

Worldly wisdom



In the first of an occasional series, **Philip Halperin** and **Con Keating** answer readers' questions on practical risk management issues

Is my trader OK?

I was wondering if I could get your thoughts on a trader who is trading for me. He's only been trading my account for around two months. He has the following characteristics:

- a) Active US stock trader about 20-30 trades a day; mostly day trades.*
- b) He is not a pure day trader as he will also hold positions for a week or so.*
- c) Very quickly had a 15% draw down.*
- d) Then proceeded to double the initial stake.*
- e) In the last 3 days had a draw down of about 20% from the highs.*

Would you kindly take a look at a chart of his daily equity and give me your thoughts? To paraphrase the song: should he stay or should he go?

PH: Unfortunately, the question you posed does not admit of an easy solution. When I used to manage traders professionally, candidates were asked for a year's worth of daily P&L history. I have found myself to be on very shaky ground indeed even when I only had 60 trading days, even with a detailed interview (and you can believe I know what questions to ask...).

At present, you are having second thoughts about a trader who has been with you for less than 35 trading days. It is doubtful that I could make any sense out of such a short record. *A priori*, my guess is that it would be more like gazing into a crystal ball (some folks do that very well, but I tend to be more analytical).

Nevertheless, I am willing to take a look, so send me a Lotus or Excel file in the form: Date Cumulative P&L Daily P&L. I can then quickly take a peek at the graphics. I am sceptical as to whether I could give you an intelligent opinion, but I'll give it a shot.

Regarding the behaviour you describe, you did not mention how high

the highs were, or the degree of gearing, or P&L vs. capital, so I can't give you even a qualitative feel for that. Sorry.

Another factor to consider is the mix of man and market. What is the mandate you gave him, and was it congruent with the market/cap requirements he had to work with? The story you tell is consistent with someone who was short Brazil this week, but it could be anything. Is this guy to be long only, or can he go short? How big is the position relative to the markets he is in? Are there quanto-type considerations here? (For example, a dollar P&L against a local currency book.)

Anyway, if you have performance pictures, I'll take a look.

Thanks for the thoughts. I have enclosed a spreadsheet of daily P&L and cumulative P&L and a chart of both.

There are no real mandates. He can go long or short. He can also be long or short gamma. However, he just takes positions in the underlying and trades them with some sort of stop. It appears to me that he is using the underlying like being long premium. He has no restrictions on what markets he trades. However, he has gravitated towards the lesser-known Internet stocks.

PH: Thank you for sending me the raw data. As I noted before, with so little to go on, this is admittedly a bit like reading tea leaves, particularly as this type of analysis is extremely sensitive to single irregularities.

That said, my initial impression of the performance is basically positive, but I have some strong concerns as well.

First, the initial impression. This does indeed look like a prototypical long momentum trader, with very much of the 'catch the wave' behaviour that I describe in my trader prototypes article. You correctly surmised the long premium behaviour evidenced in the performance to date – this sort of thing is typical of trend followers.

This is also (quasi) confirmed by looking at winning days vs losing days:

18 losers subsumed by 14 greater winners – smells just like a long gamma position. My reaction is strengthened when you mention his tendency to use stops, which is very typical. From the standpoint of efficiency, overall this is quite an efficient P&L for a long momentum

Trader-management data

Date	Daily P&L	Cumulative P&L	Win/Loss Count
26-04-99	0	0.00	
27-04-99	2,177	2,177.40	1
28-04-99	-68,700	-66,522.60	0
29-04-99	21,850	-44,672.60	1
30-04-99	90,082	45,408.90	1
03-05-99	-153,150	-107,741.10	0
04-05-99	-87,500	-195,241.10	0
05-05-99	-45,875	-241,116.10	0
06-05-99	-95,950	-337,066.10	0
07-05-99	-12,492	-349,558.10	0
10-05-99	-10,950	-360,508.10	0
11-05-99	42,200	-318,308.10	1
12-05-99	79,650	-238,658.10	1
13-05-99	-26,550	-265,208.10	0
14-05-99	-92,477	-357,684.60	0
17-05-99	0	-357,684.60	
18-05-99	0	-357,684.60	
19-05-99	-37,755	-395,439.60	0
20-05-99	-8,086	-403,525.60	0
21-05-99	-355	-403,880.10	0
24-05-99	0	-403,880.10	
25-05-99	102,182	-301,698.60	1
26-05-99	118,611	-183,087.60	1
27-05-99	57,388	-125,699.60	1
28-05-99	477,891	352,191.40	1
01-06-99	-170,901	181,290.90	0
02-06-99	186,209	367,499.90	1
03-06-99	167,504	535,003.90	1
04-06-99	-17,737	517,267.40	0
07-06-99	-41,206	476,061.90	0
08-06-99	435,742	911,803.40	1
09-06-99	754,145	1,665,947.90	1
10-06-99	1,174,720	2,840,667.90	1
11-06-99	-297,504	2,543,163.90	0
14-06-99	-600,132	1,943,031.50	0
15-06-99	-277,601	1,665,431.00	0
Count	36	Count	32
Avg	46,262	Winners	14
Std Dev	293,368	Losers	18
Efficiency	6.3		



The most important thing to realise concerning models is simply that they are all wrong in some respect

trader, in terms of the ratio of ex-post risk to ex-post reward (6.3x). This is not an efficient P&L for an exclusive day trader, and is about what I would expect from a day trader who tends to ride trends overnight. If I were looking at a year's worth of data, I would say the guy is a keeper.

But I do have concerns: First of all, there *seems* to have been a tendency to increase size radically while on a roll at the end, but the downside reflected a larger size, and might not have been cut fast enough. The retracement that I see from your data is 41% off the highs (I do not know where you get 20% from), which is not bad if it is cut here. I would be more concerned to see anything more than substantively 50-60% retracement at this speed. The question we have to ask is, what has caused the relatively shallow losing period, and the extreme spiky win/retracement period? I don't have the answers, but they should be forthcoming at an interview. Two possible hypotheses:

1) *Professional control.* The guy turned on the heat while winning, kept things small during the initial losing period. If this is the case, great.

2) *Switch markets.* Same investment, but moved into more volatile markets toward the end. This would imply some serious monitoring and caution going forward.

Another problem I have is what to do with the zero-P&L days. There are three such (four if you count the first day) in the initial period. Did the trader stay out of the market entirely on those days? If so, this is commendable. Was he absent? If so, not so commendable. What you must do is to watch the daily P&L very closely over the next two weeks; let us see if he cuts down the size or not. I don't think I would take two more 500,000 plus down days at all, maybe not even one. My instincts are telling me that behaviour exhibited to date looks quite professional, but it is simply too early to tell, and the actual behaviour that is manifest in the next few days should give you a better picture. I hope this helps, and I would appreciate a follow-up in a few weeks' time to let me know what actually did happen.

How to measure model risk?

One of the areas I am really interested in right now is model risk. I have been given the task of coming up with ideas and ways of either measuring or controlling it, or both. Mostly my findings have been from magazine articles and conversations with other professionals. A short answer of possible ways of measuring model risk would be appreciated.

CK: The most important thing to realise concerning models is simply that they are all wrong in some respect – they are elementary representations of reality and inevitably highly stylised. There are actually two branches of uncertain knowledge which are relevant in market usage for model risk – the model itself and its parameters.

Within model risk, we might proxy variables instead of the true one, excluded variables or approximations. Quite separately, wrong model and abnormal situations (such as war) also need to be considered. A further source of risk is expert disagreement, for example, your expert, consultant or trader, has his/her own agenda and advises according to that. There's one pernicious form of wrong model to be wary of – the model which worked well when created, but the market or security subsequently changed in some important characteristic.

As not all models are quantitative, remember that ambiguity in language (try classifying a multinational conglomerate in words) can be a fundamental source of risk. The more usual taxonomy of parametric risk includes: unpredictability – chaotic behaviour or nonlinearities in the process under measurement, sampling error (self explanatory), bias (poll just the Labour party membership on hanging and you will get a different result than that from polling the Tory – increase the sample size but still question only Labour members and you will get the same bias more precisely). Finally, do not forget straight old fashioned measurement error.

Within this classification, with a bit of thought, you should capture all the possible cock-ups. For further reading, have a look at a paper written by Emmanuel Derman – 'model risk' – on the Goldman Sachs website at www.gs.com

PH: I would say there is a 'big' dependence here on whether a true benchmark, such as a 'real' market, exists for the stuff you are quoting. If so, it is relatively easy to quantify and calibrate first-order model risk. I am too much of a believer in the dynamic hedging thing to truly believe there is any way to effectively do this with second-order, or Greek, model risk.

What can you tell me about volatility?

I am doing a short thesis on volatility measurement, do you have any material on this topic?

PH: From a strictly pragmatic standpoint, I have a prejudice against too much of this sort of thing. Volatility estimation is of course important for calibration purposes for risk management, but from the viewpoint of actually making money, most so-called volatility trading is actually arbing apples and oranges. This is due to two factors:

1) Delta-neutral or quasi delta-neutral strategies actually still have an important, though residualised, directional component to them. This is somewhat neutralised through re-hedging, but the great impact upon P&L involves the relative directional movement captured through the re-hedge (in the long option case, for short options reverse my argument). This short-term directional flutter can be deemed short-term or instantaneous 'volatility of the underlying', as opposed to the implicit volatility of the option per se. Traders call this 'gamma trading', and are (or should be) quite clear about the fact that the 'option' volatility and the volatility of the 'underlying' are two different things.

2) The implicit volatility of the option is essentially the slop factor in the pricing model. While in some theoretical world, there should be an identity between it and the underlying volatility, this is not the case in practice: It represents many of the following things (not an exhaustive list):

- amount of greed and fear in the market
- proximity of the market to the end of some perceived range

- in commodities markets, perceived tightness or supply around some future delivery date

- illness of fit (particularly in the tails) between a mathematically-manipulable model and the market participants' perceptions of probable price ranges

So it is a measure of how much hot air there is in the psychological accord. Option-option volatility arbs generally involve buying one of the two different psychological bases above (or others) and selling another.

My final problem with volatility estimation (although I don't know whether Con will agree with me here) is that it generally involves some implicit notion of 'population volatility' which I don't think exists, except for very broad ranges over defined periods of time. Despite the fact that this is, to my mind at least, akin to the search for the Holy Grail, there does exist a practical calibration need, as I mentioned earlier. So we risk managers spend eons of time fine-tuning a model to say that, for example, the volatility of September London copper is 24.1% and not 24.2% today, but what are we really measuring? Can we make any money, prevent any losses, suggest a trading strategy, say where options volatility for Sep will be to this degree of precision two months hence, say where an 85-delta option that the market has not traded and will not trade should trade, from this knowledge? And worse, we actually give management a huge degree of illusory comfort as a result of this false precision.

CK: For an in-depth look, I suggest the following books:

1 *The Econometrics of Financial Markets* Campbell, Lo & MacKinlay Princeton 1997

ISBN 0-691-04301-9 Should be out in paperback by now

2 *Forecasting Volatility* Eds. Knight & Satchell

Butterworth Heinemann 1998

ISBN 0-7506-4081-2

3 *Volatility in the Capital Markets* Ed. Nelken

Fitzroy Dearborn 1997
ISBN 1-888998-05-9 or 1-8884964-73-7 ♦

Help yourself and others too

This series relies solely on genuine questions from readers, so if you wish to receive some wisdom and share it with the 'World' please contact the authors phalperin@internet.com or keating@risk.demon.co.uk

Philip Halperin has had fifteen years of experience in trading systems, trading management, and risk management in banking and derivatives houses. Currently he divides his time between London and Moscow, as director of risk management for Alfa Securities, London, and AlfaBank, Moscow, where he manages all operational, credit, and market risk.

Con Keating chairs the European Federation of Financial Analysts Societies' sub-committee on analytic techniques and methods. The *FOW* credit risk series from earlier this year was based upon one of the current strands of this research. ♦