

# ForeStock Frequently Asked Questions

## Predictors and indicators

**Q:** Some algorithms in ForeStock guide are referred as predictors, others – as indicators. What is the difference between these two kinds of algorithms in trading usage?

**A:** ForeStock offers classical indicator style algorithms intended as the analysis tool for historical data and as an auxiliary supplement in building custom strategies by the user. Indicators are very similar in their usage to the standard technical indicators common in most trading platforms.

Predictors, even though very similar in display to indicators, are much more elaborate algorithms in mathematical sense. They are designed not to simply monitor the price dynamics, but to predict future dynamics depending on existing historical prices. Predicted future price serves as the advice to trader to make immediate decision on the current positions to maximize returns. Trader may wish to perform certain actions depending on the predicted price change. For instance, trader may wish to close position, if he will see that the price is likely to move down on the next bar, according to predictor. In this way, predictors serve as precise trading advisors.

## Displacement issues

**Q:** TradeStation, Ninja Trader and other trading platforms allow showing indicators with some displacement against original price chart. How we can pick up the best displacement for ForeStock indicators?

**A:** ForeStock is not just another technical indicator suite. Instead, it is the complex forecasting engine carefully tuned up to the incoming data stream. We took extraordinary efforts to ensure the precise synchronization with the incoming data to achieve the best possible accuracy of market indicators.

Artificially displacing indicator against its original market synchronization will completely obscure its built-in forecasting ability and will produce completely misleading results lacking any validity. It will yield artificial results and will prevent the tests on historical data to match real live market performance because broken synchronization will cause engine to use forward-looking information and fake all historical testing process. At no circumstances user can introduce any displacement to ForeStock indicator displays to avoid false results and overall confusion.

Predictors behave different to indicators in terms of displacement. By meaning, they express future value intrinsically displaced into the future on the number of steps equal to the forecast length input into algorithm. We calculate market predictions for the next market step or, with the less accuracy, for the few next steps. It is advised and encouraged to adjust manually predictors exactly to this amount of forward steps (typically one) to get best trading advises.

## Optimal market depth

**Q:** User manual gives special table of allowed input lengths for each algorithm inside ForeStock. Why different algorithms require different length of input data? How we can choose this length optimally in each case to achieve the best performance?

**A:** ForeStock contains algorithms of different complexity levels. Simple algorithms typically work well on very short input data. However, many algorithms inside ForeStock are adaptive. It means that they automatically adjust their settings based on input data to achieve best forecasting performance.

As with humans, algorithms have only one way to learn – they learn on the previous experience. This experience is passed to algorithm in a form of market history. The longer history is provided, the better experience will have algorithm to learn. As with humans, there is no guarantee that algorithm will learn well, provided it has good initial data. However, not giving enough data is solid guarantee that even good algorithms will have no experience to educate on it properly.

Each algorithm has the minimal survival data length. Without minimal data, it simply cannot live and operate. All initial data points on chart will be just void until this minimal limit is reached, indicating that algorithm is not operational until enough data history has been collected. However, it means exactly the survival limit. Calculation starts immediately as soon as the limit is reached. Nevertheless, it does not mean that calculation on these limit conditions is perfectly accurate. Algorithm with the minimal data is as the newborn baby: it is very unnatural to expect from it to be market genius. You must teach it with enough historical data to expect better professional expertise. The more data you provide the better results you can expect.

On another side, the calculation time grows with the amount of data. On the real time stream forecast will appear useless, if it arrives later than the forecasted event really happens. Hence, the user must choose the balance between the desired accuracy and the allowed data depth to get the timely market advises depending on performance of computer.

### **Missing values in indicators**

**Q:** In some cases, indicators have some points missing or are completely void. Does it mean ForeStock does not work?

**A:** ForeStock is the full-fledged expert system in market forecasting. Unlike the vast majority of simple technical indicators, it makes very complicated market modeling to produce expert inference on the future market trends. As any real expert, ForeStock cannot always have the exact opinion on the market trend. In some cases, it may have just not enough data for that. Then the user is responsible to provide more market depth to algorithm to expect more accuracy. In other cases, data appear just too volatile or dubious to make any clear expert decision. In such situation, ForeStock gives the void result, which means “no clear advice available on the moment”. As any professional and honest expert, ForeStock is not afraid to admit its limitations in certain situations. It is much better to sustain from advice, if conditions are vague, than giving false advise and provoking possible losses.

### **Recurrence of results**

**Q:** We run ForeStock several times on the same or slightly changed input data and obtain the results, which do not match exactly in each case. Does it mean that the results are unstable and not trustworthy?

**A:** ForeStock contains very complex forecasting algorithms. It includes wavelet regressions, neural networks, complex statistical optimizers and nonlinear filters. These technologies involve

calculations thousands times exceeding in volumes all typical indicators supplied with trading platforms. All computers operate on finite precision arithmetic. It typically has 15 digits accuracy. In very long and complex calculations even small discrepancies tend to sum up and bring noticeable divergences preventing the results of several runs to coincide exactly even on the same data supplied. What matters here, is the tendency in behavior of such errors.

If the results of several consecutive runs do not differ considerably and has the tendency to match exactly with the increase in the input data volume, then we can tell that algorithm is stable and has the convergence point in the multidimensional phase space. In other words, we can say that algorithm has attractor, which guarantees statistical accuracy and consistency of the results on the ensemble of representative input statistics. Convergence is governed by Lyapunov exponents and other chaos measures. This style of convergence escapes full literacy and exhibits sporadic misfits and other phenomena. Key indicator is then steady decrease in the number and amplitude of such deviations with increase of data series length, which indicates underlying model convergence to stable result in terms of its phase space.

Results of all ForeStock algorithms generally coincide in consecutive runs. Coincidence is, however, not literal because of convergence aspects of inner ForeStock optimizers. On short data series, coincidence is poor or even completely absent due to statistically insignificant data. Coincidence much improves on longer series and gets better with additional data added in most cases. It indicates correct model structure and its applicability to market forecasting. In many cases, good reproduction of results requires quite long data series of thousand points and more. Exactly this statistical convergence gives to ForeStock fundamental benefits over the most common technical indicators.