

An Introduction To Serious Algorithmic Trading





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1. A budding retail trader's story

Meet Larry, a fictional character with a fictional name chosen completely at random, whose journey represents that of the typical retail trader's.

Larry started trading FX a few years ago.

In his quest for trading excellence, he read multiple online tutorials, followed several forums regularly and poured through a staggering number of price charts over time.

He tried his hand at trading fundamentals, technical analysis, price action and more, both manually as well as via commercial (and free) automated trading robots.

Each had its pros and cons.. as do most things in life.

What became clear to him very early on though, was that discretionary trading is an art in itself, requiring not only skill but patience and mental fortitude of epic proportions.

If you're wondering what any of this has to do with serious algorithmic trading, keep reading..

1.1. Why automated over manual trading?

For him, automated trading offered the opportunity to trade without any emotional involvement, an opportunity that would enable him to:

1. Focus on the logic and rationale behind his trading ideas,
2. Avoid the stress of indecision (entering too early, late or not at all),
3. Avoid other limiting factors such as human error, greed and fear.

After several unprofitable attempts at using both free and commercially available trading robots, he decided it was time he went solo.

Going forward, he would commit to putting in the time and effort to create his very own algorithmic trading strategy – one that he would author from scratch, using his own experience and intellect.

And off to the proverbial drawing board he went.



1.2. His first algorithmic trading strategy

Fast forward some time, he came up with what he thought was a great strategy using technical analysis:

1. It involved moving average crossovers,
2. Survived a 15 year backtest on multiple currency pairs and timeframes,
3. Had a great risk/reward ratio in backtesting,
4. Fairly smooth equity curve,
5. A tolerable historical max drawdown,
6. An acceptable level of stagnation over time,
7. And survived all major financial crises during the backtest.

1.2.1. The rules

The rules of the strategy were:

1. GO LONG at the open of the next price bar, when the FAST Moving Average (MA) with lookback period "x" crosses above the SLOW Moving Average with lookback period "y".
2. GO SHORT when vice versa.

In summary, the conditions necessary to trade in either direction were:

If $MA(x) @ Time (t_c - 1) > MA(y) @ Time (t_c - 1)$: GO **LONG** @ Time t_o

If $MA(x) @ Time (t_c - 1) < MA(y) @ Time (t_c - 1)$: GO **SHORT** @ Time t_o

.. where t_c refers to **Closing time**, and t_o refers to **Opening time**, of the price bar.

1.2.2. The backtest

He backtested the strategy over 15 years of currency data, the strategy performing consistently well throughout.

His hard work having apparently panned out really well, he was confident that it would perform in similar fashion in live market conditions and launched it live.

1.2.3. The forward test

After some time however, the strategy started losing more than it ever had in backtests.

This was most unexpected...



Genuinely puzzled by this outcome, he:

1. Went through all trades executed so far with a fine-toothed comb.
2. Backtested the strategy over the same period as it had been live.

... only to find a dramatic difference between the performance in backtesting vs live trading.

1.2.4. It doesn't work... now what?

Perhaps the strategy was missing something.

Perhaps he needed to filter price-based signals a bit more in live trading than in backtesting to account for live market dynamics?

He tested this theory by adding a select group of indicators for filtering out bad signals, which had the welcome effect of eliminating several losing trades from the backtest results.

"Surely the added layer of price filters will have a positive impact on future live returns", he thought... and launched this revised strategy live.

Fast forward to several iterations of such indicator addition, deletion and parameter-optimization, Larry has still yet to find a solution to the strategy simply not behaving in live trading as it does in backtesting.