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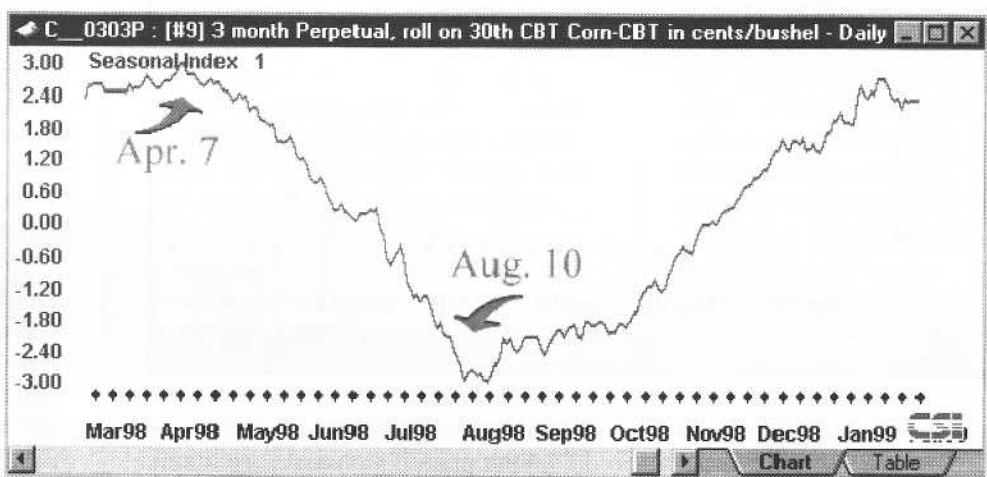## Using Unfair Advantage® to Analyze Corn Seasonality

By Steven Davis

Unfair Advantage is an excellent staging ground for commodity analysis. To demonstrate this, I will show you how to use UA to analyze the historical profit paid to speculators to insure against Crop Yield Failure, Crop Risk Premium, in Corn.

To begin with, UA includes Corn daily data back to 1949. This gives us a

money by selling Corn on or about April 7th and buying it back on or about August 10th.

Those of a philosophical bent might interpret this to mean that the speculator is providing insurance against crop yield failure. To see how this might work, suppose that a commercial hedger wants to hedge a

chance to look at payouts and premiums across a variety of circumstances: Soviet grain embargoes, inflation, the Green Revolution. Sure you could get by with three years of data, but would you sell someone car insurance based on his or her driving record for last three months when they had been driving for four years?

Having all of this data, we can look for a seasonal pattern using the Seasonal Index. Perpetual Contract® data is well suited to this task since we won't know which contracts we wish to trade until we have an idea of the seasonal behavior.

According to the graph above, the speculator should, on average, make

corn risk. He could buy the future when the crop yield is uncertain and then exchange the future for the commodity when the crop yield is known.

The Perpetual Contract data is not available as a tradable index. We could proceed with our analysis using Perpetual Contract data and assume either that traders would implement the daily, incremental rolling required or that traders would repeat the analysis on a price series representing his or her trading methodology. We can avoid making such assumptions by choosing instead not to roll. Over a time period distant to expiration, one

would expect fluctuations in price to mimic the underlying commodity value. Trading a single contract each year is much simpler.

To make the analysis a breeze, we use a Gann contract. The December Gann contract is a concatenation of all December contracts, each taking up

These charts represent projections for the forthcoming year based on a cumulative seasonal index of all corn data from 1949 to the present. The scale is in units of standard deviation.

when the previous expired. To find the 1973 enter price, for example, one simply looks for the first close after April 7th, 1973 in the December Gann contract.

Since the profit/loss statistics would be the same for a back- or forward-adjusted contract, it could be used instead, but it is very helpful in testing daily order generation software if the simulation enter/exit prices match the contract values. Perhaps a better reason is that detrending of a Gann contract has a much clearer meaning than detrending a back-adjusted series. With a December Corn Gann contract, the prices start out in the 100's and end in the 200's. By detrending, all the prices are in the 200's, apparently removing inflation. With a back-adjusted series, a series with no obvious inflation might still go negative. The detrender will

remove the trend, but in such a case, the effect is to remove the effects of rolling. Since we are discussing an analysis without rolling, I chose the Gann Contract.

Before we do the analysis on the December Gann contract, we should confirm that the seasonal pattern is present. Unfortunately the CSI Seasonal Index requires gap-free data series, and the December Gann contract for Corn has several gaps caused by December contracts which began trading in February, leaving January without prices. The Seasonal Index, in such a circumstance, should be applied to a shorter data series or taken with a grain of salt.

The Seasonal Index applied to the December Gann generally agrees with the index based on the Perpetual Contract, but one might change the enter timing to early July in expectation of a greater rate of return and higher liquidity. I will not do that here.

To analyze the Crop Risk Premium, one need only generate a table for each year with the April 7th settlement, the August 10th settlement, and the highest close in the date range. I have chosen to detrend to modernize the historical prices. From the table of closing prices, a spreadsheet can generate the profit/loss statistics.

Net Profit/Loss over 49 years	116.25 cents/bushel (67.25 after slippage)
Average Monthly Rate of Return	0.13 (148% APR)
Risk (Std Dev of Monthly ROR)	0.39
Percent Winning Trades	69%
Biggest Winning Trade	62.25 cents/bushel
Biggest Losing Trade	-150.5 cents/bushel

The slippage was taken to be 2 ticks going in and 2 ticks coming out (No rolling required.) The investment basis for the Rate of Return is taken to be the maximal margin. No leverage was applied.

The following table shows, for each year, the settlement prices on the enter and exit and the Profit/Loss and Maximal Margin in cents/bushel units. To get dollars/contract values, multiply by $50.

Year	Enter	Exit	P/L	Margin
1949	233.75	233.25	0.50	9.00
1950	241.75	256.25	-14.50	11.00
1951	282.75	275.25	7.50	9.00
1952	281.75	284.75	-3.00	9.00
1953	264.25	244.25	20.00	9.00
1954	250.00	256.25	-6.25	10.25
1955	241.75	228.75	13.00	9.00
1956	246.50	240.50	6.00	9.00
1957	228.00	226.25	1.75	9.00
1958	216.00	214.50	1.50	9.00
1959	210.50	206.25	4.25	9.00
1960	202.75	202.50	0.25	9.00
1961	207.75	204.00	3.75	9.00
1962	206.00	192.50	13.50	9.00
1963	199.25	196.25	3.00	9.00
1964	201.75	198.75	3.00	9.00
1965	201.00	197.25	3.75	9.00
1966	198.50	222.00	-23.50	12.69
1967	218.75	193.00	25.75	9.00
1968	197.00	176.50	20.50	9.00
1969	185.75	185.50	0.25	9.25
1970	186.75	197.50	-10.75	10.44
1971	210.50	188.50	22.00	10.44
1972	192.75	189.00	3.75	9.00
1973	215.00	365.50	-150.50	41.25
1974	296.50	397.50	-101.00	40.50
1975	326.00	355.00	-29.00	13.31
1976	317.00	321.00	-4.00	13.63
1977	314.25	254.75	59.50	9.00
1978	303.75	272.25	31.50	11.19
1979	311.25	323.50	-12.25	21.06
1980	341.00	377.75	-36.75	17.81
1981	428.00	365.75	62.25	9.00
1982	337.50	284.00	53.50	9.00
1983	338.50	386.00	-47.50	18.00
1984	336.00	315.75	20.25	9.00
1985	299.75	253.00	46.75	9.00
1986	231.25	197.75	33.50	9.00
1987	202.00	189.50	12.50	14.63
1988	247.00	329.75	-82.75	41.94
1989	282.00	245.75	36.25	9.44
1990	278.75	266.75	12.00	13.81
1991	279.50	273.50	6.00	9.00
1992	275.75	227.75	48.00	9.00
1993	258.25	254.00	4.25	9.00
1994	269.50	229.50	40.00	9.31
1995	271.75	284.00	-12.25	13.56
1996	336.75	344.75	-8.00	17.44
1997	288.25	250.25	38.00	9.00

The Crop Loss Premium, itself, is the average profit provided to speculators for insuring against crop yield failure. The price, on each day of trading, is assumed to fairly represent the remaining premium for the remaining term. Thus no stop losses were employed. If one wished to trade, however, the large payouts seem avoidable. For example, in 1973, the price trended higher in February and continued unabated until June. The investor could easily have interpreted this as the market insuring against a crop surplus and forgone the 150 cents/bushel ($7525 per contract) loss that resulted from trying to insure against a near certainty.

Editors Note:

The table (at left) of short corn profits gives the insurer of short corn risk the necessary information to set policy size and premium charges. Let's say you wanted to sell an insurance policy that would reimburse the holder for all losses greater than ten cents per bushel per seasonal trade. The required premium charge could be based upon the likelihood that a given season would produce a loss in excess of ten cents per bushel, plus cumulative offsetting profits that non-loss seasons would net. Buying/Selling insurance against Crop Yield Failure provides an alternative to buying/selling a short-term call option, which would achieve a similar benefit. The risk-adverse insurer would likely translate the policy size (10 cents of risk) into a stop loss of a tolerable amount more or less equal to the risk level set by the policy.

UA has proven a useful tool. The long history (to 1949), the Perpetual Contract data, the CSI Seasonal Index, the Gann Contract facility, the Detrending facility, and the file export facility combined together to make analysis easy ✦

New Back-Adjust Option for UA:

A new option is being added to the Unfair Advantage program which addresses an industry norm that sometimes forces a back-adjusted series to reach into negative territory. This soon-to-be-released version will splice contracts together using percentage or proportionate changes in place of arithmetic changes. With this approach, no back-adjusted series can move into negative territory because multiplication, rather than addition or subtraction, is used. Please watch our web site for details of this new release.

Tech Talk

Q. *I can no longer get cash prices for commodities #381 (& 225) - 10 Year Australian T-Bonds Index, #231 - Australian 3 yr. T-Bonds, #228 - 90 Day Bank Accepted Bills and #171 - various currencies quoted in A$. Are they still available?*

A. Not at this time. We stopped quoting cash prices for these series when our source went out of business. The last update was February 27, 1998 We are seeking an alternative source for this data.

Q. *I am having trouble with one of the commodities in my Unfair Advantage database. Whenever I try to do anything with it, the charts and files are garbled. How can I correct this?*

A. It sounds as if the commodity file in your UA database has been corrupted. To correct, you may download the entire history for that commodity (the CDB file) from CSI's Product Upgrade web site. Use your web browser to navigate to the URL address: *http://pcweb.csidata.com/ua/uax.htm.* The Replacement Database Files box displays, asking you to enter the CSI/UA number of the desired commodity. Enter the number of your commodity (e.g., CME Live Cattle is simply the number 2). Click [submit].

A screen saying "CDB request = *filename*" displays (e.g. 00000002.CDB for Live Cattle). Click on the filename to bring up a Save As dialog. Click the up-one-level folder on your screen until the UA folder is shown. Double-click the UA folder, then the ARCHIVES folder, and then the CDB folder to reach and open the folder named c:\ua\archives\cdb. Click [Save]. The data will be downloaded and saved automatically.

VERY IMPORTANT: Make a note of the Files Updated Through date on the left side of the Replacement Database Files screen. If this date is earlier than the date of your last update, you must enter this date (exactly) to re-collect your entire portfolio for the missing days. (See the last Tech Talk Q&A for details). Note: This procedure will only provide usable data for current Unfair Advantage subscribers.

Q. *When I tried to download an Unfair Advantage CDB file to correct a corrupted commodity, the file was not saved correctly. It came in as an executable file (ending in .exe) and I couldn't use it. How can I prevent this problem?*

A. After you submit the commodity number, the screen saying "CDB request = *filename*" should list a filename that includes an eight-digit number followed by .CDB. If your filename ends in something besides .CDB (possibly .EXE), click the filename with the right (not left) mouse button and choose SAVE LINK AS. Delete the last three characters of the filename and replace them with CDB. Proceed as described above.

Q. *Where do I find the "CSI/UA number that I am supposed to enter on your web site when I download a CDB file?*

A. The CSI number can be found in several places: 1) when you view the factsheets 2) when you create a new chart (it is listed along with the commodity name) 3) when you add a commodity to your portfolio (listed with the commodity name). It is easiest to find the CSI number on all of these screens if you choose to SORT by CSI #. ✦

Unfair Advantage users may download an updated on-line manual from the UA website at http://pcweb.csidata.com/ua/uax.htm.