

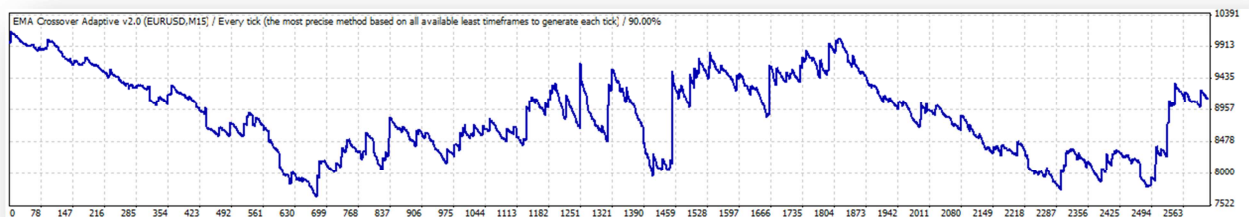
Adaptive Trading Robots

Information technologies are expanding with exponential growth. Artificial intelligence marks significant progress during the latest years. Researchers have more and more sophisticated tools for analyzing datasets and make accurate forecasts. Automated trading on financial markets also benefits from these new technologies. Expert advisors become more and more sophisticated and their performance increases. Automated robots already outperform the human trading in several ways:

- ❖ Expert advisors watch the markets 24 hours a day and don't miss any good opportunities to enter a trade.
- ❖ Software robots can perform millions of calculations, comparisons, analysis within a second.
- ❖ There is no emotional aspect of trading.
- ❖ They make fast decisions and react immediately.

No human can compare to the above mentioned capabilities of trading robots. And yet most of the expert advisors tend to lose money in the long run. Where does this paradox come from? The answer is that most of the expert advisors lack intelligence. They stick to a strategy and strictly follow its rules while markets are changing constantly. Today's best strategies will probably fail tomorrow.

We at RoboFx are following the current trend in technologies and have developed new generation expert advisors – adaptive systems capable of optimizing themselves in real time. This method can be applied to almost any trading strategy. It explores all possible parameters of the trading strategy and the best are selected. When markets change new best parameters appear and are automatically updated. If it happens that none of the strategy parameters bring profit, the expert advisor can stop trading for a short period. Thus it will avoid losses which the standard expert



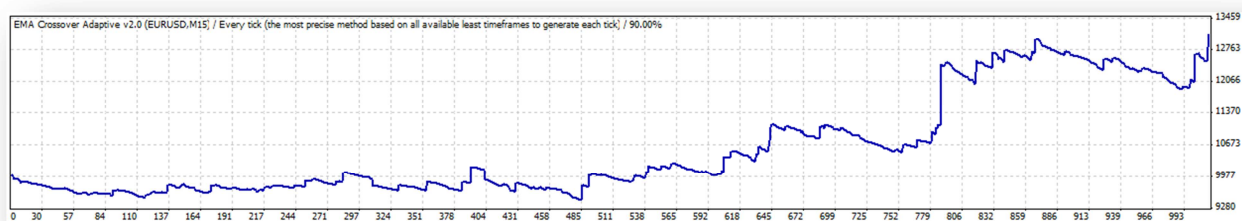
advisors will accumulate.

To better illustrate advantages of adaptive systems we provide a simple example. We took the most basic strategy – Moving Average Crossover. A long trade is opened if a bar closes above the moving

[Image 1]

average. The long trade is closed when a bar closes below the moving average and a sell trade is opened at the same time. Starting balance was 10,000 \$. We run this strategy in the MetaTrader backtester on EUR/USD 15 min chart for the period of 3 years with 0.1 lots per trade. Result is shown on Image 1. In fact very few expert advisors will pass 3 year test period finishing in profit.

Then we applied our adaptive algorithm to the same strategy and made another backtest for the same 3 year period of time, same conditions (Image 2). You can clearly see the difference. Even that simple strategy was made profitable. No tricks here! Net profit and profit factor significantly increased while consecutive losses and drawdown were reduced. Total number of trades is much smaller. Obviously the expert advisor stopped trading for some periods preventing losses and re-enabled itself when market conditions became better. Adaptive algorithm can select the best among different parameters: profit factor, win/loss ratio, consecutive losses or the best of all parameters



combined.

[Image 2]

Adaptive expert advisors are very promising and our efforts in this direction will continue for sure. Unfortunately they have few drawbacks as well: every trading strategy has to be approached individually to make it adaptive and complexity of development is high.

Keep an eye on us at <http://www.robofx.org>