benefit.

APM: You mentioned your erraticness filter. Can you explain that?

ECKHARDT: Erraticness incorporates different measures of market spread. If market erraticness rises above a certain threshold, new trades in that market are blocked. This is designed to eliminate a subset of potential trades that we think will add to the portfolios' volatility without contributing much to their returns.

APM: What effect has the erraticness filter had on your performance?

ECKHARDT: We introduced the erraticness filter near the end of March 1996, and it turned out to be very beneficial. For the first few years after we implemented the erraticness filter, in examining our Sharpe ratio the numerator got bigger and the denominator got smaller simultaneously. In my experience, that's very rare.

APM: How would you describe the holding periods for your various systems?

ECKHARDT: We have three packages which consist of 19 systems in all. The short-term package has an average trading length of about 6 days; the medium-term package has an average of about 12 days. The long-term package is over 60 days.

APM: Do the systems trade in tandem or independently?

ECKHARDT: All of the systems trade independently and are designed to be profitable on their own.

APM: What about your risk management process?

ECKHARDT: Our risk management techniques are based on utility theory. They take into account the fact that each dollar you make is a little smaller than the last one, and each dollar you lose is a little bigger than the last one. They allow you to quantify your own aversion to risk, and then to maximize expectations based on your risk aversion.

APM: So the objective is to achieve the highest risk-adjusted returns, rather than the highest absolute returns?

ECKHARDT: I think the objective of any investment is to achieve the highest returns based on your own risk tolerance, or in the case of a professional manager, the risk tolerance of your clients.

APM: In terms of your win-loss percentage, what percentage of your trades tend to be winners, and what percentage tend to be losers?

ECKHARDT: Looking back, about one third of the trades have been winners, and two thirds losers. That's been true for a long time. The idea is you win in only a modest percentage of trades but you make these wins count.

APM: Can you describe your optimization process?

ECKHARDT: We use evolutionary algorithms that we've developed in-house. To give you an idea of what that means, let's say you have a system with certain parameters. Certain price points that you're looking to hit, certain thresholds based on patterns you've observed. You can express a particular form of this system as a sequence of numbers, and treat that sequence exactly like a genome (a string of genes).

In order to test the system, you can run it with a given set of numbers. This will give you hypothetical performance figures which are analogous to an organism's fitness. Then, just as in natural selection, you can cause genes to mutate or you can genetically recombine two genomes, always favoring those with higher fitness. The fitness can then "evolve" to be higher.

APM: How do you apply this process to trend following?

ECKHARDT: The objective is to find ways to identify trends within the massive amount of randomness or "noise" that the market generates. The difference between a real market and a random walk is that the real market has a slight trend component. Perhaps one or two percent of the process is trend, and the rest is noise. That's the inference problem you're facing. So the question becomes, how can you use the fact that there is some information in a price series, and how can you extract returns from that information? That's where testing and optimization come into play.

APM: What about the issue of overfitting?

ECKHARDT: The dangers of overfitting (or over-

> "As a general rule, avoid those things that give you comfort; it's usually false comfort."
>
> -William Eckhardt, *The New Market Wizards*

"The better a system looks, the more adamant you should be in trying to disprove it."

-William Eckhardt,
The New Market Wizards

PAST RESULTS ARE NOT NECESSARILY INDICATIVE OF FUTURE RESULTS. The risk of loss in trading commodities can be substantial. See Important Risk Disclosures at the end of this document.

optimizing) are significant. There are real hazards. Overfitting is the worst kind of mistake because it tells you that you're getting something when you're really not.

APM: How do you try to avoid it?

ECKHARDT: Ultimately there is no way to completely avoid overfitting, but there are tests for estimating its influence and techniques for limiting its extent.

APM: How do you try to ensure that you're staying ahead of the game?

ECKHARDT: We take the attitude that if we don't improve, we'll backslide. So we have to improve continually, and as a result, we have a constant research effort aimed at improving what we're doing.

APM: Does this also relate to how you view your competition?

ECKHARDT: It does. We have some sharp competitors. Thirty years ago people were looking for pictures in the charts—heads and shoulders or crocodiles or whatever. Now you have a lot of people with scientists on staff and with good computers. It's a tougher environment. There's no question about it.

APM: Speaking of difficult environments, how did your models react to the meltdown in financial markets that we saw in 2008?

ECKHARDT: A few months before things really began to fall apart, our systems essentially shut down. They judged the market to be too erratic. When the crisis hit, we had small positions.

APM: Did you exercise discretion in this case, or have you exercised discretion in the past?

ECKHARDT: In this case we did not, but in the past we have. We have traded through a number of very difficult events—9/11, the first Gulf War, Chernobyl. But even when we've exercised discretion in the past, it's been even-handed. What we tend to do is just assess the fact that everything's become riskier and more volatile, and we liquidate a proportion of everything.

APM: Do you have a sense that the erraticness filter may have kept you out of some trades that could've been profitable had you taken them?

ECKHARDT: I'd like to have made more money in the last half of 2008. Whenever we feel that we may have fallen short, we do research to investigate the matter. But it's important to realize that the last half of last year is simply not enough of a sample to make a substantial change. It would not be a warrantable inference. It would be like fighting the last war.

Why do you think trend following has the potential to be successful?

I would offer a few reasons, all based on human nature. The first is that we're not very good as a species at reasoning about probabilities. We are good at other things, such as estimating speed and distance. Take the ability to catch a baseball, for example; physicists tell us this requires integrating differential equations, which is of course quite complex. By comparison, we make mistakes in easy probability problems.

One consequence is that we tend to have only two responses to extremely small probabilities, neither of which is helpful: we ignore them completely or we exaggerate them. I would give the Anthrax scare some years back as an example of the latter. The probability that any single person would be infected with Anthrax was incredibly small, yet a lot of people were in hysterics.

The more typical response is to ignore very small probabilities altogether—to assume that they're essentially zero. Let's say there's a one percent probability that beans were going up a dollar. That should make beans go up a penny. In fact, what would typically happen is that market participants would ignore that small probability, and the price wouldn't respond at all. Let's say the probability slowly creeps higher. At some point it registers on people's mental scopes, so to speak. Then they tend to respond discontinuously to this continuous development.

Another example of how people behave unreasonably when faced with probabilities is the way they respond to lotteries. If you offer subjects a sure win and you offer them a lottery that's a little better, they'll take the sure win. On the other hand, if you offer them a sure loss or a lottery that's a little worse but has a chance of recouping, they'll take the lottery. Traders tend to follow the same—they take profits and they play with losses. This bias generates trends. The trendiness of prices seems to be grounded in human nature.

-William Eckhardt

Important Risk Disclosure

The risk of loss in trading commodities can be substantial. You should therefore carefully consider whether such trading is suitable for you in light of your financial condition. In considering whether to trade or to authorize someone else to trade for you, you should be aware of the following:

If you purchase a commodity option you may sustain a total loss of the premium and of all transaction costs.

If you purchase or sell a commodity future or sell a commodity option you may sustain a total loss of the initial margin funds and any additional funds that you deposit with your broker to establish or maintain your position. If the market moves against your position, you may be called upon by your broker to deposit a substantial amount of additional margin funds, on short notice, in order to maintain your position. If you do not provide the requested funds within the prescribed time, your position may be liquidated at a loss, and you will be liable for any resulting deficit in your account.

Under certain market conditions, you may find it difficult or impossible to liquidate a position. This can occur, for example, when the market makes a "limit move."

The placement of contingent orders by you or your trading advisor, such as a "stop-loss" or "stop-limit" order, will not necessarily limit your losses to the intended amounts, since market conditions may make it impossible to execute such orders.

A "spread" position may not be less risky than a simple "long" or "short" position.

The high degree of leverage that is often obtainable in commodity trading can work against you as well as for you. The use of leverage can lead to large losses as well as gains.

In some cases, managed commodity accounts are subject to substantial charges for management and advisory fees. It may be necessary for those accounts that are subject to these charges to make substantial trading profits to avoid depletion or exhaustion of their assets. The disclosure document contains a complete description of each fee to be charged to your account by the commodity trading advisor. You should carefully study those sections of the disclosure document prior to making an investment decision.

This brief statement cannot disclose all the risks and other significant aspects of the commodity markets. You should therefore carefully study the disclosure document and commodity trading before you trade, including the description of the principal risk factors of this investment.
You should also be aware that a commodity trading advisor may engage in trading foreign futures or options contracts. Transactions on markets located outside the United States, including markets formally linked to a United States market may be subject to regulations which offer different or diminished protection. Further, United States regulatory authorities may be unable to compel the enforcement of the rules of regulatory authorities or markets in non-united states jurisdictions where your transactions may be effected. Before you trade you should inquire about any rules relevant to your particular contemplated transactions and ask the firm with which you intend to trade for details about the types of redress available in both your local and other relevant jurisdictions.

This commodity trading advisor is prohibited by law from accepting funds in the trading advisor's name from a client for trading commodity interests. You must place all funds for trading in this trading program directly with a futures commission merchant.