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Validating Trading System Performance

Mining profits from the futures markets can be an arduous task. It is, however, a pursuit that many have found rewarding. The most successful traders I know owe their success to the development of a market trading system based upon decades of past market behavior. With the help of your computer and available market data, you, too, can develop such a system.

Although it is tempting to conclude that your approach merits risking your hard-earned capital, you should be aware of some rules and cautions before taking that ultimate challenge.

Select the Right Input

CSI's new Unfair Advantage® (UA) product has given you the tools to transform your commodity data into unique variable time series. Any of UA's Computed Contracts allow a string of successive contracts to appear almost like a stock, spanning many decades of history in a single time series. With UA, you can form Back-Adjusted series that concatenate many futures contracts, or form Perpetual Contract®, Gann contract, Nearest Future and Open Interest weighted series. Choosing a data series is the first step in developing a successful trading system.

Once you have evaluated and chosen one or more of these many

alternative methods for expressing data into the past, you must identify your market trading algorithm and test its ability to deliver trading profits.*

Limit Parameter Control

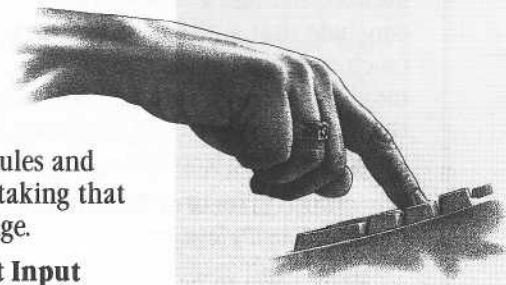
Every process you consider requires some level of decision-making control to force a market profit. Your trading algorithm should have at least one trigger to explicitly buy or to sell a given commodity, and to take a profit or a loss as time and market conditions unfold. These triggers, called parameters, can be used alone or in conjunction with other triggers to develop specific trading signals. Overcomplicating the decision that gets you into the

market tends to consume statistical degrees of freedom. The more freedom you take out of the market (adding process control), the less chance your trading algorithm will be successful. Factors such as commissions, slippage and inevitable errors made by you and your paid partner, the broker, all impact the likelihood that the market will pay back your risk capital. Excessive parameter control artificially minimizes their impact.

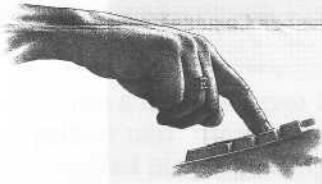
Try to limit the number of parameters introduced to five or less. It helps if each chosen parameter is independent of each other parameter,

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the Explore Possibilities



the Explore Possibilities



"You cannot profit from inflation unless you are a bank, so do not confuse earnings from inflation with prospective profits."

Validating Trading...

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but if there is some dependency, parameter consumption will not be as great. As you can see, there is an art to parameter counting. The point is that your algorithm should consume as few parameters as possible. If you can find a one-or-two parameter approach for trading that keeps risk at a minimum, you may be surprised with the success that results.

Avoid Price-Determines-Price Modeling

Using the past history of a commodity to predict the future price of that commodity is worthwhile only if you can separate cyclical and seasonal forces from other market forces. In the corn market, for example, cycles and seasonal forces repeat with great reliability and consistency because the corn crop depends upon the weather and other agricultural forces. These cyclical patterns can be seen over decades, not just a few years. To conclude that a different approach (such as a brief analysis using a moving average crossover) will give the same visibility is an invitation for an unfortunate response.

Watch the Effects of Weather on Commodity Pricing

Many seem to be surprised by the current drop in prices of gasoline at the retail level. Gasoline, recently offered at \$1.29⁹/₁₀, is now priced as low as \$0.89⁹/₁₀, according to TV news reports. To see why this has happened, you need only look at the winter temperature reports in the northern states. Thanks to El Niño, we have experienced one of the warmest winters on record, which, in turn, drastically reduced the demand for heating oil. Oil refineries overproduced the heating oil in anticipation of a cold winter and must now store the excess. Both heating oil and gasoline are derived from crude oil, so the diminished demand for heating oil has shifted production resources to gaso-

line. As a result, the oil companies now have a substantial surplus of gasoline as well as heating oil. Thus, the supply and demand curve has pulled down the retail price. Energy market speculators have been seeing the effects of this in the futures prices of unleaded gas, heating oil, etc.

Avoid Confusing Inflation and Deflation with Achievable Profits

You cannot profit from inflation unless you are a bank, so do not confuse earnings from inflation with prospective profits. You can avoid inflationary effects by detrending your time series input with UA while forming any computed series. Another way to take inflation out of your series is to present every trade in current dollars through time-based discounting. This would have to be programmed into your algorithm by inflating or deflating past historical profits into today's dollars, but remember that the discount rate will vary over time according to government whims and priorities.

Search for Directly and Indirectly Correlated Independent Variables

More sophisticated and profitable systems are often derived from the insight offered by related markets. If you want to trade the Lean Hog market, for example, it would make a great deal of sense to factor in the effects of markets related to hogs. Look at the price of corn (a raw material) and live cattle (a substitute for pork) in relation to the price of hogs. Factor in the cost of the oil-based energy products on the planting, production, and harvesting of corn, etc. Similarly, if you are interested in corn, you will want to know the price of not only energy, but also the price of substitutes such as oats, wheat and soybeans.

The commodity you have chosen to trade (the dependent variable) can best be understood by factoring in the

markets that it competes with and the markets from which it is derived (independent variables). Any viable predictive approach will draw from many independent inputs before suggesting the direction of the dependant variable.**

Examine Long Periods of Past Data

The historical period you use to simulate past performance should be sufficient to prove that your approach meets the test of time. When simulating the behavior of agricultural markets, stable factors such as the weather have had consistently reliable effects that repeat over and over again. Many markets respond to seasonal influences, and if you find that these forces are present, you will be the better off from their discovery. The more history you study, the better solution you will find.

Diversify Your Investments

As a concept, diversification is easily explained as simply not putting all your eggs in one basket. If only it were this simple! The problem with diversification is that it is much easier said than done. While clearly a trader who invests only in Hogs is not diversified, what if he invests only in livestock? What if a trader were to spread his investments over a broad range of agricultural products or a basket of currencies? Would he be diversified then?

I would argue no. An often overlooked hurdle to diversification is the fact that the underlying economy and its currency impact all markets within their scope. Catastrophic weather or transportation problems within a country will affect most commodities in the region. Similarly, the tightening of credit or a shift of currency valuation relative to other nations can impact multiple markets. I believe that true diversification requires multinational investments, covering a broad scope of markets, traded in a variety of currencies.

Avoid Small Samples

The approach you ultimately decide upon must be proven with perhaps 30 to 100 trades over the hindsight past. Each simulated trade is a sample of one. You will need many samples to prove that you have a viable approach. Although this is related to studying large amounts of history (above), it is not necessarily the same. An algorithm derived from 30 years of market data that indicates only a few trades over that time may not prove to be statistically viable. Consider removing as many of the largest profits as the number of degrees of freedom you have consumed. This rule-of-thumb correction will help to remove the uncertainty of capturing the rare huge profitable moves that mean the difference between profit and loss.

Prove Your Approach Before Investing

Once you are confident that you have a viable trading method, paper trade your approach for a prolonged period. Take notes on your anxieties and your decision-making processes. Give consideration to your reaction to larger drawdowns and consider what you can do to minimize them. Try to avoid zero-sum solutions, which deliver zero profits, less losses and commissions. A moving average crossover study with no other substantive input is typical of a zero-sum game.

So that you won't be too overconfident in your approach, let me say that there is an infinity of approaches that will deliver hindsight profits, regardless of the method you choose. It will be your job in this exercise to separate the random from the predictive.*** This article is meant to offer you some help in making the right choices. ♦

Bob Pelletier

Additional resources:

Check out your finished approach with an actual, no risk, market test using Gene Donney's Audit Trac simulated brokerage system. Phone: (561) 393-3876

** Louis Mendelsohn's Neural Networks and Interactive trading approaches draw heavily on this thesis. Phone: 800 732-5407

*** Investigate Nelson Freeberg's Formula Research for more on analytical methods that Nelson proves before he publishes. Phone: (901) 767-1956

Tech Talk

Each month in this column, our technical support staff presents topics of interest to many subscribers in a question-and-answer format. This month they address some frequently asked questions about QuickTrieve® and Unfair Advantage.

Correction:

The February '98 Tech Talk suggested uninstalling UA before upgrading to a new version if you were having problems with the program. Uninstall should be used ONLY if you have a new CD from CSI, not when upgrading from our web site.

Q. *I am impressed with Unfair Advantage's® data coverage and ease of use, but I have run into one problem with updates. You recommend using the Internet for retrieval (I live in Australia), but my connections have been slow and sometimes unsuccessful. My local Internet Access Provider ran a trace and found that the delay was in CSI's servicing ISP. When can I expect improvement?*

A. An MCI line will be installed on April 6th with service to begin near the end of that week. We expect great improvements at that time. We have had conflicting reports about overseas service, some offering praise for improving our service, even before the addition of the new server. Nevertheless we want better response for our users and we acknowledge that at least part of the problem lies with our particular ISP. We have been very concerned about the problem for several weeks, but had been consistently told that the problem could be with any one of the connecting nodes (of which there could be as many as 20 and as few as perhaps 10) between the caller and CSI. We will explore our ISP service until we correct all problems over which we have control.

Q. *Sometimes, after Unfair Advantage retrieves my daily update, it doesn't distribute the data. At that point, is my only option to retrieve the data again? If so, do you charge me for the extra accesses?*

A. It is difficult to tell why a distribution might be missed. It can mean the data collection was incomplete, or it may mean that the program simply failed to move on to the distribution process. In either case, you should try to manually distribute the data by pulling down the Database menu and

clicking Distribute. If the data is there, it will be distributed to your files, thus avoiding a repeat data collection.

If, on the other hand, a message displays saying "no update file found," you will need to update your database again through the Internet or your phone line. You will only be charged for extra accesses if they are used to re-collect data that has already been retrieved during a successful download session.

Q. *What is going on with my LIFFE Long Gilt data? All of a sudden, the values don't look quite right.*

A. Cash market reforms and innovations have necessitated changes to the Long Gilt futures contract on LIFFE. Chief among these are the reduction in the Notional Coupon from 9% to 7%, and a move to decimalization. From the June '98 contract forward, the contract is now 7% Gilts. From the September '98 contract forward, the pricing is in decimals, and the contract size is doubled to 100,000 pounds sterling.

As a result of these changes, the CSI conversion factor for commodity 174 had to be changed from -3 to +2. To present future data correctly, QuickTrieve users should edit your Commodity Constants to reflect the new conversion factor (+2) and the new contract size. This will affect new contracts only. Use Edit Data Disk Master File to change these values for your current Long Gilt contracts from 9/98 forward. All other existing files should be stored with the former (and appropriate) conversion factor and contract size.

After the close of business on 980501, the June '98 contract will be priced in decimals, too. Unfortunately, there is no way for QuickTrieve to handle a mixed conversion factor within a single futures contract.

We have automatically changed

the factsheet for Unfair Advantage users to reflect the conversion factor change. To see historical data as in 32nds, temporarily change the fact sheet to show a conversion factor of -3, uncheck the Apply Adjustments setting on the View, User Settings, General tab. To see data in hundreths, leave the conversion factor of +2 and check the Apply Adjustments setting. There is no longer a way to simultaneously view a commodity in multiple conversion factors.

Q. *I got Unfair Advantage several months ago, and my copy does not have some of the features mentioned in the CSI Technical Journal. How can I update my software?*

A. Visit the UA upgrade web page at <http://pcweb.csidata.com/ua/uax.htm> to download the latest version. Our latest upgrade (Version 1.68) offers enhanced stability and saves lots of space by correcting errors on the fly and saving them permanently in the compressed database. All the changes recently promoted in the Back Adjust module are now working also. This free upgrade is the best version yet!

Q. *After using UA for viewing many charts, my computer sometimes grows sluggish and occasionally crashes. What can I do to avoid this?*

A. Under certain circumstances, most commonly involving UA's API, the current version is subject to memory leaks. These cause excessive memory consumption and can result in the symptoms you mentioned. To reduce the incidence of memory leaks, we recommend that you tailor your portfolio(s) to include only those charts which you regularly view, and that you avoid saving charts to disk.

Eliminating memory leaks is high on our priority list for upcoming versions of UA. Please check our software upgrade web page frequently

to make sure you get the enhancement as soon as it becomes available. We expect improvement in the near future.

Note to Windows 3.1 Users:

All recent upgrades of Unfair Advantage (v. 1.59 and above) support only the Windows® 95 and Windows NT operating systems. We strongly recommend that all Windows 3.1 users upgrade to Windows 95. ♦

Market Statistics Update

ADDITION TO THE COMMODITY DATA BASE

Commodity	Short 5-Year Gilt
CSI commodity #:	504 Symbol: FYG
Exchange:	LIFFE (London)
Unit of measure:	Percent Contract size: GBP 100,000
Delivery months:	3,6,9,12
1st day on file:	980226 CSI point value: GBP 10.00
Conversion factor:	+2 Newspaper/CSI price: 102.72/10272
Limit (price):	None Max months forward: 10

DELETIONS FROM THE STOCK DATA BASE

29117	AMVCW	Advanced Machine Vision Cp Cl A Wt
29118	AMVCZ	Advanced Machine Vision Cp Cl B Wt
4669	ACARE	Aegis Consumer Funding Group Inc
29460	ASILZ	Alcohol Sensors International Inc Cl B Wt
18040	ASIL	Alcohol Sensors International Ltd
29459	ASILW	Alcohol Sensors International Ltd Cl A Wt
8928	AMTX	Amati Communications Cp
6500	AST	Ameristeel Cp Cl A
29214	AQCRW	Aqua Care Systems Inc Cl A Wt
29213	AQCRU	Aqua Care Systems Inc Un
2095	ATCS	ATC Group Services Inc
12325	ATCSL	ATC Group Services Inc Cl C Wt
7023	ATE	Atlantic Energy Inc
18405	BKUNO	BankUnited Financial Cp Perp Pfd
8219	BIRD	Bird Cp
1581	BIRDP	Bird Cp \$185 Cum Conv Pfd
9983	BWLKW	Boardwalk Casino Inc Wt
12844	BYDSQ	Boyds Wheels Inc
11256	KAP	Capmac Holdings Inc
3677	CVL	Celumovil SA ADS
7760	CSA	Coast Savings Financial Inc
8322	CELS	Commnet Cellular Inc
3389	DKT	Dakota Mining Cp
8498	DBAS	DBA Systems Inc
5727	DEW	Delmarva Power & Light Co
4173	EIRE	Emerald Isle Bancorp Inc
15957	GETTY	Getty Communications Plc ADR
15389	GLOB	Global Med Technologies Inc
15414	GLOBW	Global Med Technologies Inc Cl A Wt
1614	GTFN	Great Financial Cp
2700	HDTG	Healthdyne Technologies Inc
4381	HLMS	Holmes Protection Group Inc
2393	HMCI	Homecorp Inc
11474	HSL	Homeside Inc
8934	MPAC	Impact Systems Inc
5114	ITT	ITT Cp
1428	LIFB	Life Bancorp Inc
2399	LNTV	Lin Television Cp

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Holiday
Schedule

CSI will be closed on Friday, April 10 for the Good Friday holiday, but the computer will be accessible as usual throughout the holiday weekend. If there is an emergency such as the server going down, you may e-mail techsupport@csidata.com for assistance. Please include specific information about the problem and include your Customer ID, user #, the name and version number of the software you are using, and your method of access (e.g. Tymnet, Telenet, direct dial or Internet). We will try to resolve the problem in a timely manner.