GEORGE'S CORNER

by George Pruitt

Picking a Portfolio Using the Portfolio Selector TS Add-On

In this installment of George's Corner I am going to review a piece of software that will help a TradeStation™ user select a set portfolio of markets from a list of twelve options. I have been asked many times how one can select three or four different markets out of a list that will create the most efficient use of capital. With the limited tools that are available with TS this is an almost impossible task. If TS could merge the equity streams of various markets then you could try trial and error to create a robust portfolio. Unfortunately it doesn't even do this.

The software that Mike Chalek and I wrote, with the help of Excel or any spreadsheet software can read the TS performance reports and merge the equity streams together. It also runs all of the different permutations and combinations to help determine the most robust portfolio set. Yes there is a conflict of interest here, since Futures Truth sells the Portfolio Selector software. However, I think it is such a fascinating tool I have to elaborate on how it works and how its use can save so much time, effort and possibly capital. This software is a very simple tool that simply combines equity streams and is very easy to use.

To demonstrate how the software works lets assume we have $40K of risk capital and a good system. We know we can't trade twelve markets on $40K but we think we can trade five. The next logical question is how we choose the five from the list of twelve. Like most traders, we would try to pick five markets from different market sectors in an attempt to diversify. We might pick a currency, an interest rate, an energy, a grain and maybe a stock index. This sounds like a very plausible plan but how do you pick one market from each sector to create the most robust portfolio. The only way to get the definitive answer is to examine all of the different combinations of markets and pick the one with the best reward/risk ratio.

Mike Chalek described the process of doing this in an article that he wrote last year for Futures Truth. He showed the following equation that can be used to calculate the different number of possible combinations that exist in a given set of "N" elements taken "R" elements at a time.

$$nCr = n! / (n - r)! * r!$$

Using this equation and substituting our parameters we get the following:

n = 12 (total markets)
r = 5 (the size of our portfolio)

$$nCr = 12! / (12 - 5)! * 5!$$
$$nCr = 4.79 *108 / 5040 * 120$$
$$nCr = 792$$

That's a lot of different combinations if we had to do this by hand. Fortunately, the Portfolio Selector software can handle this in a relatively short time span. Right now the current version of the software runs all of the different combinations:

PortfolioSize	Combinations
1	12
2	66
3	220
4	495
5	792
6	924
7	792
8	495
9	220
10	66
11	12
12	1

This is a total of 4095 iterations. This took my typical PC about forty minutes to run. In future versions we will have the program only run the needed combinations. The software created 5007 individual files. The 4095 files represent the individual combinations of equity streams and the additional twelve shows the combined results of the twelve different portfolio sizes. If you look in your directory you will see twelve Combo files and 4095 files labeled in the following manner:

B1.PRN
B2.PRN

These files contain the daily equity streams for the different combinations of markets.

Here is what the Combo2 file looks like.

The different combinations sampled two at a time and their associated performance metrics are shown.

FileName	Mkt1	Mkt2	Total Equity	Draw Down	Profit /DD Ratio	Flat Time
B1.PRN	C.tot	CL.tot	$62,390	$26,108	2.39	312
B2.PRN	C.tot	CT.tot	$46,840	$7,595	6.17	174
B3.PRN	C.tot	EC.tot	$28,275	$36,863	0.77	516
B4.PRN	C.tot	JY.tot	$58,463	$16,663	3.51	199
B5.PRN	C.tot	KC.tot	$75,744	$13,725	5.52	417
B6.PRN	C.tot	NG.tot	$145,980	$61,318	2.38	642
B7.PRN	C.tot	S.tot	$66,575	$22,663	2.94	192
B8.PRN	C.tot	SP.tot	$278,725	$62,738	4.44	591
B9.PRN	C.tot	TF.tot	$37,530	$20,425	1.84	430
B10.PRN	C.tot	TY.tot	$48,075	$10,863	4.43	175

In B1.PRN you can see how the corn and crude work together to produce $62K in profit and $26K in draw down. The corn and cotton combination produced a very respectable $46K profit with a very small $7.5K draw down.

Here are the results of the entire twelve market portfolio.

FileName	Mkt1	Total Equity	Draw Down	Profit /DD Ratio	Flat Time
A1.PRN	C.tot	$42,200	$6,500	6.49	200
A2.PRN	CL.tot	$20,190	$34,140	0.59	373
A3.PRN	CT.tot	$4,640	$12,985	0.36	451
A4.PRN	EC.tot	-$13,925	$39,188	-0.36	630
A5.PRN	JY.tot	$16,263	$29,000	0.56	425
A6.PRN	KC.tot	$33,544	$23,288	1.44	808
A7.PRN	NG.tot	$103,780	$63,730	1.63	659
A8.PRN	S.tot	$24,375	$25,950	0.94	454
A9.PRN	SP.tot	$236,525	$66,675	3.55	599
A10.PRN	TF.tot	-$4,670	$26,840	-0.17	968
A11.PRN	TY.tot	$5,875	$17,063	0.34	327
A12.PRN	US.tot	-$11,250	$24,156	-0.47	1157

As you can see the system did fairly well on most markets. At this stage the Portfolio Selector hasn't done anything special other than put the results in a convenient table. This is where most traders start when trying to pick their portfolios. Many will fall into the "cherry picking" mode and pick the best performers. Based on this portfolio we would probably pick the S&P,

Corn, Natural Gas, Coffee and Soybeans. Let's now look at the Portfolio 5 file that was created by the Portfolio Selector and see how close we were. Here is what the file looks like after we sort for the best performing combinations. Only the best combinations are shown.

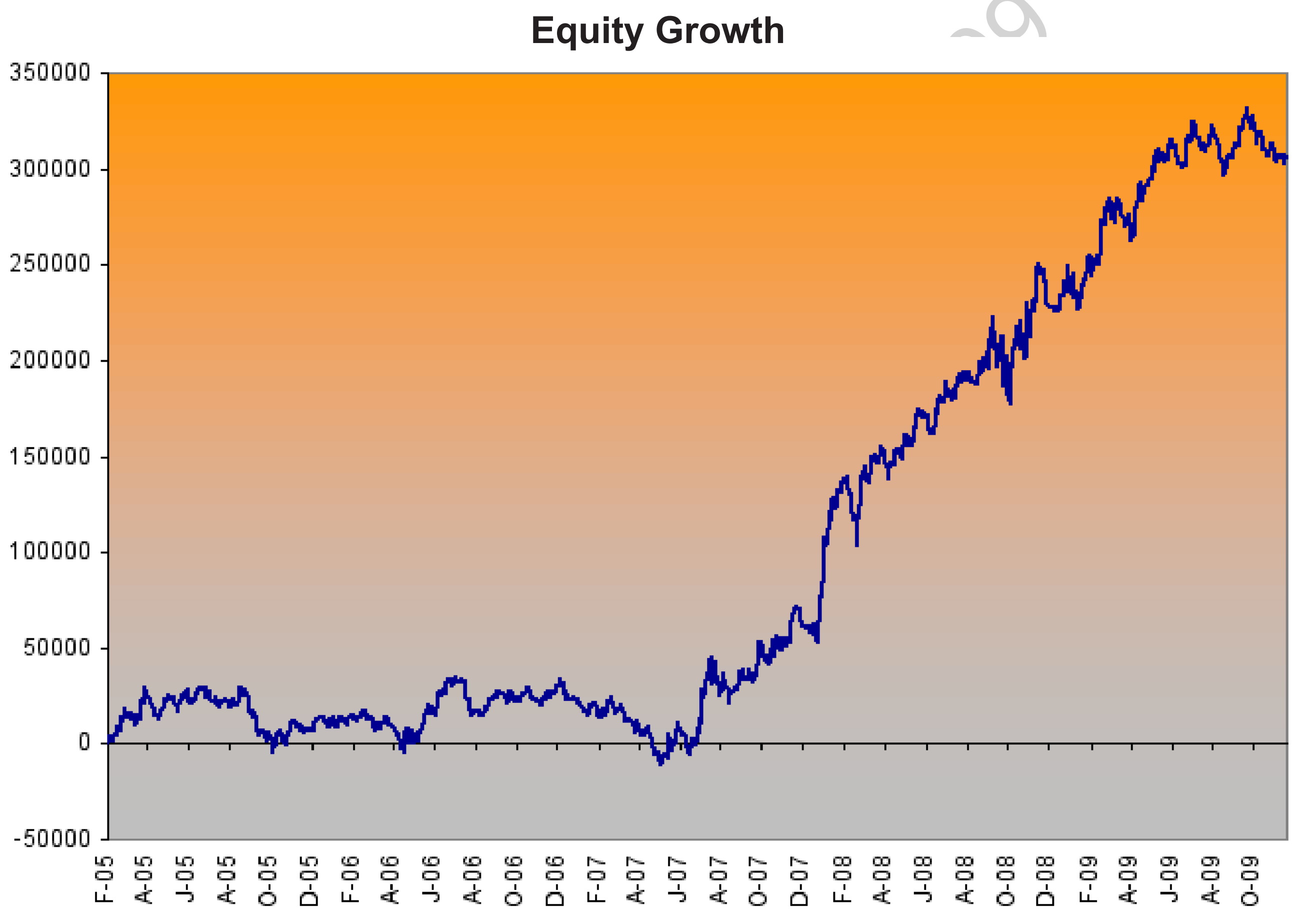
FileName	Mkt1	Mkt2	Mkt3	Mkt4	Mkt5	Total Equity	Draw Down	Profit /DD Ratio	Flat Time
D181.PRN	C.tot	CT.tot	KC.tot	SP.tot	US.tot	$305,659	$45,305	6.75	267
D276.PRN	C.tot	JY.tot	NG.tot	S.tot	SP.tot	$423,143	$62,890	6.73	415
D101.PRN	C.tot	CL.tot	NG.tot	S.tot	SP.tot	$427,070	$64,388	6.63	417
D175.PRN	C.tot	CT.tot	KC.tot	S.tot	SP.tot	$341,284	$51,705	6.60	212
D151.PRN	C.tot	CT.tot	JY.tot	KC.tot	SP.tot	$333,171	$50,680	6.57	320
D296.PRN	C.tot	KC.tot	NG.tot	S.tot	SP.tot	$440,424	$68,300	6.45	481
D185.PRN	C.tot	CT.tot	NG.tot	S.tot	SP.tot	$411,520	$64,683	6.36	415
D262.PRN	C.tot	JY.tot	KC.tot	NG.tot	SP.tot	$432,311	$68,580	6.30	482
D72.PRN	C.tot	CL.tot	JY.tot	NG.tot	SP.tot	$418,958	$66,480	6.30	466
D308.PRN	C.tot	KC.tot	S.tot	SP.tot	US.tot	$325,394	$51,775	6.28	274
D272.PRN	C.tot	JY.tot	KC.tot	SP.tot	US.tot	$317,281	$50,750	6.25	264
D318.PRN	C.tot	NG.tot	S.tot	SP.tot	US.tot	$395,630	$63,359	6.24	467
D156.PRN	C.tot	CT.tot	JY.tot	NG.tot	SP.tot	$403,408	$64,620	6.24	415
D87.PRN	**C.tot**	**CL.tot**	**KC.tot**	**NG.tot**	**SP.tot**	**$436,239**	**$70,150**	**6.22**	**480**
D23.PRN	C.tot	CL.tot	CT.tot	NG.tot	SP.tot	$407,335	$65,593	6.21	468
D266.PRN	C.tot	JY.tot	KC.tot	S.tot	SP.tot	$352,906	$57,150	6.18	261
D282.PRN	C.tot	JY.tot	NG.tot	SP.tot	US.tot	$387,518	$63,296	6.12	467
D107.PRN	C.tot	CL.tot	NG.tot	SP.tot	US.tot	$391,445	$64,825	6.04	469
D171.PRN	C.tot	CT.tot	KC.tot	NG.tot	SP.tot	$420,689	$69,770	6.03	493
D301.PRN	C.tot	KC.tot	NG.tot	SP.tot	TY.tot	$421,924	$70,149	6.01	498
D190.PRN	C.tot	CT.tot	NG.tot	SP.tot	TY.tot	$393,020	$65,764	5.98	429
D612.PRN	CT.tot	JY.tot	NG.tot	S.tot	SP.tot	$385,583	$64,883	5.94	457

Well we got pretty lucky. We picked three out of the five best markets that made up the most robust portfolio. The portfolio that we initially picked actually ended up in the 14th slot. If we were risk averse then this "cherry picked" portfolio is not the one that should be utilized. The best combined equity stream is located in the file named D181.PRN. This file's contents look like this:

```
C.tot    CT.tot  KC.tot  SP.tot  US.tot  305658.75      45305  6.74668911     267
20050223,0
20050224,1281.25
20050225,2508.75
20050228,3641.25
20050301,1835
20050302,1526.25
20050303,1916.25
20050304,1475
20050307,4113.75
20050308,5582.5
```

20050309,4503.75
20050310,7303.75
20050311,8385

The first line of the file gives the portfolio and its performance metrics. The following lines are the daily equity values of the portfolio. You can import this into Excel and create a nice looking equity curve.



All of the different Combo files are included in the directory and you can choose whichever combo you like and then graph whatever combination that fits your risk/reward needs.

The Portfolio Selector is a very powerful tool and one that is especially needed when developing a multi-market or multi-system portfolio. It doesn't care if the daily equity streams come from different markets or different systems. You can use the software to combine different systems on different markets to achieve an even higher level of diversification.