

**Newsletter 007 March 31, 2004**

Okay, so it's been a long time... and I'm using up time I should be devoting to programming the RT version, but there were a couple of things I've wanted to include for a while and I took a few days out to do one of them – to check on how volatility might be used to set box and reversal for a P&F chart to improve the returns.

Testing – I have a fairly simple backtest setup for this, I use Double Tops/Bottoms or Treble Tops/Bottoms for my long and short signals – for this batch of tests it was the doubles. I set them up to be bull only in one run, bear only in another, to ensure that bull and bear don't overlap causing the later signal to be missed. I set a 5% window up either side of the entry price – this means a trade is rejected if the trade cannot be entered within 5% either side of the price it was signalled at... if I picked a good trade at 100p I'd think twice about entering if it gapped up or down 5% overnight.

What is a winner, what is a loser? Simple answer – I set a 10% profit stop, and a fixed 10% stoploss up – starting at the actual entry price (ie the price the trade would really have been entered at) the trade exits when a 10% profit or 10% loss is made – whichever comes first closes the trade and is counted.

This is NOT how I trade really, it is merely an attempt to set a simple 'win or lose' criterion up so you can sensibly work out the percentage of winners a given signal or chart type has produced. Fair tests include, as a basic tenet, that when testing for whether A or B occurs there should be an equal chance of either – put simply it's not a fair test to put the profit stop 10% away and the stoploss 5% away on the grounds that this reflects your own idea of risk:reward. For those wanting to know how such a system might work it's easy enough – you do a fair test first, so that you can pick the 'right chart' to use, then you change the setup to your own devising and run the test to see what to expect in practice... generally the returns are fairly linear, if a 1:1 system such as my test one produces 50% winners then a system set to use 10% profit to 5% loss (2:1) will produce around 1 winner to each pair of losers.

There is a difference between developing a trading system, and measuring reliability of signals – this is about the latter, not the former.

A number of people have expressed an interest in this, I think the Weber/Zieg book has interested quite a few users, and this is something they mention. It isn't a new idea by any means, and it's skipped over very quickly, so if you want to take it further you've some work to do. From my reading of the book they define a winning signal as being (for example) a buy signal that doesn't turn out to be at the column top, and have a 70% win rate based on that definition... assuming a 2% box as the norm my testing defines a buy as a stock that goes 5 boxes higher than the signal. I'd suggest my version is easier to make a profit from. This isn't intended as criticism, just showing that the test criteria are different – my approach to testing is that it must be fair (I'm a Physicist, we get funny about that sort of thing) and it should be useable... hence I don't just assume a slippage of X% to cover entry and costs etc. The program's entry price is actually calculated to

ensure it is a price that could have been taken the following day, if the market opens above the chosen price range the entry is made IF the price falls at the top of the allowed range – if the market opens below the entry window entry will either not occur or it will be at the bottom of the range as the share price climbs during the day... ie it simulates as closely as possible a trader sitting, waiting for their price before trading. Exit prices are what the market offers the day after the signal fires – not some ‘slippage’ subtraction applied to the signal price. The actual exit price reflects a valid figure you might well have taken on the day, and if that means your 10% stop turned into 15% or 5% due to an overnight gap – well that’s life.

For the optimisation I ran data from the 1990’s over different groups, predominantly the S&P500 and FT350, I then analysed what I’d got and applied it to the charts. I then ran the following groups in for the period 2001-4 to see if I’d found anything useful – here it is....

<b>Type of chart used</b>	<b>Double Top Win%</b>	<b>Double Bottom Win%</b>
<b>Range 2%</b>	50	52
<b>Range (Opt)</b>	49	51
<b>Log 2%</b>	54	53
<b>Log (Opt)</b>	60	49
<b>Close 2%</b>	49	58
<b>Close (Opt)</b>	49	57
<b>Traditional</b>	54	55
<b>Trad (Opt)</b>	61	53

Fig 1 : US Dow 30 2001-4

So, optimized 2% log gives a good improvement in the Dow30 for long trades, but performs poorly on shorts where the close chart performed much better – only the log charts show any significant difference in returns from optimization. Traditional charts are good when optimized for long as well, like Log Opt they are also poor on shorts.

<b>Type of chart used</b>	<b>Double Top Win%</b>	<b>Double Bottom Win%</b>
<b>Range 2%</b>	50	48
<b>Range (Opt)</b>	49	48
<b>Log 2%</b>	51	47
<b>Log (Opt)</b>	57	46
<b>Close 2%</b>	45	51
<b>Close (Opt)</b>	47	49
<b>Traditional</b>	50	47
<b>Trad (Opt)</b>	51	46

Fig 2 : UK FT100 2001-4

A similar picture, optimized log charts being 6% better than the closest rivals for longs, Close doing marginally better on shorts.

<b>Type of chart used</b>	<b>Double Top Win%</b>	<b>Double Bottom Win%</b>
<b>Range 2%</b>	54	45
<b>Range (Opt)</b>	52	46
<b>Log 2%</b>	56	45
<b>Log (Opt)</b>	60	44
<b>Close 2%</b>	51	48
<b>Close (Opt)</b>	50	49
<b>Traditional</b>	52	49
<b>Trad (Opt)</b>	53	46

Fig 3 : US Nasdaq100 2001-4

And the same picture again, log optimized is 6% up on longs, again not so good on shorts where Close charts hover around breakeven...

Type of chart used	Double Top Win%	Double Bottom Win%
Range 2%	47	61
Range (Opt)	45	51
Log 2%	47	47
Log (Opt)	50	60
Close 2%	43	53
Close (Opt)	47	58
Traditional	44	62
Trad (Opt)	48	56

Fig 4 : Small World Index group 2001-4

This group was made up from a small group of indexes, DJ, Nasdaq, S&P, FTSE, Hang Seng. Poor results all round, only log scale suggests breakeven on long trades, but it does quite well when optimized on the short side... unusual, considering the poor showing Log has made on shorts in the other groups.

Group traded	Best Long		Best Short	
	Chart type	Win %	Chart type	Win %
Dow 30	Trad (Opt)	61	Close	58
Nasdaq 100	Log (Opt)	60	Close (Opt) /Trad	49
FTSE	Log (Opt)	57	Close (Opt)	49
Mixed Index gp	Log (Opt)	50	Range	61

Fig 5 : Top Scorers

A little misleading perhaps, in that the odd score here is only 1% better than the next option, I produced this more to show that you need to look at the charts to decide what is appropriate for the market you are trading – personally I've come around to the heretical view that it makes sense to run this sort of test to identify which variety of P&F to apply to which market .. and also to identify areas it is unprofitable to trade in. I've had a little flak over this at times from people claiming that good money management will turn a profit from 35% winners, well – so what? It's a lot easier to make a profit with 60% winning trades, so that's the sort of figure I'm looking for!

From the above information this is what I'd consider trading :-

- 1) Dow 30 stocks, using optimized Traditional scaling for long trades and optimized close charts for shorts.
- 2) Nasdaq 100 and FTSE stocks, long only, using optimized log charts.

Optimised Traditional charts are using the reversal box optimization, others use box size optimization.

Future –

I'd have to say that it's obvious where the main effort went in the coding for box size optimization, log scaling shows much more improvement than range and close, I will be looking at them more closely to see if they can't be improved.

It would be sensible to occasionally backtest the market(s) you trade like this, perhaps just testing the last year or so of data, to check that the win percentages aren't falling and to ensure that you have the information to inform a swap of charting style/type – you should remember that markets aren't static and there's every likelihood that the best method to trade a particular market is changing as the market mood alters.

A fair amount of testing has been conducted on data back to 1991, the optimization was set using that data, not 2000+. The idea being to develop on older data, then see if it works today – no part of the optimization coding involved testing data from later than 1999. This avoids the problem of deciding what has worked well recently and then claiming to have invented an improvement because it performs well.

Some evidence suggests that very low volatility produces poor returns... the win ratio seemed to fall off quickly beyond quite low volatility at the other end of the scale – this is worth checking in backtest (volatility is included in the spreadsheet file produced, see the end two columns of the .csv). It may be that using boxsize optimization a general rule of 'don't trade 0.5% charts, or any chart with a box bigger than 2%' would shade the odds further, ditto to avoid reversal optimizations that result in anything other than 3-4 box reversals. This is just an idea picked up from a visual scan of countless spreadsheet totals that I haven't tested yet.

Have fun, let me know if you find anything good – please consider joining the MSN group if you haven't already, it's a better system than the onsite forum so I use it myself!

<http://groups.msn.com/PfscanUserGroup/general.msnw>