In This Issue

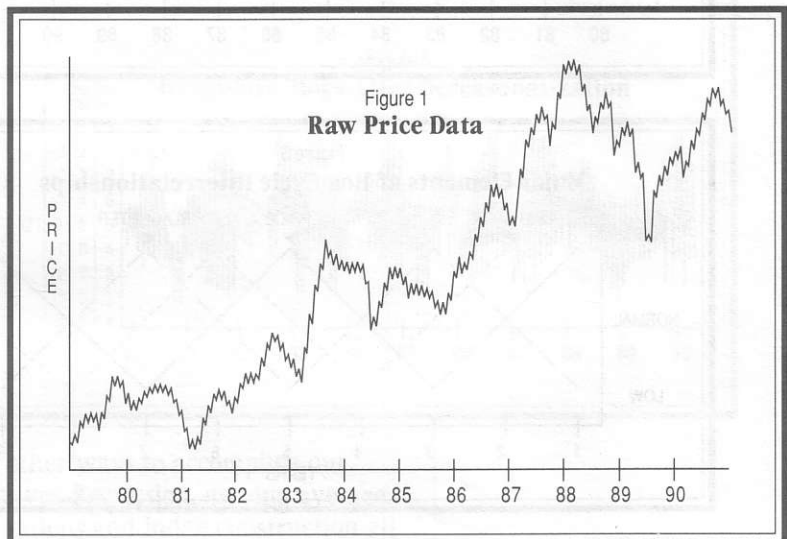## Chaos As A Money Management Tool *(Part II)*

In the January News Journal, I began this two-part article on using chaos to determine appropriate levels of market exposure. The focus of this second installment is the actual techniques used in uncovering chaos. In case you missed Part 1, I will review the important points before moving on.

Last month, I compared this technique to that of a sculptor carving away everything that was not his subject, literally freeing his figures from the stone. I pointed out that we market technicians ply our electronic chisels (*our computers*) attempting to expose trends, cycles, seasonals, etc. in planning for trade timing. My premise explains why there is valuable information in the residual price data that most analysts cast aside. It also explains how, by removing trends, cycles and seasonal tendencies, we can uncover impressive new money management techniques. Residual price data, which I refer to as chaos, can point the way to super-profitable trading results.

First let us review that every time series contains four elements which are loosely defined as trend, cycle,

Figure 1
Raw Price Data

seasonal tendencies and irregular patterns. My method of trade allocation requires methodically isolating each of the first three components and removing them from the data. Our objective is to chisel away all components except the irregular patterns, which represent chaos. The chaos component (*not to be confused with randomness*) can identify market posture and help determine the appropriate investment size.

Now that we have reviewed the *why* of uncovering chaos, let's get on with the *how*. I have not completed work on the programs which will automate these techniques, so the illustrations shown here are hypothetical.

Suppose we have a time series of live hog price data. I have chosen the classic hog market because it fulfills several nicely behaved characteristics:

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(continued from page 1)

It follows a definite longer term trend; it has a unique seasonal pattern; and it assumes a very explainable cycle. Like all markets, live hogs conform to the typical patterns of irregularity when other known components are removed.

Figure 2
Detrended

Figure 3
Major Elements of Hog Cycle Interrelationships

Figure 4
Hogs After Decyclization
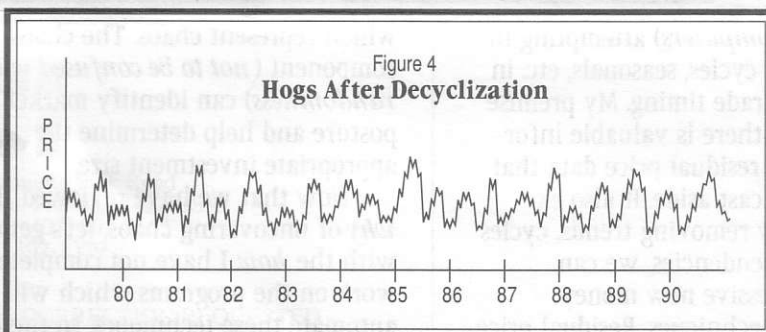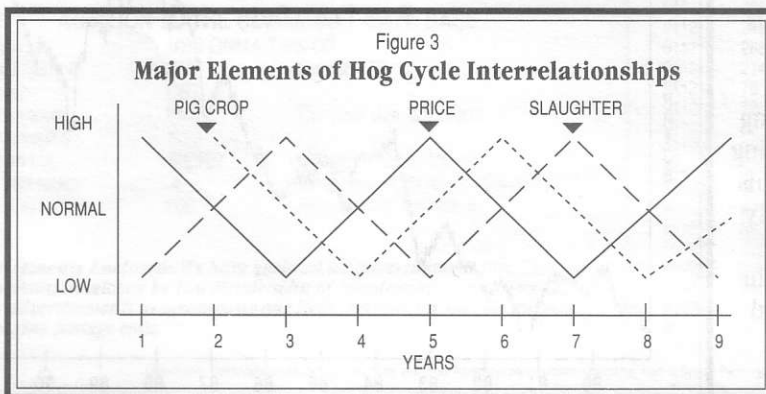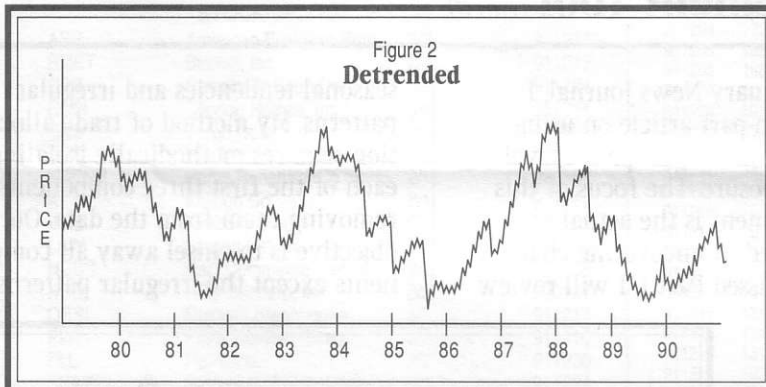
An example of raw price data is shown in figure 1 on page 1.

The first step in exposing chaos is to chisel away the trend component from the hog market. This is done by subtracting the fitted trend from the raw data through a regression technique. The result is a flattened (*detrended*) time series. (*See figure 2*) The chart in figure 2 holds the residual cyclical, seasonal and irregular components of the hog market.

The cyclical component for live hogs is fundamental to the characteristics of hog production. There is a four-year cycle for hogs which is related to the production elements of pig crop size, rate of slaughter and price. The price in one period affects the size of the farmer's pig crop in the next period. This, in turn, determines the number of pigs slaughtered. The number slaughtered affects the price, which influences the size of the next crop, and so on in a circular fashion. The lag between price in one period and pig crop in the next and between pig crop in one period and slaughter in the next determines the length of the cycle. This is usually one year, making a complete hog cycle last four years. (*See figure 3*)

I use a centered moving average correction based on the two-year half cycle period to first expose and then remove price cycle patterns. With this step, our sculpting is almost finished. Figure 4 shows live hog data without trend or cycles. The chart shows the remaining components of seasonal tendencies and irregular patterns.

Once the cycles have been removed, the analyst should take the final step of deseasonalization. This step would build the seasonal relationships so that they can be cut away. The resulting chart will look something like figure 5.

As discussed in the January News Journal, figure 5 shows chaos in units of the residual price standard deviations. We have turned the flattened-out irregulars into an extremely helpful chaos diagram. This chart was

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included in Part 1 last month as the end result that can be achieved by removing trends, cycles and seasonals.

For the sake of those who missed last month's article, I'll give a brief description of the chart and its uses. The chaos levels, shown as sigma readings (σ), reflect the proportional tendency that prices fluctuate from their historical norm (0σ). Positive sigma readings imply an overpriced product and negative readings imply an underpriced product. It is reasonable to assume that the market that is overpriced or underpriced is the most likely to experience a reversal.

The chaos chart tells us how many contracts or 100-share lots to buy or sell based on the magnitude of the readings. In the example (*figure 5*), if the chaos level is at $+3\sigma$ when a sell signal develops, the trader would sell eight contracts. If a signal to buy occurs at the $+1\sigma$ level, four contracts should be purchased. The number of contracts in the buy and sell columns are rather arbitrary. They represent proportionate levels of risk based on the tendency of the market to return to the norm of zero sigma.
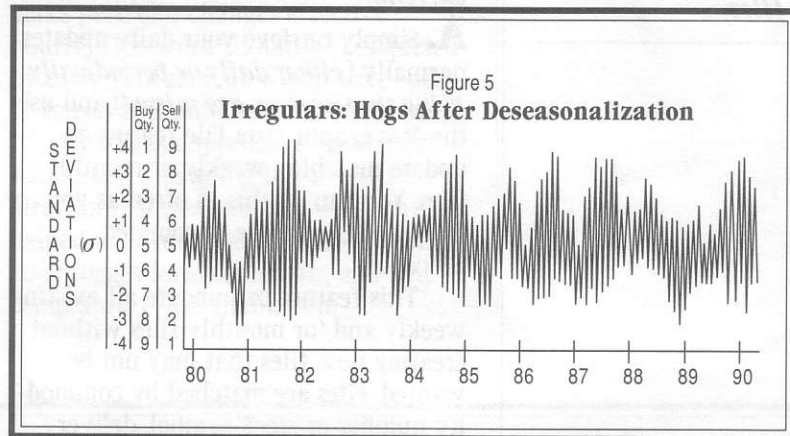
This market-oriented technique uses natural market forces to amplify profits. The result is a noticeable improvement in gross profit as well as speed of profit accumulation. Since the level of market exposure suggested is inversely proportional to historical levels of inherent risk, the odds of losing all capital with this system are very slim.

This article is about money management, not trade timing. Since good timing is so critical to any successful trading system, I feel I should briefly touch on this subject. I firmly believe that in developing any timing system, the trader should use decades of data, whenever possible, to follow and understand the market. One should buy on strength and sell on

weakness as opportunities develop. I am working on a timing system that will use differential filters, auto regressive integrated moving averages (ARIMA), and more. Once timing is under control, the techniques described can be used to reveal the chaos level. This tells how much market exposure is appropriate for any given trade.

The task of cutting away the trend, cycle and seasonal tendencies can be accomplished in several ways. As you read through the various steps in the process shown , you may have

Figure 5
Irregulars: Hogs After Deseasonalization

STANDARD DEVIATIONS (σ)	Buy Qty.	Sell Qty.
+4	1	9
+3	2	8
+2	3	7
+1	4	6
0	5	5
-1	6	4
-2	7	3
-3	8	2
-4	9	1

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seen other ways to accomplish our objectives. Regression, moving average calculations and index construction all seem promising. I invite technicians and analysts to apply these and other theories in their work on their own trading systems.

I continue to work on the Unfair Advantage® software, which will include this type of trade exposure selection. The fascinating subject of money management through trade allocation is food for thought for any financial market trader.

Bob Pelletier

> *"The chaos chart tells us how many contracts or 100-share lots to buy or sell based on the magnitude of the readings."*

Ask Customer Service

Q. *Is it possible to make weekly or monthly charts from my daily data?*

A. Absolutely. QuickTrieve offers automatic creation of weekly or monthly files to match any or all of your daily files. Use QuickManager's Move/Split A Data File feature to move data into new weekly or monthly files. Once these new condensed files have been created, they can be graphically displayed with QuickPlot or other CSI-compatible software.

Q. *How can I keep my weekly files current?*

A. Simply retrieve your daily updates normally (*either daily or periodically, being sure no days are missed*) and use the Move/Split Data File feature to update matching weekly or monthly files. You can do this as often as you like, as it is a simple, automated procedure.

This feature can update all existing weekly and/or monthly files without creating new files that may not be wanted. Files are matched by commodity number or stock symbol, delivery month and delivery year. Therefore, only continuous files such as Perpetual Contract Data, nearest futures, cash, stocks and funds can be updated indefinitely.

Q. *What's included in weekly and monthly files?*

A. A weekly file holds Monday's open, the high and low for the week and Friday's close. It also includes your choice of total or average volume, and Friday's open interest.

A monthly file holds the open for the first business day of the month, the high and low for the month and the close on the last day of the month. Also provided is your choice of the total or average volume, and open interest for the last business day. Holidays and weekends do not interfere with this procedure.

Q. *What if I want to see the week-to-date figures in the middle of the week?*

A. No problem! QuickManager calculates weekly or monthly values based on the most recent day updated. For example, a weekly file updated on Wednesday will show Friday's close as the closing value for all weeks except the current. The current week will reflect Wednesday's close.

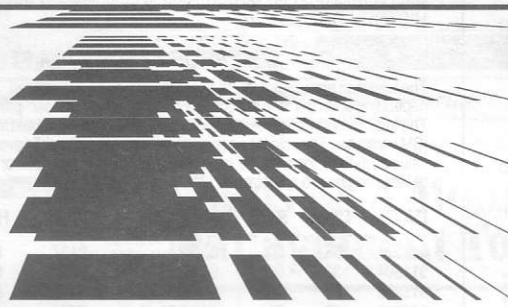**Q.** *Can I buy weekly or monthly data directly from CSI without condensing it through the software?*

A. You can buy historical data that way, but you'll need to condense your daily updates to keep those files current on an ongoing basis. We sell weekly historical data at a 30% discount and monthly historical data at a 50% discount off our normal daily data rates.

Q. *I've found the process of condensing daily prices into monthly files is indeed quite automated. Still, I wonder if there is a way to reduce the time or effort further.*

A. You can get it down to a three-keystroke operation by building a macro through QuickTrieve Automation. To begin, press <Alt><R> at the main menu and give the macro a single character name. Then go through the necessary menu selections to condense your data, remembering that they will be repeated exactly the next time you use this feature. Press <Alt><R>again to save the macro. The next time you want to condense daily prices, press <Alt><P> followed by the macro name. This will play back your macro exactly as you recorded it.

Looking Ahead In 1992

Our regular readers have probably noticed a new look to the CSI News Journal this year. The new look is only part of a broad program to enhance all aspects of the CSI Data Retrieval Service. This program has been going on for several months and will continue throughout the year.

Although the News Journal is the most visible change, CSI subscribers have probably noticed better reliability in data retrieval due to our recent hardware upgrades. Many of you are now enjoying easier access with our latest QuickTrieve enhancements. Version 4.03 with a 1992 Commodity Alerts Calendar and data integrity checker should now be on its way to everyone who ordered it. We have re-organized our Customer Service Staff to better serve you and will soon release innovative new programs to help improve your trading success.

As we move forward in our goals, we occasionally encounter a minor setback. A temporary increase in data retrieval time has resulted from instantaneous processing of portfolio changes. To eliminate these delays, we are modifying the procedure on our end and will make portfolio changes effective hourly. This work should be completed by early February, at which time speed of retrieval should be faster than ever.

We always appreciate your input, which keeps us going in the right direction. To those of you who have helped us throughout the years with your suggestions, comments, and yes, complaints — we thank you.

CSI Software Product Summary

□ **QuickTrieve®/QuickManager®** - To retrieve, manage & edit data; includes Alert Calendar $99/Unrestricted use $39/Daily data user

□ **QuickPlot®/QuickStudy®** - Charting & analysis software (requires QT/QM) $156

□ **Trading System Performance Evaluator™** - Computes your system's capital requirements $199

□ **TraDe$k™** - Traders' complete accounting system-(price varies with number of accounts) Starting @ $399/Unrestricted use $299/Daily data user or 12-month lease starting @ $22/Mo.

□ **Seasonal Index Value Pack** - Three years of history for 33 popular commodities $444

□ **CSI News Journal** - Aug. 1990 to present $35/Yr. or $5/Reprint

□ **CSI Mailing List** - $200/1,000 names (CSI users omitted)

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All prices subject to change without notice.