# Trend Following - Basic Concepts

## Introduction

Trend following is a concept widely used in both intermediate-term investment and short-term trading. The technique plays on the premise that once a market trend is firmly established then it is likely to continue into the future. Traders therefore simply need to determine the direction of the trend, and then "follow" it until the trend changes direction. Trend following strategies are typically both long and short – that is, they can recognize and profit from both rising and falling prices.

The most commonly used entry and exit signals are moving average cross-overs. When the fast moving average crosses above the slower moving average, a long position is taken, and when the fast moving average crosses below the slower moving average the long position is exited, and a short position taken. Short-term trend followers, for example, may be on the lookout for 5 day vs 20 day cross-overs, while longer-term traders may be interested in 50 day vs 200 day cross-overs.

Because it is so intuitive, trend following is widely used (and sometimes misused) by novice and advanced traders alike. The technique is easy to implement even without a sophisticated trading platform and entries and exits are easily identifiable on a basic chart (see below). The technique is also easy to explain, which probably account for the large number of technical funds and CTAs that sell their products and services on the back of trend following strategies.

In order for trend following strategies to work, these need to be applied to data series that actually exhibit a tendency towards trending. Commodity prices are generally understood to do so, as do some forex pairs. Stock market series, however, are less inclined to exhibit long-term sustained trends. Back-testing each trend-following strategy is therefore critical to determine its relevance and effectiveness to the financial instrument being traded.


*Example of Long and Short Entries of a Trend-following System*

In this paper we will look at a couple of very simple trend-following strategies to determine whether they could be implemented profitably on US stock market data series.

## Analysis

In this example we will apply a classic 50/200 day moving average crossover strategy to the daily time series of US equities. For the sake of simplicity, all stocks within the S&P100 Index will be studied from 1995 to 2010, and the results collated into a single equity curve.

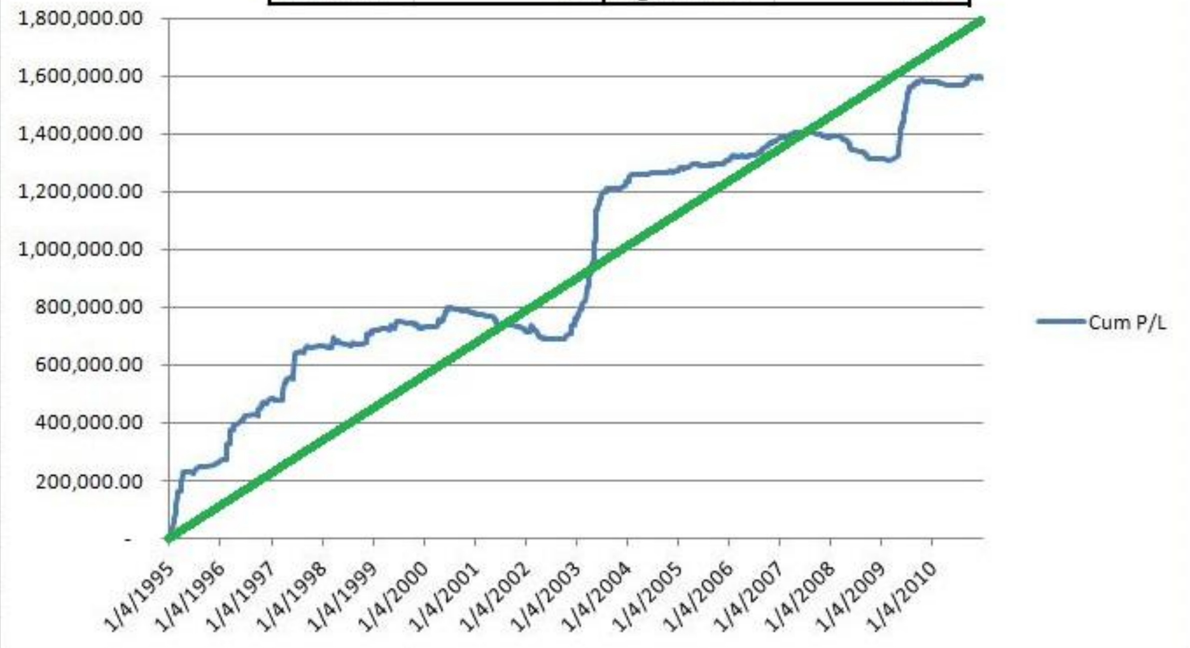
Both hedged and unhedged results will be generated for comparison.

### Long System

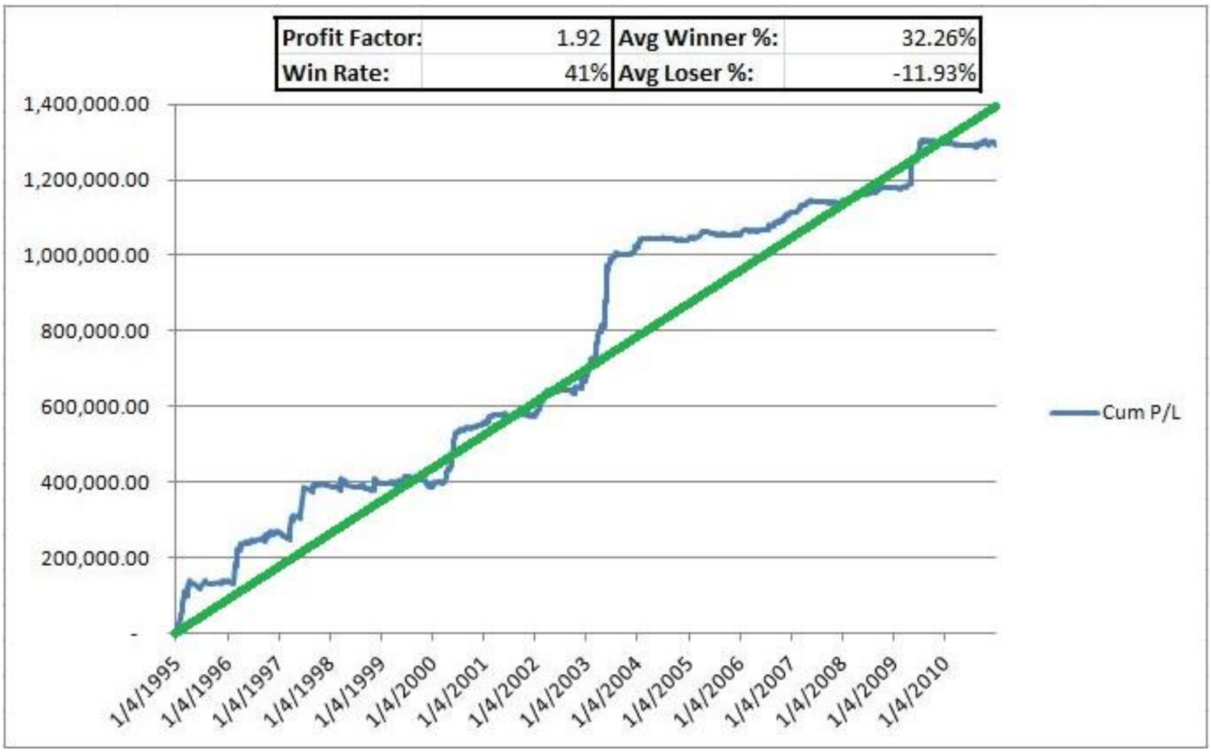
- Instrument: all stocks in the S&P100 (as of mid 2013)
- Period: 01/1995 to 12/2010 (16 years)
- Entry: Buy at today's close if the 50 DMA crosses above the 200 DMA
- Exit: Sell at today's close if the 50 DMA crosses below the 200 DMA
- Trade size: $10,000 per trade

Unhedged results:

| | | | |
|---|---|---|---|
| Profit Factor: | 3.64 | Avg Winner %: | 47.88% |
| Win Rate: | 45% | Avg Loser %: | -10.96% |



Hedged results:




The results here are quite good. With the unhedged trades the modest win rate of 45% is compensated by an average winning trade that is more than 4 times larger than the average losing trade. This yields an excellent profit factor of 3.64.

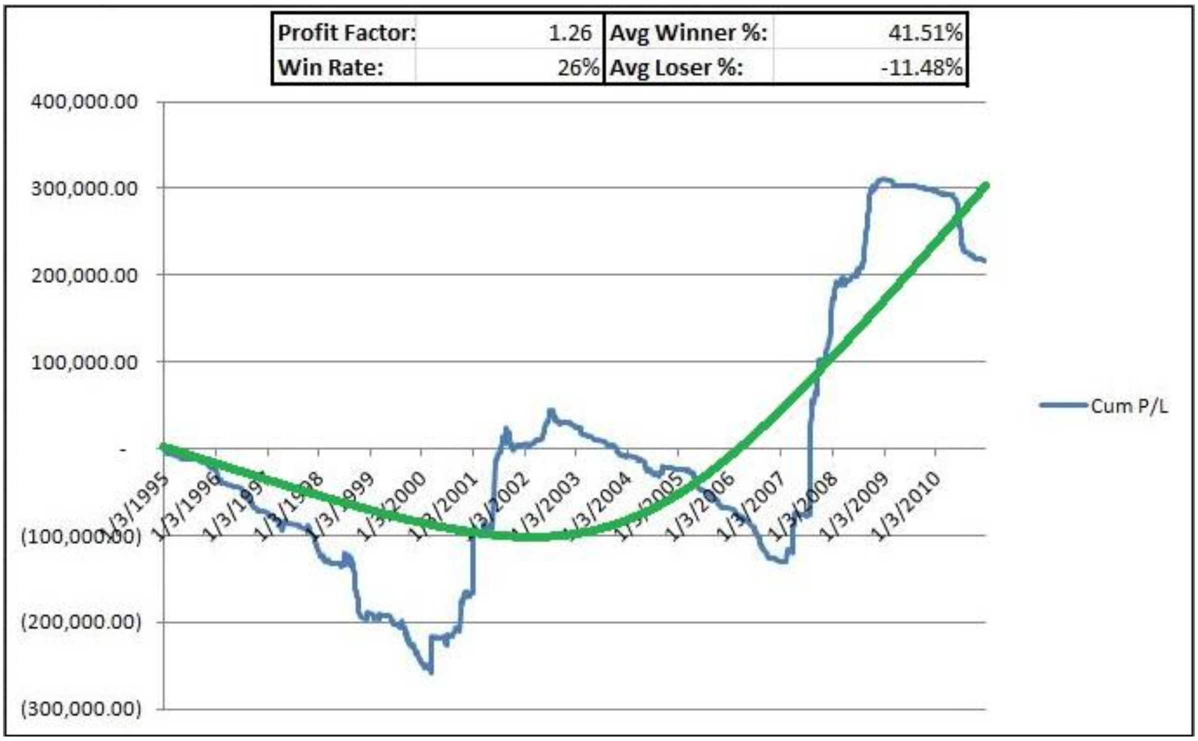
The equity curve however shows signs of weakness during long-term bearish market conditions (2001-2002 and 2008-2009). Hedging these trades with a corresponding short position in the SPY yields the second equity curve. This is a little smoother, with some flatline periods but practically no noticeable dips.

Based on these results it would seem that using a simple trend following technique such as this 50/200 DMA cross-over for long entries is likely profitable in the long run. Moreover, hedging each trade can further protect from downside risk.

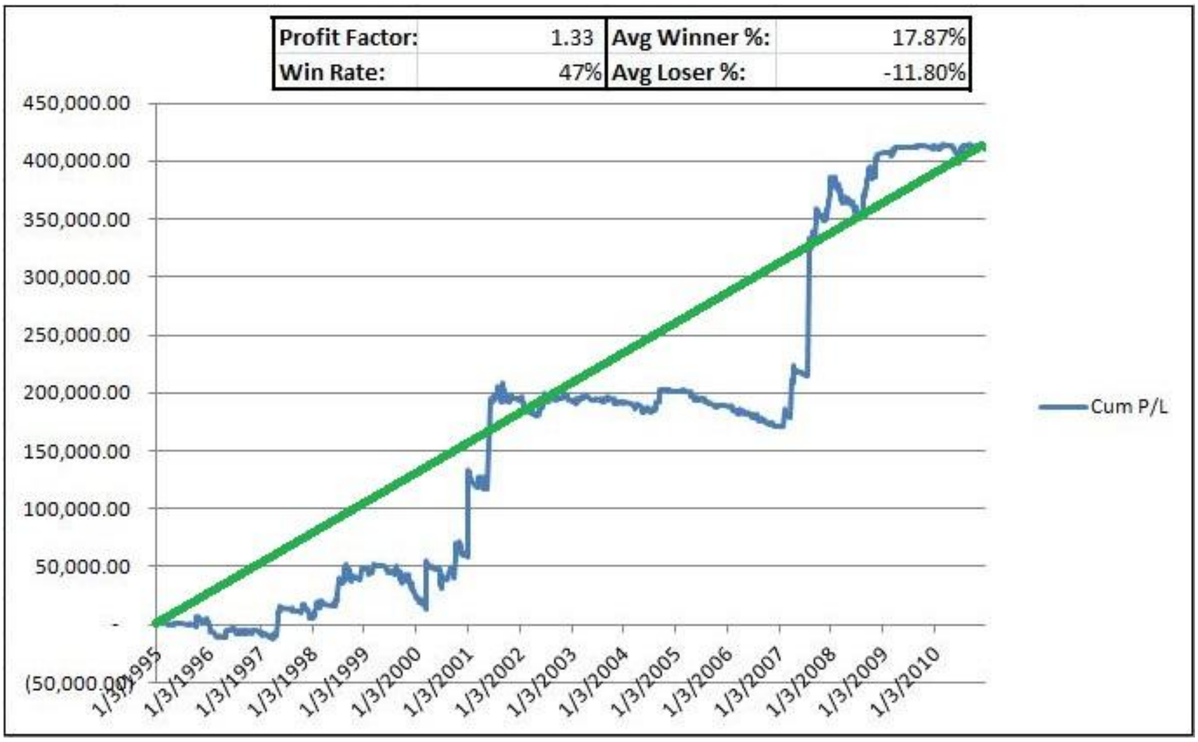
**Short System**

- Instrument: all stocks in the S&P100 (as of mid 2013)
- Period: 01/1995 to 12/2010 (16 years)
- Entry: Sell short at today's close if the 50 DMA crosses below the 200 DMA
- Exit: Buy to cover at today's close if the 50 DMA crosses above the 200 DMA
- Trade size: $10,000 per trade

Unhedged results:




Hedged results:




The results of the short trend-following system are rather disappointing. Here too the average winning trade is approximately 4 times bigger than the average losing trade. However, the 26% win rate is very low, yielding a profit factor of only 1.26 over the period.

Hedging each short trade with a corresponding long position in the SPY yields the second equity curve. This is somewhat more attractive than the unhedged curve, but still quite choppy. Essentially the system performs rather well during market crashes (2001 and 2008) but remains flat or marginally profitable the rest of the time.

In view of these results, it would appear unwise to use this type of long-term trend-following system to enter short trades, be they hedged or not.