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Capital At Risk (CaR)

Capital Preservation is an important aspect of trading which is unfortunately neglected by many traders. While generating profits is certainly a focus of trading, equal emphasis needs to be provided for ensuring the safety of the wealth so generated. If one is not careful, there can be many instances where one losing trade can wipe out the profits generated by multiple profitable trades. It is therefore imperative that one regulates the quantity of the capital exposed in one particular trade.

To find out the amount of capital exposed to one trade, a concept called “Capital at Risk”, or CaR for short can be defined. Note that this is not equal to the amount of capital used for a trade. To put it simply, it is the expected loss in the trade in case the trade does not go as expected. There are various factors which constitute this measure. Based on these factors, one should decide on how much capital to use in a trade.

- Loss in case Stop Loss gets triggered
- Likelihood of hitting the Stop Loss
- Reward-Risk Ratio

Let us consider each one in more detail.

Stop Loss Trigger

The Stop Loss is an important aspect of trading. The main purpose is to limit the losses in case a trade goes bad. The scope of this discussion is not to specify how stop losses are set. Instead, we will assume that a stop loss level is arrived at by some other means and is available for calculations.

Let us take an example of the NIFTY Futures. Say the loss in case the stop gets triggered is 50 points. Therefore the loss should be limited to:

$50 \times \text{Lot Size} \times \text{Number of Lots}$

If the Lot Size is 50, this becomes:

2500 x Number of Lots

The exercise is therefore to find the optimal number of lots to trade with.

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Likelihood of Loss

In the real world, it is very tough (maybe even impossible) to come up with concrete probabilities for any trade. To get around this problem, we can define the anticipated amount of “Risk” in the trade. A trade should be classified as High Risk, Medium Risk or Low Risk. Once again, it is outside the scope of this discussion as to how this classification is done. We just do the calculations assuming that the calculation has already been provided.

We cannot assign probabilities of a trade succeeding based on the trade classification as described above. Instead, we limit the amount of capital based on the classification. The suggested limits are:

High Risk – 2.5%

Medium Risk – 5%

Low Risk – 10%

In other words, the above means that in High Risk trades, only 2.5% of the capital should be put at risk. In Low Risk trades, even 10% capital can be put at risk. The idea is that if a trade is identified as High Risk and one still wants to trade that, very less capital should be allocated so that the inherent risk does not wipe out too much capital.

To take an example, let's say one has a total corpus of 1 lakh Rupees to trade with. If a high risk trade is being attempted, then the number of lots purchased should be limited by the consideration that in case of a loss, the maximum loss should not exceed 2500 Rupees.

Reward - Risk

Before trading, one needs to keep in mind that undue risk is not taken for too less a gain. The reward should be sufficiently big as compared to the loss made in case the stop loss is triggered. A higher ratio implies a better looking trade and therefore this ratio needs to be as high as possible. If the ratio is low, then we should allocate less capital to this trade.

Let us say that the loss in case of stop loss is 50 points. Let us also say that the profit in case of the target being met is 100 points. The Reward to Risk ratio therefore is $100 / 50 = 2$.

The suggested par-value ratio is 3.

The capital to be exposed is first calculated by applying the above two rules – Stop Loss trigger and likelihood. This capital is then modified by the Risk – Reward ratio. If the ratio is 3 or greater than three, then no modification is required. Else it is decreased in proportion to 3.

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For example, let us say the capital exposed depending on the Stop loss trigger and likelihood has come out to 6 lots per lakh of corpus.

If the reward-risk ratio is 2, then this capital will be modified as:

$$6 \times 2/3 = 4 \text{ lots}$$

Determining number of Lots

Let us now walk through a complete exercise to determine the number of lots to trade with.

The following parameters are given for a trade with NIFTY Futures.

Risk Rating – Medium

Loss if stop loss hit – 50 points

Profit if target met – 100 points

Let us assume that one lakh is available for trading. The question is how many lots of Futures to buy so that one is optimally exposed to the market.

Firstly, the Medium Risk trade limits the loss to 5% of the corpus, that is Rs. 5000.

Secondly, as explained in the “Stop Loss Trigger” section, the loss should also be limited to $2500 \times \text{Number of Lots}$

By equating the two, we get
 $2500 \times \text{Number of Lots} = 5000$

In other words, the Number of Lots = 2.

Now, the Reward-Risk ratio is $100 / 50 = 2$.

Therefore, the Number of Lots are modified as $2 \times 2 / 3$

In other words, the optimal number of lots for this trade is 1.33 lots per lakh of corpus.

To be more conservative, one should always round down rather than rounding up.

So if you have one lakh, you deal with 1 lot.

If you have two lakhs, you deal with 2 lots (not 3) even though the value is $1.33 \times 2 = 2.66$