

## INFORMATION SYSTEM FOR ANALYSIS AND FORECASTING OF FUTURES MARKETS

M. Odnovol, A. Alekseyev  
(Ukraine, Dnipro, National Mining University)

We considered different approaches to the analysis and forecasting techniques of futures markets. We also studied methods of working with the use of technical analysis.

Existing software products that allow technical analysis of futures markets are considered. All of them realize powerful indicator and oscillator analysis, they are equipped with fast access to mass media, but they limit this. Other existing methods of technical analysis are not used in them.

In the analysis of futures markets, the following types of trends are distinguished:

An upward trend (ascending trend, bullish trend) - each time in the wave is achieved a higher in comparison with the previous value of the course - price movement in which each next local maximum and local minimum is higher than the previous one.

The situation when the market has no development is called the state of the flat market.

Based on these types of trend, we distinguish three states in which our random process (price movement) may arrive: the state of the bullish line (corresponds to the uptrend), the bearish line condition (corresponds to the downtrend) and the state of the "flat" (corresponding to lateral trend).

Undoubtedly, it is possible to consider another decomposition into states. So, for example, we can distinguish four market conditions based on the trend line - the states in which the angle of the trend line and the horizon is in the gaps,  $[-\frac{\pi}{2}; -\frac{\pi}{4})$ ,  $[-\frac{\pi}{4}; 0)$ ,  $[0; \frac{\pi}{4})$ ,  $[\frac{\pi}{4}; \frac{\pi}{2})$  respectively.

The software product can easily be extended to determine any states in any combination in a random process. The program has a convenient, intuitive interface, with well-placed collapsible panels and informative prompts.

The main window of the program has the following form (see fig. 1):

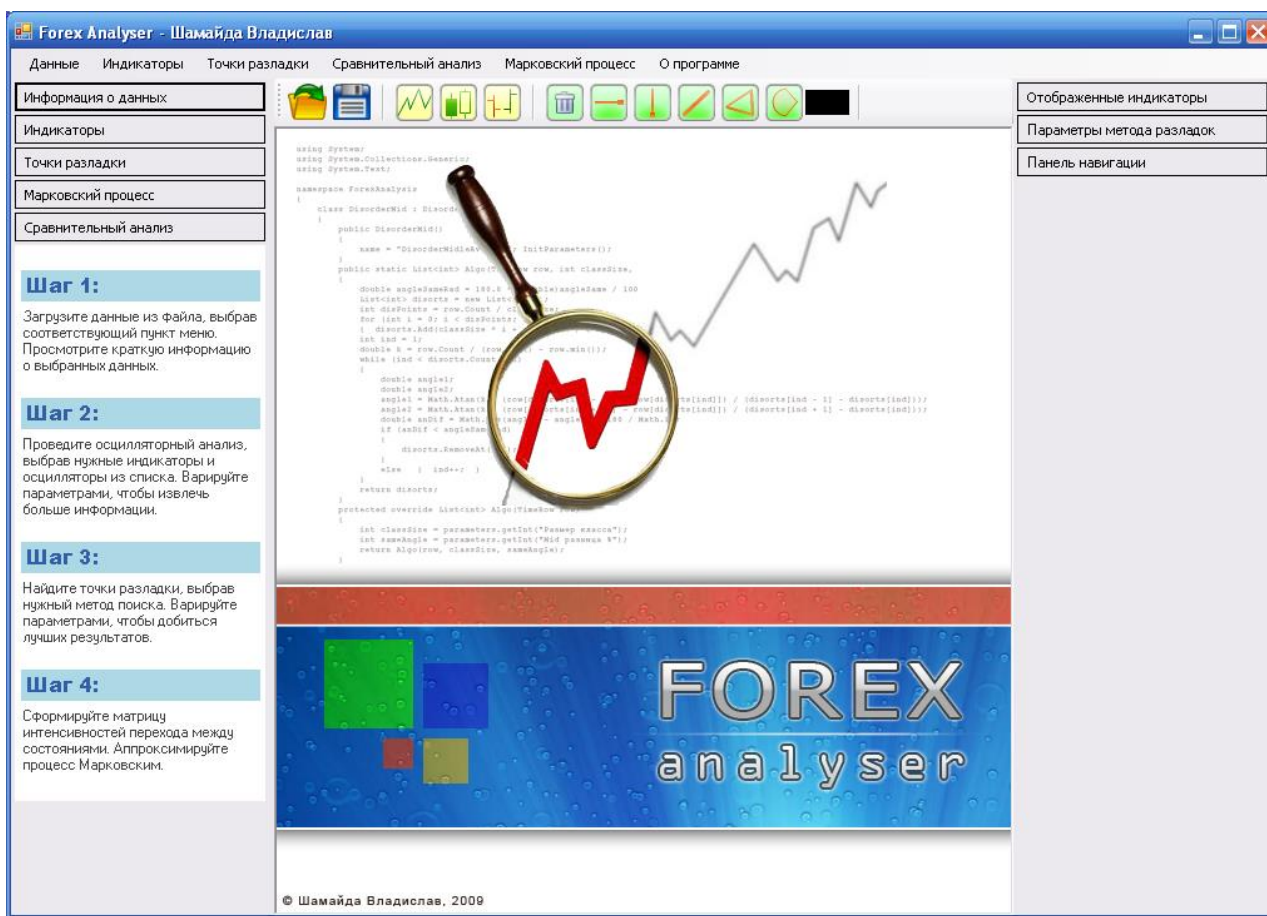


Fig. 1. The main program window

On the basis of the tasks set, a software product was created in which various methods of technical analysis of futures markets data were implemented, as well as the following features and advantages:

- a) primary data processing - anti-aliasing and filtering;
- b) indicator and oscillator analysis, with the possibility to replenish the base with new indicators;
- c) an assessment of the ability of the indicators to give signals of a change in the state of the market;
- d) graphical analysis of the data presented in the form of Japanese candles;
- e) approximation of the development of price dynamics in the market by the Markov process. In this case, the market is considered as a random process with a finite number of states, which are determined on the basis of different types of trend;
- f) for the isolation of market conditions, there are not developed indicator procedures for finding breakpoints (points at which the market changes its state). The base of these procedures can easily be supplemented with new algorithms;
- g) modeling of market behavior and finding the risk functions that reflect the probability of a market being in this or that state;

h) Based on the analysis with the help of indicators, oscillators, Japanese candles and modeling data of the Markov process, a conclusion is made about further development of the market and a decision is made to buy or sell;

i) the software product allows comparative analysis of different methods and procedures for selecting the best of them in each particular situation and for a more accurate result;

j) the software product has an easily understandable user-friendly interface and is equipped with a lot of hints, which makes working with it convenient and more efficient;

An analysis of the indicators was conducted and recommendations were given on the cases of their most effective use, as well as on their joint application.

All indicators are parameterized, the user is given the opportunity to select the parameter values depending on the size of the considered time interval and the urgency of the forecast.

When using indicator analysis, it should be remembered that the indicators do not create new information, but only extract existing from the currency quotes charts and provide it in a more convenient form, so it is possible to see trends that were not visible on the original chart.

It is necessary to understand that the means of technical analysis are limited to knowing what is happening here and now and does not take into account factors of external influence on the market, which, in fact, a lot: from weather conditions to the political and economic situation in the country and in the world. Therefore, technical analysis is rational to use only for short-term analysis.

Experienced traders skillfully combine the possibilities of both a technical and a fundamental approach to the analysis of futures markets.

This work can be useful for beginning traders who cannot take into account many factors affecting the market, as well as students studying random processes and mathematical statistics.

#### REFERENCES:

1. Нисон Стив. Японские свечи: графический анализ финансовых рынков. Перевод с англ. Дозорова Т., Волкова М. М.: Издательство «Диалог», 1998. — 336 с.  
Кудренко Д. В. Анализ информационных технологий задачи оперативного анализа фьючерсных рынков: Обзор /О. Ф. Приставка, С. О. Смирнов, О. М. Хохольков/ - Днепропетровск: Наука и образование, 2003г.-91с