TREND FOLLOWING
101
A CONCISE GUIDE TO TRADING LONG AND SHORT

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Trend Following 101

A concise guide to trading long and short
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**Wikipedia:** Trend following is an investment strategy based on the technical analysis of market prices, rather than on the fundamental strengths of the companies or securities.

**Introduction**

If you look at a selection of charts, it quickly becomes obvious that prices tend to move in particular directions – either upward or downward – for extended periods of time. Often, there may be no obvious fundamental reason why this is occurring but it is. These are trends – and successful traders generate significant profits by identifying and following them.

According to the Wikipedia definition above, trend following is based on technical analysis. In reality, I would say that this is only partly true.

Technical analysis can include any number of different technical indicators and strategies, many of which have very little value. Trend following on the other hand is more philosophical than a simple technical analysis approach.

It is the belief that trends exist across numerous markets and industries and even more, that there is a reason for them existing. It is the belief that the price of a security is the most important thing to understand and everything you need to know about a market can be ascertained from it’s price action.

It is also the belief that trends can last for much longer periods than expected and trend following is the approach designed to capture the long tail of market returns.

Recent media coverage of trend following insists that the approach is out of date and some commentators have even proclaimed that trend following is dead. I will come to this later on. For now, let’s take a look at what trend following is and what it isn’t.
Price is king

Investors use technical analysis to identify trends, to determine when to enter the market, and to formulate their exit strategy. However, this analysis is really targeted at trying to anticipate price movements – and price is the overriding principle behind trend following.

The key tenet of trend analysis – and the mantra of trend followers – is that price can tell investors everything that is important about a security. It tells them how the stock has performed in the past, where it is now, and what the future is likely to hold for it.

Performance of a famous trend following fund run by Bill Dunn. Src: DUNN Capital Management.
Because of this, trend followers focus on price movements, rather than trying to use fundamental factors such as economic data, geopolitical events and other macroeconomic factors to predict performance. In essence, they believe that the market is always right – and that profits come from following what the market is doing at that precise moment rather than trying to predict what will happen next.

If you consider all the inputs and information that exist in the financial markets you will realise that attempting to understand what causes a market to move in a certain way is near impossible.

For example, can you reasonably expect to know all the information about a particular company’s finances? Can you even begin to understand the relationships that go into the supply and demand constraints of a particular commodity?

Trend followers argue that attempting to analyse fundamentals is futile. Everything that you need to know about a market it reflected in it’s price. The price is all you need to know and a market that is going up should be bought, while a market that is going down should be sold.

**Not just technical analysis**

Some trend followers claim that what they are doing is not just technical analysis. They point to the existence of trends across many spheres – economic, political, fashion, technological – to argue that trends exist across all areas.

This is a reasonable claim, but it is worthwhile to remember that trends are also tied to unique market phenomena.

For example, investor enthusiasm can drive trends to extremes without any fundamental underpinning – in the end this can make them susceptible to painful reversals but the trend follower will usually have made many hundreds of percent along the way.
The dot.com boom is a good example of this, but there are many more representative cases throughout history, including the Dutch Tulip Mania in the 17th century, and the South Sea Bubble in the 1800s.

There are also short-term factors at play, such as when the market becomes overbought or oversold – which can lead to a trend stalling or even reversing. This sort of short-term technical phenomenon really has no exact corollary in other areas outside of the markets.

### Searching for the long tail

Back in 1909, Henry Ford made the statement that “Any customer can have a car painted any colour that he wants so long as it is black.” This was in reference to the Model T, the car that made Ford a powerhouse in the automotive industry. This is a perfect example of mass marketing, which targets the vast majority of consumers with a very narrow product offering.

In fact, this is captured in the 80/20 rule – or Pareto principle – which asserts that 80% of cases can be addressed by covering 20% of the total set of requirements. This is a characteristic of many mathematical distributions, which see the vast majority of items clustered closely together – with only a few outliers.

However, this principle doesn’t always hold – particularly in cases where there is a long tail distribution. This is when a disproportionately high number of cases lie outside of the central peak of the distribution.

This distribution can be seen in many areas such as recent trends towards mass personalization, as well as the success of companies such as Amazon, which target the long tail with a huge array of products, rather than selling a few products to a mass market.

In fact, in a long-tail distribution, less than 50% of cases fall into that core 20% of requirements, making chasing the long tail highly profitable for many businesses.
The same long-tail principle applies for investors who follow trends. Long tails are characteristic of financial markets – for example, if you look at a broad selection of stock returns, you’ll find that some of them move relatively little over a year – maybe 5% or 10% – but there are also a disproportionately high number of stocks that make much larger price moves – 50%, 100%, 200% or even more in some cases. These are the long-tail stocks that trend followers are hunting, since they offer the biggest opportunity for profits.

**Trend-following basics**

Because trend followers are trying to catch the long tail, they typically adopt a relatively straightforward strategy. They buy when the market is rising, and sell when it’s on its way down. What they hope is that they are getting in on the start of a trend, which they then ride to its profitable conclusion. They don’t actually care whether the market is rising or falling – they are unbiased and can make profits in both cases.

However, because of the long-tail nature of the market, some of these trends will be short-lived or even non-existent. It’s a bit like waves at sea – there are tiny ripples, some bigger waves and the occasional monster. The big waves and the monsters are where trend followers make their profits – but, they also find themselves trying to ride the ripples. Worse still, they find that the wave is moving in the wrong direction – they expect to be lifted up, but they find themselves falling off the other side.

Because of this, trend followers not only need to jump on waves that look hopeful – in other words, a rising or falling stock – they also need to be prepared for when things go wrong. While they need to ride the winners to their conclusion, they also need to get out quickly and cut their losses on losing trades. If they didn’t do this, the losses would overwhelm the wins, leading to an inevitable – and costly – result. In other words, the goal is to have a few big wins that more than offset a larger number of small losses.

In reference to the surfing terminology, trend following is about getting back on the board and waiting patiently until the big wave comes in and riding it into shore. One big wave can make up for all the other smaller, missed waves.
How to find a trend

Traders who follow trends typically use technical indicators rather than raw price charts to identify trends.

They do this because indicators provide an objective way of establishing when a trend is underway and they are easy to program into trend following trading systems. Even so, some traders do rely on naked price data – known as price action – to find trends. Though this is a much more risky approach.

Moving averages

One of the most popular indicators for identifying trends is a moving average. This is basically the average of the price for the previous several trading intervals. When a smaller number of intervals is used, this is known as a fast moving average, since it reacts quickly to changes in price.

When a larger number of intervals are used – a slow moving average – then this tends to change more slowly. The benefits of using a moving average are that it tends to eliminate any short-term fluctuations in the market, giving a more accurate view of the overall market direction.

Traders use moving averages to determine whether or not a trend is developing and typically use two moving averages together – a fast one and a slow one.

When the fast moving average crosses over the slow one, this is an indication that an upward trend is underway and is usually a strong buy signal.

If the fast moving average then falls below the slow moving average, a downward trend is underway and the trend trader will sell.
**Breakouts**

Another popular way of spotting a trend is to look for breakouts – these are relatively easy to see on charts.

Here, the trader will look for a price to break out of its trading range and make a new high. For instance, if the stock has been trading between $2.20 and $2.30 for the last 50 days, and then rises to $2.35, then this is a strong signal that an upward trend may be forming. Different traders use different intervals – the 50-day interval above is just an example – since there are differing opinions on which intervals predict the market most accurately.

Most trend followers use trading programs to test which time intervals work best for finding profitable breakouts then work these into their trading systems.

**Other approaches**

There are hundreds of other indicators that trend traders can use. Many traders use these to get an extra edge, but the risk is that they make trading too complicated – which can lead to mistakes.

Some of the most popular of these other indicators include Bollinger Bands and moving average convergence/divergence (MACD). Another popular indicator is the relative strength index (RSI), which measures how strongly the market is moving up or down. This is used both to determine when the trend is strong – and likely to continue – as well as when the trend is too strong, in which case the market may become overbought or oversold, leading to a price trend reversal.

Ultimately, it’s important to focus on the end goal, which is to capitalise on long term trends. Simple strategies often work just as well as more complex ones in this.
Managing risk

As discussed previously, trend traders do not expect to make a profit on every trade. Generally, trend followers win around 30% - 40% of trades.

Because of this, it becomes very important for them to limit the amount they lose on the trades that don’t work out. This is the discipline of risk management.

The first principle of risk management is not to risk a disproportionately large amount of your total capital. Most traders will limit their risk to less than 2% on any one trade – meaning, for example, that they will not risk more than $200 if their total capital is $10,000.

Of course, that doesn’t mean that they only make a $200 investment. What it does mean is that they look at the maximum that they can lose on the trade, and then use this to establish how much they invest.

For example, they might buy a stock at $2.10, and then place a stop order which is triggered if the stock hits $2.00. They are expecting the stock to rise, but if it does fall, then the maximum that they can lose is $0.10 per share. This means that they can afford to buy 2000 shares and only risk $200. In this case, their total investment is $4200 – which is significantly more than the $200 they are risking.

Stops or not

Importantly, some trend followers may use stops and some may not.

In the example above, using a stop loss limits the downside of a potential losing trade but it also ensures that you exit a trade at a loss.

It’s for this reason that some trend followers find stop losses can undermine their overall performance. In this instance, it’s worth doing some investigation into what kinds of stops work the best for the strategy in question.
Some traders prefer different types of stops such as the ‘Chandelier’ stop or volatility measured stops. Other traders prefer to use stops that only get triggered very occasionally. They reason that a stop often exits a trade at the worst possible time. It’s therefore far better to use an exit strategy that does not involve a stop loss.

For example, if you buy a market on a EMA crossover, you should sell on an EMA crossover too. By optimising risk you can estimate that your average loss rarely exceeds 1% or 2%. This can be preferable to risking a set 1% or 2% on every trade since markets are never so predictable.

**Risk: reward**

Traders will also look to see a good risk/reward ratio on their trade. For example, if they are risking $0.10 per share, as in the example above, then they will typically look for a trade where the potential profit is three times or more – they are expecting the stock to go up by at least $0.30. In fact, some traders will look for a multiple of 5 to 1.

To establish what the potential profit is, they will analyze similar past historical trades, and will also look at other technical indicators to determine what the price movement is likely to be.

**Trend-trading systems**

Trend traders tend to take a mathematical approach to trading, relying on indicators to decide which stocks to trade and when. Unlike fundamental traders, who tend to apply more individual judgment, trend traders tend to stick to the numbers.

We’ve already discussed one example of this – using crossover moving averages as a signal. In fact, one of the most common of these is when the 50-day moving average rises above the 200-day moving average, crossing it from beneath – this is known as a golden cross.
Similarly, when the opposite cross happens – the 50-day average falls below the 200-day one – this is known as a death cross. One system could be to buy when a golden cross occurs, and sell when a death cross shows up.

Because this is a very well defined strategy, it is easy to go back and see if the strategy would have generated profits using historical data. The trend trader can then discard any strategies that obviously don’t work, and then optimize the ones that do by changing the parameters – for example, using periods other than 50 and 200 for the two moving averages.

Of course, this is a very simple example of a trading system – and because of its notoriety it’s unlikely that it will produce staggering returns anymore. Trend following systems can be much more complicated of course.

Because they are all well-defined, they are relatively easy to automate using computerized trading systems. This not only reduces the amount of manual work that the trader needs to do, it also takes a lot of the emotion out of the equation – which is important, since emotions often lead to trading mistakes.

Even if they are able to completely automate their trading, however, trend traders shouldn’t make their systems too complex. First of all, this means that they could fail in unexpected ways – more complexity makes systems more unpredictable. At the same time, there is the risk that they develop a system that fits all the historical data perfectly – just because it has been tuned to do that – but really has no validity when it comes to anticipating future market behavior.

**Curve-fitting and other biases**

Indeed, trading systems that work well on past data do not always work well on future data. Curve-fitting a system to past data is just one of a number of biases that a trader needs to overcome in order to develop a system that is robust and ready to use on real markets.
Selection bias dictates that a trading system's performance could just be by chance, while survivorship bias can impact on a system by not taking into account securities that have since fallen off of the exchange.

Traders need to understand the principles of sound system design in order to create a system that will not fail on live markets. Since there is no quicker way to the poor house than by following a badly designed trading system

**Does trend following work on stocks?**

Before we go much further it's worth demystifying a couple of things about successful trend following.

Firstly, there are very few trend following funds in the world that trade stocks alone and the reason for this is that a core element of successful trend following is diversification.

Put simply, individual stocks are very closely correlated; they tend to all move up together and all move down together therefore trend following on stocks needs to be done slightly differently.

Instead, most trend following funds are run by CTA’s (commodity trading advisors) and they typically trade a diversified basket of different futures. Commodities such as gold, wheat, crude oil, bonds such as US Treasuries, currencies and stock indices.

Many trend following funds trade around 60 different futures markets and they use correlation matrixes to spread their risk over different types of markets.

But back to trend following on stocks and it’s clear that the strategy can perform well on stocks so long as it is tailored sufficiently.

There are several academic papers that suggest trend following is a viable option when trading stocks but there are some key takeaways to take note of.
Firstly, shorting stocks is shown to be not very effective in trend following models since stocks have an inherent upward bias. Unlike a currency pair which is unbiased to either direction, most stocks are productive assets that move higher over time according to earnings and inflation.

As a result, diversification when trend following stocks is hard to come by and this means that a trend following approach can not be expected to perform at it’s maximum all the time.

There will come bear market years where stocks go down and in this instance, a trend following stock portfolio will find it near impossible to make money.

The solution to this may be to find a filter or market timing mechanism; some way to switch out of stocks when the overall market is entering a bear stage. Perhaps, when the broader market index is trending down, trend following funds can move out of stocks and into cash, or bonds.

Overall, the evidence suggests that trend following works on stocks for the same reason it works on other markets; it enables the capture of long tail returns, the stocks that go up and up and up.

**Famous trend followers**

Interestingly enough, once you take out famous investors such as Warren Buffett or George Soros, some of the most famous traders of all time can be described as trend followers.

(Even George Soros, who takes a heavy fundamental approach to trading, relies on ‘riding’ trends and his own theory of reflexivity. In a way, Soros’ technique is based on following trends and staying with markets that are moving in one direction).

One of the most well known trend followers is Jesse Livermore, a trader from the Great Depression era who was immortalised in the classic trading book ‘Reminiscences of a Stock
Operator'. Livermore made and lost many fortunes during his career and his writings are still the cornerstone of modern trend following strategies.

Livermore would not have had a mechanical system as such, but what he did have, was an ability to buy stocks that were going up and sell stocks that were going down. He also preferred to cut losses short and learnt from experience that there was often more money to be made by doing nothing than by trying to catch every little move in the market.

A little later than Livermore, Nicholas Darvas was another trend follower who made it big in the markets, turning $25,000 into $2,000,000 in just a couple of years during the 1950’s.

Darvas’ approach was based on boxes. He would draw boxes around the recent price action and when a stock broke out of the box he would buy it and ride the trend higher. When the stock fell back into the box he would sell and he would always prefer the strongest momentum stocks.

The late Richard Donchian was another trend following pioneer who was around from the 1960’s and Donchian also began the process of computerised trading which inspired fellow trend follower Ed Seykota.

Other famous trend followers include Richard Dennis and the Turtle Traders who were profiled in the original Market Wizards book by Jack Schwager. Dennis made many millions trading a simple breakout strategy in the commodities markets and taught the strategy to a bunch of students who had no experience in the markets, who ultimately also made millions of dollars.

William Eckhardt was Dennis’ partner at the time, and Eckhardt still operates his flagship trend following fund today. It’s been going since 1980’s and has over $300 million assets under management.

Other high profile trend following funds that are in operation today include Bill Dunn’s Dunn Capital which returned over 50% in 2008, Michael Clarke’s Clarke Capital (founded in 1993) and David Harding’s Winton Capital which holds over $24 billion in assets.
Indeed, 2008 was a standout year for trend following funds as the strategy was able to make money while nearly every other strategy fell deep into the red.

Following is a larger list of high profile trend following funds that exist today:

- Abraham Trading founded by Salem Abraham.
- Altis Partners.
- Beach Horizon founded by David Beach.
- BlueTrend, from BlueCrest Capital.
- Campbell & Company.
- Chesapeake Capital founded by Jerry Parker.
- Clarke Capital founded by Michael Clarke.
- Covenant Capital.
- Drury Capital Inc.
- Dunn Capital founded by Bill Dunn.
- Eckhardt Trading.
- EMC Capital founded by Liz Cheval.
- Hawksbill Capital.
- Millburn Ridgefield.
- Mulvaney Capital Management.
- Sunrise Capital.
- Transtrend.
- Winton Capital.

What happened in 2008?

As mentioned above, trend followers cleaned up in 2008 as stock markets imploded and huge price moves were seen across many different markets.

One incorrect assumption is that trend followers made all that money in 2008 shorting stocks but that isn’t the case at all. Trend followers rarely short individual equities and a lot of the money made by trend followers was in other areas.
In particular, trend followers made big money from US Treasuries and bonds which soared during the financial crisis. They were also able to capture big gains in crude oil, on the long side and on the short side when the commodity reversed.

Many also did well in other commodity markets; pork bellies, sugar and gold. And there were big profits to be made too in currency pairs such as GBP/USD and USD/JPY.

As mentioned earlier, a crucial part of successful trend following is diversification and in 2008, we saw many uncorrelated markets post big trends in different directions. Near perfect conditions for trend following.

**Is trend following dead?**

Since 2008, the performance of trend following has been more sporadic causing some to claim that the strategy no longer works. 2011 was a particularly choppy year for trend followers and saw most trend following funds finish the year in the red. But the years either side of 2011 have not been kind either and most traders have found it hard to match the impressive returns witnessed in stocks.

Below is a chart showing the aggregated performance of a number of trend following funds compiled by iasg.com. Notice how the index has been in a drawdown since 2011.

![Chart showing trend following performance](chart.png)

The table of results also shows how trend following has been less successful in recent years:
However, the truth is that trend following has been claimed not to work many times before and whenever that’s happened it’s usually been a good time to start trend following again.

It is worth remembering that the average trend following fund made money nearly every year between 1994 and 2009 so it’s perhaps only natural for the strategy to have a slower period. Especially considering the attention, and therefore new traders, it’s gained since 2008.

What do trend followers say?

Nevertheless, there are still some of the opinion that trend following has seen it’s best days. Even Winton Capital, one of the largest trend following funds, released a paper arguing that although trend following is not dead, there has been evidence of a degradation in performance.

Winton said “We find trend following systems to be effective in forecasting future price movements, but we observe a significant and persistent decline in the forecasting ability of those with the fastest turnover.” Historical Performance Of Trend Following, December 2013.
And it’s also worth noting the closure of one well-known trend following fund in 2012 - that of John W Henry, who is also owner of the Boston Red Sox.

Moreover, some trend followers lay the blame at the Federal Reserve, claiming that the excess of liquidity has created an artificial, low interest rate environment that has seen normal trends hard to come by.

For me, that seems like a poor argument. In my eyes, trend following is precisely the strategy that is intended to profit from such unusual periods of market activity. Huge levels of monetary stimulus should lead to big trends and ultimately bubbles. These are the long tail events that trend following is supposed to thrive on.

My hunch is that it’s only a matter of time before record levels of stimulus translate into huge financial trends and bubbles, and when that happens, trend following will have it’s time in the sun once again.

**Update March 2015:** As of March 2015, it does indeed seem that the naysayers were too quick to cast aside the strategy of trend following. Take a look through the performance of the major trend following funds and you will see that 2014 was one of the best years ever for trend following. Mulvaney Capital in particular returned over 60%.

**Conclusion**

Price trends have always been and always will be a key feature of financial and equity markets. In some cases, they are linked to external events, but in many cases they are driven by technical factors or by the sentiment of market participants – independent of fundamental drivers.

Traders who understand this and can both identify and exploit trends have the potential to generate large profits.
However, anyone who is considering getting into trend trading has to understand that they are not going to win all of the time. They need to take a scientific approach to trend trading, eliminating any emotional involvement – whether that is the thrill of victory or the agony of defeat.

Given that the majority of trend trades will not work out, they mustn’t commit too much capital to any one deal, and must ensure that their potential losses are well understood and limited.
1. Testing a 50 day moving average strategy on stocks

One very basic but popular trend following strategy is based on the 50 day moving average. But can this simple strategy can work in today's markets?

50 Day Moving Average Strategy

To test the 50 day moving average strategy I loaded up the Amibroker trading platform and wrote some basic code. In this first test, the system buys a stock when the 50 day moving average crosses over the 200 day moving average. It sells when the 50 day moving average crosses back under.

(This is a portfolio system that holds a maximum of 10 stocks at any one time. Risk is divided into 10 equal positions and commissions are set at $12 per trade. This was tested on stocks in the S&P 1500 US stock universe between August 2000 and August 2010. Trades are entered on the next day open.)

Test 1:

Buy = 50 day MA (close price) crosses over 200 day MA.

Sell = 50 day MA crosses under 200 day MA.

Results: CAR: 16.94% Max Drawdown: -54%
As you can see, over stocks in the S&P 1500 between 2000 and 2010, this simple 50 day moving average strategy actually did very well.

Bear in mind that the buy and hold return on the S&P 599 was just over 2% (nominal return) over the period with a 57% maximum drawdown.

2. 29 rules for trend following on stocks

1. Price is everything.
2. Ignore the news.
3. Buy a stock when it breaks out of a range.
4. Sell a stock when the trend changes.
5. Buy a stock when it makes a new high.
6. Short a stock when it makes a new low.
7. It’s harder to short stocks than it is to buy stocks.
8. Some stocks trend more than others.

9. Diversify when you can.

10. Ignore the whipsaws.

11. Don’t chase the market.

12. Let your winners run.

13. Cut your losses short.

14. A stock can always go higher and always go lower.

15. Don’t get out before the trend changes direction – look to catch the middle.

16. Trend followers have more losers than winners.

17. 40% is a good percentage of winners for trend following stocks.

18. Put your stops far enough away to allow the trend to develop.

19. Don’t fall in love with a stock.

20. Don’t pick bottoms.

21. Don’t pick tops.

22. Don’t try and predict the market – go with the flow.

23. Follow your signals.

24. Trade small enough you won’t go broke and large enough to make it worthwhile.

25. Compound your returns.

26. Trend following stocks works best with a system.

27. Back-test your system.

28. Don’t forget delisted stocks.

29. Stick to the system.
3. Trend Following For Stocks: Complete Trading System

There is significant evidence that trend following strategies can work just as well on stocks as on futures. Big trends exist in the stock market, just like any other asset class. And exploiting those trends can be hugely profitable.

It’s for this reason that I decided to come up with a complete trend following trading system for stocks and make it available to those that are interested.

This strategy is not just about the right buy and sell rules, it’s about the whole process of portfolio management, trading signals, and following the right methods for gaining an edge.

A lot of time has been put into testing different rules and I am now very pleased with the system’s out-of-sample results, (+45% in 2013 for example). The full system equity curve can be seen below:

As the equity curve above shows, this is a high performing strategy with a reasonable drawdown. The strategy has been able to withstand 30 years of market conditions, through both bull and bear markets. This system was tested on reliable, survivorship-bias free data and has delivered millions of dollars in trading profits.
For more details about Trend Following For Stocks: A complete Trading System, please see http://jbmarwood.com