

The Irrational Behaviour of Using Risk Control with Momentum Strategy During a Bullish Market Trend, an Example of Asymmetric Volatility Bias and Loss Aversion

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ABSTRACT

The goal of the research is to investigate if the application of the risk control to the momentum strategy is a proof that the investor has asymmetric volatility bias that led a behavioural tendency to associate the volatility only as a risk factor, without consider potential upside effect of the volatility, the researcher as called this behaviour asymmetric volatility bias. The risk control apply to the momentum during a bullish market is an example of loss aversion and asymmetric volatility bias.

Key words: momentum strategy, risk control, volatility, herd behavior, loss aversion, disposition effect, asymmetric volatility bias, irrational behaviour and recency bias.

INTRODUCTION

The bias of the past information could explain the momentum 's strategy and companies that have always had good management, good public image or paid dividends are seen as good investments. The momentum strategy is a trading strategy in which investors buy securities that have had high returns over the past three to twelve months, and in my personal opinion, because we overweight the recent information, the momentum strategy could be explained by the recency bias, that is a cognitive error identified in behavioural economics whereby people incorrectly believe that recent events will occur soon again.

Furthermore, the moment strategy could be explained by the financial herd behaviour, where everyone follows the same behaviour and continues to buy the title.

During my financial work on the momentum strategy for the portfolio, I notice an irrational behaviour in the use of momentum with risk control that adds a control to volatility target of the equity exposure. The reflection that I have done is the following: if the market is bullish (positive momentum), we aspect that the stock price rise, so to apply risk control reducing equity exposure should involve a lower return. We should not reduce the equity exposure, because if we believe in the positive moment of the bullish 's market and the high volatility registered should increase the performance of the portfolio thanks to the upward volatility.

If we use a momentum with risk control means that we are irrational, because we have chosen to invest in the momentum strategy, so in theory is expected an increase in stock price, but when the volatility starts to become higher, we reduce the exposure to the equity, so reducing the increase of the performance of the portfolio thanks to upward volatility.

This behaviour of the investor can be explained if we think that the weight of the loss is greater than the weight of the gain: people's tendency to strongly prefer avoiding losses to acquiring gains according to the prospect theory that was developed by

Daniel Kahneman and Amos Tversky in 1979 also known as the loss-aversion theory.

Maybe this loss-aversion psychological mechanism could push the investor to put a target on the volatility, applying the risk control to the momentum strategy. This is irrational, because if we believe in the momentum strategy, we should expect that the market will go up, so we should not be concerned about the volatility since the market trend should be bullish.

For this reason, I did some tests and I implemented a change in the momentum strategy plus risk control, so the modified strategy invest 100% in the index if momentum is positive, with no constraints on volatility and the strategy will reduce the exposure to the index if momentum is negative, applying a target volatility.

My strategy can reduce downside volatility and reacts more quickly to favourable market conditions with respect to traditional risk control algorithms. This is because if the momentum is positive, we should follow the momentum strategy without diminishing equity exposure in the portfolio, but the volatility is taken only as a risk factor that confirms the idea of greater aversion to losses than gains (loss aversion theory). High volatility could be very helpful if the market is bullish, but usually investor associated volatility as risk and not also as potential opportunity.

We could explain this behaviour also using my theory of the “relative rationality” where the emotional sphere affects our decision and the behaviour is dictated by unconscious fear of losing and so we weight unconsciously the loss more than of the gain. According to the “relative rationality” theory, the decision-making is not done in a rational economic way, but could be linked to the personal emotions, unconscious, psychological sphere.

Starting from these observations on the volatility effect on the decision making, I think it is irrational using momentum strategy with risk control when the market is still bullish and can be explained that the

investor feel the volatility only as a risk (loss aversion), when instead an increase in volatility, during a bullish market, could positively affect the investor’s return.

During a bullish market there will be a better performance if we do not apply risk control algorithm reducing equity exposure in the portfolio.

This example of the momentum strategy with risk control explains how the decision are done not always in rational way, but taking into account the emotive sphere and subjective behaviour linked how we weight the variable in the scenario. In fact, the event of loss or gain could occur with the same probability, but from an emotional point of view in our emotional decision and subjective probability we overweight the effect of probability of a loss more than the effect of probability of gain.

So high volatility during a bullish market should be a positive effect for the return of the portfolio, but the increase in volatility leads the emotional sphere to overweight the probability of the loss event and so the investor will prefer to use a risk control algorithm to reduce the equity’ exposure with the aim to reduce volatility and associated perceived risk.

If the market momentum is positive and we put a risk control this irrational behave could be explained taking into account the impact of the subjective emotion on the decision making.

PRESENTATION OF RESULTS

The research question has the goal to investigated if the application of the risk control to the momentum strategy is a proof of the asymmetric volatility bias and that the behaviour of the investor to reduce equity investment during an increase of the market volatility using the risk control algorithm, could be view as irrational behaviour at least when the market momentum is still positive and the investor is risk seeking.

For the research question is present a table to represent the sample’s answer.

The table shows the number of the sample that has participated and is showed the

percentage's answer type. The survey has been conducted with a web-based survey thorough Likert-type survey using closing question. Is present a statistical result table that contain the standard deviation, average score, Z-score, p-value and the result of the test if the null hypothesis is rejected or not.

The research question is: The momentum strategy with risk control is a proof of the investor irrationality and asymmetric volatility bias?

- a) Null Hypothesis (H_0): would state that there is no significant impact of the asymmetric volatility bias and the investor has rational behaviour.
- b) Alternative Hypothesis (H_1): There is significant impact of the asymmetric volatility bias and the investor has irrational behaviour.

The research question has the goal to investigated if the application of the risk control to the momentum strategy is a proof that the investor has asymmetric volatility bias that lead a behavioural tendency to associate the volatility only as a risk factor, without consider potential upside effect of the volatility. According to the researcher view at least until the market momentum is still positive, the behaviour of the investor to reduce equity investment during an increase of the market volatility using the risk control algorithm could be view as irrational behaviour. The explanation of momentum strategy theory could be found in the investor bias to overweight recent information and herd behaviour bias. The investor behaviour to apply a risk control on momentum strategy due an increase in volatility, when the market momentum is still positive respect to the acquisition price, can be view as asymmetric volatility bias and investor irrational behaviour.

The following research question has been used.

Below is analysed the question number 1 relative to the research question.

1. Assuming you are investing using the momentum strategy where the strategy consist in buying stocks that have had high returns over the last 6 months, and assuming

that you use a momentum strategy with risk control at 15%, so in case the historical volatility in the market is higher than 15% , the strategy will reduce the exposition in equity 'stock and hold cash/bond, so due to the higher volatility you will sell some equity stock. Let's assume that after you bought the stock, the market volatility has reached 40%. Assuming that there is an upward trend respect to the acquisition stock's price and respect last 6 months stock's prices (bullish market and still positive momentum and gain position), and due to the increase of the volatility you will use the risk control to reduce your exposure to equity in line with the strategy?

- a) Null Hypothesis (H_0): would state that there is no significant impact of the asymmetric volatility bias and the investor has rational behaviour. Investors do not use risk control during upward trending market with higher volatility.
- b) Alternative Hypothesis (H_1): There is significant impact of the asymmetric volatility bias and the investor has irrational behaviour. Investors use risk control during upward trending market with higher volatility.

The reason behind this research question is to prove the investor volatility's bias, to test if the volatility is only perceived as a risk and this volatility bias lead the investor to reduce the investment in equity (risk control) during a favourable upward market trend with high volatility.

The researcher as called this behaviour asymmetric volatility bias, because in the mind of the investor the volatility is associated only to the risk, without consider the potential benefit of the volatility during an upward trending market.

During an upward market the high volatility should be considered as positive factor and not as a risk only, due to the fact the volatility measures the dispersion of data points around their mean value, so could be also positive during an upward market.

The following tables show the answer and statistic result of the empirical research question.

Table 1 Answer Choices Sub-Question 1

Answer Choices	Responses %	Responses
Strongly disagree	2,17%	9
Disagree	11,08%	46
Neither agree nor disagree	50,36%	209
Agree	30,36%	126
Strongly agree	6,02%	25
Total	100%	415

Table 2 Statistical Results Sub-Question 1

Standard Deviation	Average Score	Z-score value	Reject null hypothesis? If Z score > 1,645	p value	Reject null hypothesis? If p-value < 5%
0,82	3,3	7,453	Yes	0,00%	Yes

Z-score is higher than the one-side Z-score critical value 1.645 for 95% confidence level and the p-value is less of .05 significance level, the null hypothesis is rejected. The empirical research supports the alternative hypothesis that the investors use risk control during upward trending market with high volatility confirming the asymmetric volatility bias and irrational behaviour.

If you are not a risk averse investor, the volatility should do not be taken only as measure of the risk, indeed if the momentum is still positive and the market is upward, the volatility is a positive factor that let increase the stock' price quickly and for this reason could be better do not use the risk control or reduce equity exposure. Hence, the momentum strategy with risk control during a bullish market is a proof of the investor irrationality.

The test show that the investors have asymmetric volatility bias, the increase in volatility in the mind of the investor is perceived as negative risk factor only, without to consider the potential benefit of the higher volatility during an upward trending market.

If the market is bullish respect to the acquisition price and the last 6 months

momentum is still positive is irrational to use the risk control strategy to reduce equity exposure, because the investor will not benefit of the volatility on market during the upward trend. Furthermore, also if the investor is risk averse, the investor that use momentum strategy believe that the recent past positive trend will continue and for this reason is contradictory respect to the logic of the investment to change strategy now, due the fact that the momentum is still positive and accord to the momentum strategy, the investor should continue to invest and do not reduce equity's exposure.

As a matter of the fact, my strategy has bit the risk control strategy during the upward market as a confirmation of the above statement.

SUMMARY OF RESULTS

The research question has the goal to show that the application of the risk control to the momentum strategy is a proof that the investor has asymmetric volatility bias that led a behavioural tendency to associate the volatility only as a risk factor, without consider potential upside effect of the volatility, the researcher as called this behaviour asymmetric volatility bias.

The asymmetric volatility bias can view as loss aversion bias.

The risk control applied to the momentum strategy during a bullish market is an example of loss aversion and asymmetric volatility bias.

The main research finding are asymmetric volatility bias, irrational behaviour and overweight last information bias or recency bias.

The question number 1 show that the investor reduces the investment in equity (risk control) during a favourable upward market trend with high volatility and consequently the application of the risk control to the momentum strategy could be a proof of the irrational behaviour.

The research test show that the investors have asymmetric volatility bias, the increase in volatility in the mind of the investor is perceived as negative risk factor only,

without to consider the potential benefit of the higher volatility during an upward trending market.

Consequently, the use of risk control with the momentum strategy during a bullish market is a proof of asymmetric volatility bias and confirmation of the existence of the loss aversion bias.

Furthermore, the momentum strategy could be considered an indirect confirmation of the investor's behaviour bias to overweight the recent information (recency bias). Indeed, the strategy consist in buying stocks that have had high returns recently.

Conflict of Interest: None

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