Mar 20-Feb 21

QUANTLETTERS

THE SYSTEM IS THE EDGE

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“Quantamental Q30 quant portfolio was launched in public domain on 1st March 2020. Every month we send a Quantletter to subscribers. The letter also contains a writeup on relevant topics. 12 Quantletters have already been issued. Below is compilation of the write ups over the last 12 letters, consolidated as per topics and questions. Hope quant enthusiasts and system investors would find these useful.”

Why Quant?

Quant was a result of a couple of years of delving into quantitative, systematic and trend-following techniques. All this started as a result of trying to fill my own lacunae in investing that I could identify. Being a quality-focused long-term investor, I was realizing that I could not capitalize on short term strong business and stock price momentum. In addition, due to my interest in behavioral psychology, I was convinced that the biggest determinant of investment result is the mindset. Any system that could capture these short-term bursts and codify the big decisions required during an investment would be beneficial in getting better results than otherwise possible. As I keep learning, I intend to refine the current Q30 system. The objective is to keep upgrading the system to deliver better returns with reduced risk and lesser drawdowns.

Systematic investing requires a different mindset from traditional investing where there is a lot of focus on doing due diligence. In quant, you are required to follow a system. One which has been tested under different conditions. The need to keep the faith in the system even when the going is tough is very important. It is equally important to understand that no system, however good, will work all the time.

So, what is quant?

Basically, any analysis using numbers is quant. It can be using fundamental parameters like absolute numbers or ratio analysis. It can use technical indicators like moving averages etc. What it is not is technical chart reading. This is because charts are subjective. What may look like a cup-and-handle pattern to me may look like something else to another person.

What is interesting about quant systems are that it is predictable and you know how it can be expected to behave. The reason is you have seen it happen in the past and the patterns of events keep repeating. Today's corona virus is yesterday's SARS or day before's Bird Flu. The people don't change and their reactions also are similar. A tested system which can help and guide us in investing in a systematic approach helps us keep sanity in the markets. And hopefully profit from other people's folly.

Show me an example of a quant system

A quantitative system is not an alien beast. You have all dealt with quant systems for many years. But first, let's look at what it is. A method which uses only numerical parameters to build and trade stocks is a quant system. Essentially, there has to be rules which are followed. And these rules have to be quantifiable.

For example, you may want to buy high quality companies that are cheap. You would need to define what high quality means. For the sake of the example, lets keep it simple. Let's say we decide to use ROE as the parameter for quality of a business. Then the next step is to define what does "good quality" mean. There are 2 ways you can define the values for ROE. On a absolute scale or a relative scale. On absolute scale means there is a definite value, like 15%, over which you consider a company to be good. Relative scale means you list all companies based on their ROE and sort their values in decreasing order; then choose a set number of stocks from the top of the list.

Similarly, you can devise a strategy for defining and finding cheap valuations. And voila, we have an implementation of the Joel Greenblatt's magic formula. But, the well recognized but not always understood pure quant strategy is a stock index like Nifty 50 or Sensex. Take a look at the Nifty Strategic Indices - https://www.niftyindices.com/indices/equity/strategy-indices (Nifty strategic indices have many strategies and provide a wonderful glimpse into the world of quants at a very high and broad level.) By definition, every index is a quantitative one which is based on fixed rules and NOT on someone's discretion. There is no investment committee which sits and deliberates on which stock should be included in the index. So, every investor actually knows and follows a quant-based system directly or as a benchmark. It is not something which is new or esoteric.

How much to invest in each stock?

When we create a portfolio, allocating weightages to stocks is an important point to think through. In a discretionary portfolio, investors typically use “conviction-weighting”. That is, their stock allocation depends on how convinced they are about their stock pick. Some people talk of using the Kelly criterion, though to be truthful, I have never seen anyone use it in real life. Why Kelly criterion cannot be used with any degree of confidence is a topic for another day.

In a non-discretionary portfolio like a quant-based strategy, where you are not doing any bottom-up fundamental analysis, conviction does not play any role. So, you need to have some formulaic way to decide on the weightages for stocks. Here are some standard ways:

- Equi-weighted – all stocks start with equal allocation
- Market-cap weighted – allocation based on market cap. Two possible combinations are possible based on the strategy implemented – i) higher allocation to higher market cap stocks or ii) higher allocation to lower market cap stocks.
- Trailing return based – allocate stocks based on past returns. Again, two possible combinations here: i) higher trailing returns have higher allocations for trend following or momentum portfolios and ii) lower trailing returns have higher allocations for mean reverting portfolios.

For the Q30 system, we chose to go with the simple equi-weighted allocation. As Q30 is a combination of growth, momentum and trend following, with a decent time horizon (3 months) so to keep things simple, equal weighting is easy to understand and simple to follow.

I am a big proponent of keeping things simple. Because it is easier to implement simple strategies. Also, simple strategies tend to stand the test of time. The more complex the strategy, the more chance of data-fitting is possible. That is, picking a strategy that only works for a certain period under certain circumstances. Q30 as a strategy is envisaged as a strategy that will win big during a bull market and lose less in a bear market.

What about market timing?

A regime filter or a market regime filter is a tool to help us conceptually understand the kind of market we are in. As a systematic investor we can increase our odds of success by adding a regime filter to our arsenal. It tells us, based on how we have defined it, if we are in a bull market or a bear market. We would think differently about market risk in the different market scenarios.

A simple example of a regime filter is using the 200 day moving average. If the index of your choice is above the 200 day moving average, then you define it as a bull market and below it as a bear market. You can design your portfolio strategy to hold full allocations in stocks if you are in a bull market and 50% allocated in a bear market. So, with that basic logic you can start constructing a slightly more realistic and slightly more nuanced regime filter.

First, define the market conditions you want to address – superbull, bull, bear, superbear. The reason for doing that is you want to be cautious in the market extremes of superbear and superbull conditions and aggressive in the bear and bull conditions. Then we use a combination of indicators like RSI and 50 & 200 day moving average to define the selected conditions. For example, Above 200 dma and 70 RSI we are define as superbull and above 200 dma and above 50 RSI as bull phase.

Another trick that can be used is to use multiple indices. For example, you can use the average of Nifty, Nifty Next 50 and Nifty 500 in equal proportions to define your market. For a long only investor, it may increase the odds of success to be buyer only when the regime filter is indicating a bull market.

Trailing Stop losses?

A trailing stop loss (TSL) is not what its name implies. It is not a tool for stopping a loss. On the contrary, it is a tool to protect your profits. Selling is one of the toughest, perhaps the toughest aspect of investing. A TSL is a simple, mechanical and yet reasonably effective tool to automate the sell decision.

There are many ways a TSL can be implemented. It depends on the kind of stock or index you are invested in. Here are some of the most popular ones:

There are many ways a TSL can be implemented. It depends on the kind of stock or index you are invested in. Here are some of the most popular ones:

1) Max percent drop from the most recent high – here you can have a 10-20-30% kind of level as a trailing stop loss. If the stock falls by, say 20%, from the most recent high, you sell and book profits.

2) Moving average based – here you sell if the stock falls below your chosen moving average, like say 50 day moving average or 200 day moving average.

3) ATR based – the previous two methods do not account for the volatility in a stock. For example, a stock like Nestle fluctuates very less compared to, say, an Indusind Bank. Here an ATR (Average True Range) based trailing stop can be used which would account for the higher variations in stock price for the more volatile stock.

4) Parabolic SAR – This is another advanced method which is used as a TSL. Here the trailing stop keeps increasing even if the price stagnates after a point, so sometimes it also acts as a time-stop (i.e. you get stopped out after a period of holding if the price does not go up).

5) RSI based – If the RSI falls below a threshold level, say 30, it indicates a significant loss of momentum and is used at times to trigger a trailing stop.

Of course, all these can be used for all time horizons by changing the parameters. For example, in a long term portfolio, maximum percent drop could be used as 30% or a 200 day moving average could be used. Even a combination of some of these rules can be used at times.

Are these returns real? How do I mimic the model portfolio returns?
Your returns should be in the range of give and take 1 or 2% of model portfolio returns owing to buying day volatility and that is fine. However, if you have deviated widely from this range, there could be various reasons for that.

Most likely scenario is that you may have been following the model portfolio but with some discretion as to which stock to skip, because you don't like it for some reason. May be it is overvalued in your opinion or may be it has posted not so great results in past. Or even if you have bought them all as per the standard allocation, you may have booked profits or bailed out early without waiting for the reset date or exit instructions.

Laurus Labs is a good example of this phenomenon. After we bought it, it went down by more than 20% before recovering and turning out to be one of the biggest winners so far in the portfolio. When it was going down, it may have been tempting to book stop loss thinking it is going downhill. When it has been shooting up, it may have been tempting to book part profits thinking how far can it go, may be it will reverse and my gains will vanish.

These are all natural reactions. However, the very premise of a quant portfolio is to follow the rules and not fall prey to ingrained human biases. If you are not comfortable following the rules, start with a smaller allocation to quant portfolio and let it run for few months. As you experience how it is performing, gradually you should be able to develop the confidence to run it on autopilot.

Some recommendations to make it easier:

- Have a separate demat account for quant portfolio. If it is mixed up with other portfolios, it would be easier to get confused in such a case, as you may be selling a stock as per one strategy and holding on or buying the same stock as per may be any other investing method that you are following.
- Follow the model portfolio in toto for a defined allocation. If you want to pick and choose and do discretionary trades, keep a separate allocation for such discretionary trades. That way at least you know whether you are outperforming the default q30 portfolio or is it a lot of activity for not so proportionate extra gains.

Ease of execution converts theoretical returns in to reality

Often you come across many equity investment products and strategies which show decent returns on the face of it over a long period of time. But when it comes to investors who have been subscribed to those products and strategies, not everyone of them actually manage to get those returns. Main reasons why customers don't actually reap the benefits is

- **Not following the strategy in toto.** Deviating from the strategy in the hope of getting better returns more often results in lower returns. We have covered this topic in one of previous quantletters as to how to overcome such tendencies.

- **Strategy is difficult to follow and execute i.e. Ease of Execution is low.** Active investment strategies often require frequent buy and sells and regular monitoring. Depending on how many times action has to be taken and how complex those actions are, it may be tedious to follow all the instructions all the time. This usually culminates in to complete unwillingness to follow the strategy as one would realize that it doesn't suit their day to day routine.

Ease of Execution is not something you would often see discussed in investment writeups and advice. The focus is usually on returns and then drawdowns in that order. Ease of execution is equally critical. Even if the returns are acceptable, corresponding drawdowns is something that you can live with without giving up when the times are bad, you still need to be able to follow up the actionable advice every time there is something to do. If you cannot keep up with that, all the returns will remain just on paper.

What that means is, you should be careful in choosing strategies which you may find difficult to follow and execute due to your lifestyle or simply the way your mind is conditioned to think. If a futures strategy for example requires you to be active every hour during the market hours and you cannot afford to do that always, a slip here and there could be a recipe for disaster. Many equity strategies also require action almost every week, frequent buy and sell, change in allocation, to and fro movement in to cash. And that needs to be done every week without fail, adding up a time commitment on your part.

We have designed the Q30 system keeping ease of execution at the forefront.

- Action is required only once a month. Sometimes stop loss instructions are issued in the middle of the month but those are few and far between. Since inception, over the last 8 months we have had only 3 such days.
- Allocation to each scrip is simple. 10% of the funds for the month has to be allocated to each scrip. No need to think how much to buy, whether to stagger the buys, whether to wait few more days, whether to average up or down. There is nothing which leads to indecision.
- Portfolio is highly diversified, containing upto 30 stocks. The current basket for example contains 29 stocks. This leads to lower volatility and helps in sticking to it. It also means larger capital can be deployed in it. You can keep following this strategy for years without worrying about slippages.

We hope that all this means at the end of the day, your returns will closely match what you see tracked as part of the model portfolio. Simpler to follow, simpler to execute would eventually lead to getting the returns which you see on paper.

Why there is no profit booking targets?

Often we receive questions similar to "We have a stop loss mechanism, can we also have a profit booking mechanism before the 90 days - suppose after a stock has a run a good%?"

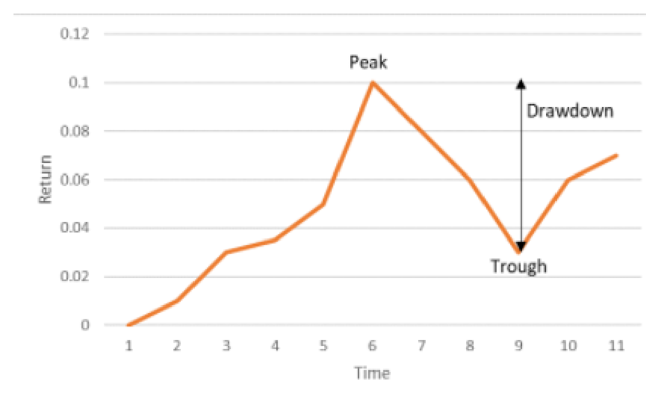
One of the strongest mantras of trend following is "cut your losses short, let your winners run". The portfolio relies on few outlier trades to derive most of its gains. Stopping trades from running as high as they can breaks the very core of the trend following principle. A strategy that uses profit targets is problematic at a root level. At best it reduces the long term CAGR of the portfolio. At worst it can actually ruin the portfolio performance.

When a stock runs up in short term, it is indeed tempting to try and exit the trade before the inevitable trend reversal. That can be psychologically comforting. However unless done based on rules, it would invariably have a negative impact on long term portfolio CAGR. We reset each basket every 3 months. Stocks which continue to be in very strong uptrend remain in the portfolio, else we exit, booking the profits or losses as the case may be.

Not to say that this is the only way to ride winners. There can be various other ways to ride the trends without prematurely exiting them. One of the more common ones is reviewing the holdings weekly or monthly. Each such review period has its own pros and cons. What's the best way to ride the trends till it breaks is based on the review period, nature of stocks the strategy invests in and many other factors including what kind of activity and churn one is temperamentally suited to. There is a popular adage that "no one ever went broke taking profits". You actually can go broke if profit booking and loss booking rules are not in sync with the portfolio strategy. Let the profits take care of themselves!

Managing Drawdowns

Drawdown measures the drop from any peak to bottom in the value of a portfolio (before a new peak is achieved). (Max Drawdown = (Peak value before largest drop - Lowest value before new high established) / (Peak value before largest drop))



Measuring and being aware of the maximum drawdown and the current drawdown of any investing strategy you are following is important. There are two factors which need to be balanced:

- The return percentage by itself means nothing. The return comes accompanied with drawdowns. Unless you can stomach the drawdowns of a strategy, you won't be able to stick with it and not be there in good times to benefit from it.
- Yet one has to accept a reasonable drawdown as high returns are invariably accompanied by high drawdowns. The more you focus on reducing drawdowns, more the returns are compromised. A fixed deposit for example doesn't have any drawdown. You know what that means for returns.

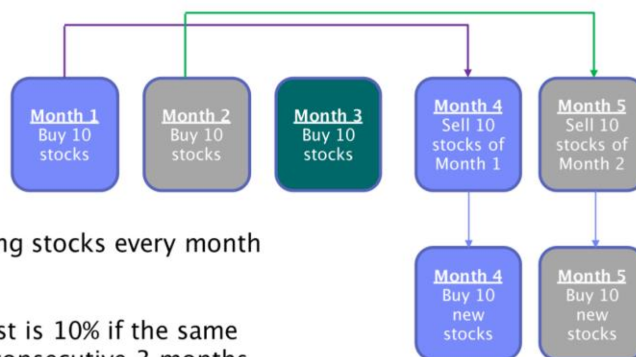
Q30 is designed to be a high return strategy accompanied by commensurate drawdowns. In bear markets or sideways markets, the portfolio will undergo drawdowns. The focus is not to keep drawdowns to absolute minimum as that would lead to lower returns.

But what is an acceptable drawdown? Enter MAR ratio. MAR is a gain-to-pain ratio that is calculated by dividing the Compound Annual Return (gain) by the Maximum Drawdown (pain). A strategy that compounds at 10% annually with a maximum drawdown of (20%) will have a MAR ratio of 0.5. To give you some perspective, the Nifty buy and hold strategy has historically yielded ~13% compound annual return with a maximum drawdown of about (55%) in the last 2 decades so that gives it a MAR ratio of 0.24. Any strategy with a MAR ratio of 1 and above is considered exceptional. Hedge fund industry considers MAR ratio of 0.5 and above acceptable. Current Q30 drawdown and MAR is not being compared as it is off the charts and should moderate over a longer cycle.

Q&A

I am getting started. Do I deploy my entire quant portfolio capital in one go?

Q30 Portfolio capital is divided in to 3 equal parts. 1st part, which is 1/3rd of total capital is deployed in Month 1. Please see the below infographic explaining the process. This is designed to even out the variations that happen month to month and also capture the latest trends in the market every month. Alternatively, you can invest the entire corpus in 1st month across all stocks and then keep making changes on a monthly basis.



Selects upto 10 strong stocks every month & reset quarterly.

Max allocation at cost is 10% if the same stock is selected in consecutive 3 months.

Stocks get moved out of portfolio in 3 months unless they reappear in the new month's selected stocks.

You may explore using the basket order option available with your broker to sell and buy the stocks. Create a basket for sell order. Create a separate basket for buy order. In any case, do maintain the monthly basket quantity in excel/google sheets for your records so that you can reset the respective basket on the review date.

I want to add extra capital. How do I go about it?

At any time, you want to add capital, allocate it to the monthly baskets in 3 equal parts. 1st part will get deployed immediately and the remaining 2 parts will get deployed when the respective baskets will come up for reset. However if the amount of additional capital being deployed is small and you want to do it every month, you can just add it to the current month purchases. Again the rationale is not to invest lumpsum in one go and even out the variations.

I need to withdraw some capital. Can I sell stocks which are in profit?

No. For partial withdrawal of capital, sell the stocks in equal proportion.

Q&A

"I see that some of the companies share price movements are indicating strength over the others. Each stock underperforms differently from the other within the portfolio, logically the stop loss would get triggered at different levels of underperformance, right?"

The stop loss can be both at individual scrip level or it can be at portfolio level or both. Stop loss at individual scrip level is very common. And there are so many ways to go about it. However, if only this method of stop loss is followed, then in times of market wide distress like the current one, nearly every stock sooner or later will hit the stop loss limit effectively ensuring that you end up losing the maximum possible stop loss on the entire portfolio.

As an example, let us assume that stop loss is set at 20% from buy price. When the market is doing well, occasionally few stocks will hit this limit while the rest will not, and the portfolio overall will do well absorbing the losses in these few specific scrips
But during those market environments when literally everything is falling, like they are now, you can imagine that nearly all stocks will hit this level one day or the other and the portfolio will crash badly. There is no point of having stop losses if every stock in the portfolio hits a stop loss.

That is where the portfolio level stop losses come into the picture simplifying the decision making and ensuring that the entire portfolio is liquidated partly or fully without waiting for each stock to hit their individual stop losses. That is why in specific circumstances like the current one, even when some stocks are displaying more relative strength vs the rest, the logic of portfolio level stop loss helps in containing the damage, rather than sticking with the stocks which haven't fallen to the stop loss level.

''Can you please explain what stop loss mechanism have you devised? When even some nifty stocks falling more than 10% in a day, wouldn't it be late if our stocks fall steeply and faster than anticipated and we don't get a chance to put in a stop loss then? Why have you not shared the stop loss upfront along with the list? Moreover, since the overall portfolio is about x% down so would it be a good idea to average down and increase the capital invested?

Q&A

There are multiple questions here. Let's look at them one by one. The current stop loss that is devised is fairly complex with multiple parameters and cannot be dumbed down to sharing in advance that please exit if the stock falls below say 20% from the purchase price. That is why no stop loss level was shared upfront.

With any stop loss method, be it individual scrip level or a portfolio level, there is always a risk of the stocks overshooting the stop loss. That's part and parcel of investing. Adverse market environments are also usually accompanied by very high volatility. Even in good times, specific stocks can be very volatile on certain days where the intraday movement can be a very wide range. For this reason, it is not a good idea to monitor prices intraday and trying to figure out whether the stop loss level has been hit. As we have experienced on several days in the past month, stocks have fallen badly in morning only to recover and even post gains by market close and vice versa. So our system takes in to account only end of day prices to determine whether the stop loss has been hit whether individual or portfolio level. The suitability of a specific stop loss method depends on the nature of the underlying strategy. For the Q30 quant system, we will not be bothered by intra day volatility and will always follow end of day prices to determine if any stop loss has been triggered.

Q30 is a quant system and it does not involve averaging down to increase the capital invested because in a specific month the portfolio has gone down by x%. The whole idea of having a quant system is to follow it diligently and not try to override it based on personal discretion. As and when you have increased capital to invest, add that in the beginning of the period when you are entering the scrips and not as an averaging strategy. To repeat once again, drawdowns in Q30 quant portfolio is a feature and is not a bug. There is a trade off between returns and drawdowns. If one is not comfortable with any drawdown whatsoever then any kind of equity investing be it through mutual funds or direct is not a suitable vehicle. Being comfortable with some degree of drawdown is a precondition for being able to enjoy the higher gains which inevitably accrue following a strategy with an edge month on month.
Having said that, drawdowns cannot be allowed to be become deep and remain open ended. The higher the drawdown, longer the recovery time to get back on track. These are the two balancing factors which has been incorporated in to the Q30 system design. We will take drawdowns in our stride and keep following the system with discipline. As and when markets turnaround, we will be more than compensated. We have to stay in the game with most of our capital intact.

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