Lecture № 14

Trading Systems

In the previous lectures we got acquainted with the technique of deal execution and technical analysis methods, and considered the major indexes which fundamental analysis is based upon. All potential traders examine these fundamentals as they are necessary for analyzing and understanding any financial market. However, as experience has shown this is not enough. It can be often observed that the same people work in dealing centers in front of the same computers, using the same systems and indicators, seeing and reading the same. However, some of them leave in one or two months, while others continue working. What is the recipe for success of some traders? What allows them to win? What do they see on the screen that allows them to steadily blossom? In reality it's nothing special, it's just that each successful trader has his/her own trading system. We are going to talk about such trading systems in this lecture.

A trading system is a concentration of the experience, efforts and knowledge of a trader. The cost of such successful trading systems is really high – days and nights spent in front of computers, careful and sometimes agonizing analysis of mistakes, and lots of upset nerves. However, as a result of all this, the trader himself, like it or not, creates his/her own individual trading system. It is their professional secret and not because he/she does not want to share it but because it cannot be passed on. There cannot be two similar systems; each trader has their own methods and skills which he/she can share. However, they cannot explain all nuances and subtleties of their market understanding, adjustment, tests, control, etc. The trading tactic should be created by one's own self - from the very beginning, from the first step. And if someone decided to become a real trader – i.e. work steadily and effectively (read, with profit) on the market for a long time – then he/she must create his/her own trading system. There is extended literature where famous traders share their secrets and give examples of their trading systems which helped them to achieve success. It is very useful to familiarize yourself with these systems; however, copying them will not necessarily give you the desirable result and those professionals' experience should be used only as an example. The example shows how to use technical instruments, how to combine the methods of analysis, what can be considered as a wake-up call and when to retreat. It will help to find a rational kernel which will help you to create your own unique trading systems.

The trading system is a rather complicated mechanism which consists of several components, each with its own key value. It is similar to the parts of one machine - if one little screw is not in its place, the whole mechanism will not work or will perform badly. The same is true for the trading system: if some component is not correctly adjusted, the whole work will come to nothing. Moreover, since the same factors in different conditions can lead to opposing market reactions, the system should be rather flexible. The system should also never be static; it should be constantly checked and updated. This would ensure it can provide minimal risks with maximum accuracy of the forecasts made (in this sequence). The system is an accurate calculation, a balance point between several unknown quantities and constantly changing factors. It asks the right question and gives the right answer. Specifically it is all about the trader gaining profit. That is why it is very important to highlight the key points, spread the risks, calculate the point of entering and exiting the market, and choose the appropriate analytical instruments. The trading system is a system of hard rules defining the points (prices), time and conditions for entering and exiting the market. The experienced trader, or in other words, one who has a trading system, is always prepared for any turn of events on the market. He/she can give a detailed account of his/her future actions for any currency. He/she should be able to explain it in detail. If he/she cannot explain this, then he/she cannot understand it but this is an inadmissible luxury which can lead to great loss. The only criterion confirming the effectiveness or inefficiency of any system is the practical result of work.

As mentioned above, the trading system is a system of rules detecting the consequences of several major factors' influence on financial markets. More specifically, it is the combined result of fundamental analysis, technical analysis, risk management and allocation of capital. The concrete embodiment of trading system is trading plan.

The first step of developing a trading system is making a decision on some principle questions. These are questions concerning the allocation of capital, trading strategy and risk management. In other words, he/she should clearly know:

1) The volume of initial funds (i.e. account size); leverage provided by the company (or choosing by yourself);
2) The margin call level (minimal margin for opened position keeping);
3) lot sizes, general level of maximal losses;
4) level of losses by one position, possibility of hedging (for instance, work not only on Forex but also on the currency futures market, if the account size allows it);
5) maximum number of open positions;
6) average amount of profit built in the trading plan, the approximate cost of one point in a given currency, etc.

Then the future trader should decide what tools exactly he/she will use. Traditionally one starts trading with four major currencies, quoted against the US Dollar: Euro, Swiss Franc, Japanese Yen, British pound. Moreover, the trader can work with other instruments: Canadian or Australian dollar, ruble, hryvna or cross-courses. However, traders should know here the relative value of currencies against each other and the cost of one point. After this, it's time for technical analysis: the trader should create a range of means of technical analysis which he/she will use. These include resistance and support levels and/or lines, trends, indicators, graphical patterns, Elliot waves, analysis of Candlestick charts, Fibonacci relations and others. The choice is rather wide, and to make a selection it is necessary to get acquainted with all of them. The process of indicators selection is more complicated. In spite of their huge number, we advise to limit them to the few simplest ones. Indicators from the trend group as well as from the oscillators group should be presented in your set. The choice of indicators mostly depends on traders' work type – intraday trading or medium-term positions. Meanwhile, the possibility of the same indicators' variation is limited only by the technical capabilities of the system.

In the end, the last step is the development of a trading plan is a ready form which the trader will fill in daily in several copies – one for every chosen currency or cross-course. Besides the necessary column with enumeration of technical analysis means and a set of indicators, the trading platform should include a separate line for fundamental analysis with a list of further events, probable data and time of publication. You can also indicate there so-called "market expectations." One more obligatory "ingredient" of the trading plan is columns "Results" and "Check." The result is the trader's reflection: to enter the market or not; if deciding to enter, then what price and what conditions at (for example, after data publication), where to place stop-loss, where to close profit position, etc. In other words, there must be a concrete trading plan for the current day. Thereafter, the column "Check" is filled the next day taking into consideration the results of the previous day: if the trading plan was drawn accurately, if not – indicate reasons and/or mistakes (if possible). It is obligatory to indicate the status of the account by the results of the executed operations – “executed conventionally” for the short haul. With a developed scheme of a trading plan and a methodology of market analysis, the trader is quickly used to the chore, which will become easier and habitual every day. The main thing in this endeavor is discipline. The creation of the trading plan is the first step of trading system development. The created technology of daily work will become the basis for your own system of work at financial markets.

The selection of means and instruments of technical analysis is very important - on the basis of these criteria the trader forecasts the market movements. The main question is defining what is really important and what is useful addition; what is primary and what is secondary; most importantly, which instruments are necessary and why. At this stage of selection and analysis the trader starts working directly on what will become his/her trading system in the future.

Technical analysis tools are used for:

a) revealing the existing trend (ascending, descending or sideways);
b) calculating the points (levels) of entering and exiting a position – major and local.

The usage of instruments such as trend lines, support and resistance levels, graphical patterns (reversal and continuation), and Fibonacci lines in different applications (retracements, fan, arc, etc), Elliot wave theory and analysis of candlesticks will bring invaluable benefits. Indicators are mostly used for:

a) receiving confirmation of entering points;
b) determining the possibility of trend line reversal.

Before analyzing indicators, traders should make analysis using the so-called instruments of “classic” technical analysis. Every trader should understand that indicators are derivations from the prices. With the help of classical technical analysis instruments, traders should be able to get answers to the following questions:

1. What trend is leading at the market (ascending, descending, sideward), which trend is the major one, which one is local (for example, a small ascending correction in the long-term trend).
2. Patterns and their meanings.
3. Whether to use some Fibonacci numbers (after abrupt price movements or for the projection of future movement).
4. What price levels are major points of support/resistance, which ones are local.

Having an idea of what is happening on the market, the trader can proceed to computer analysis. As already mentioned, computer analysis is secondary to the price movement and, consequently, to the classic technical analysis.

Signals and reading of indicators should be considered as confirmatory – or contradictory – to the conclusion made on the basis of usage of classic technical analysis instruments.

A universal indicator does not exist. Any indicator gives only an approximate forecast. To answer the questions what to start and what to finish with, we bring to your attention some advice about the makeup of your own instruments:

1. Trend indicators and oscillators must be in the set. Naturally, a preference to one indicator or another will be shown according to the character of operations to be executed by the trader. In other words, if the trader is going to work intraday, the oscillators should prevail in his/her instruments. If preference is given to medium-term trading, the trend indicators and oscillators should be presented in the instruments half-and-half. If an inclination to long-term trading exists, then trend indicators will prevail.

2. Besides knowing the group names for indicators, traders should know what each indicator is intended for, what signals it gives and what their meanings are. For example, it is thought that ADX is the best indicator for trend beginning determination, and MACD (divergence at MACD) shows its finishing.

3. It is better to have an indicator which can work at a trend and a non-trend market (e.g. MACD – histogram).

4. Indicators calculated on different principles must be in the set of instruments. It helps to avoid duplication (for example, slow stochastics, relative strength index (RSI), and the Rate of Change indicator, moving average and Bollinger bands, etc.). Doubling indicators will often make similar signals, meanwhile the coincidence of indicators calculated by different principles gives rare signals of enter/exit with a more accurate forecast. The set of indicators should not be too wide because you will have to analyze their data in different time periods – from a week to an hour. It is possible to receive discrepant signals even from three-four indicators.

OPTIMIZATION AND TESTING

After the selection of one or two computer indicators it is necessary to test them. Testing is usually done in two steps – through history and on a real-time basis. The testing process helps traders notice some nuances which are rarely mentioned in educational literature. During testing the trader learns how to recognize signals: in the past everything looks simple, but in real time some skills are needed. The trader then makes his/her own list of enter/exit signals and ascertains that these signals do not always correspond to the described ones in the literature during real work.

During the first step of testing the trader decides how suitable the chosen indicator is for future work. In this case the testing process consists of a simple count of the number of correct signals on the basis of the available data. If the trader decides that an indicator is worth working with, the second part of the first step (optimization) starts. In other words, the trader will try to achieve an increase of the number of correct signals. The most common way of optimization is to change the entering variable, with the help of which this indicator is calculated. Methods of mathematic optimization with the help of different formulas are also possible – for example, the computation of the exponential formula, etc. This is good for those who know mathematics or the market very well. It is not necessary to use the same variable for work in different time charts. It can be supposed that on daily charts a moving mean for the period 10 will yield more correct signals, and on intraday charts the optimal number of periods for moving averages will be 5or 7. The main idea is to find the optimal conditions for each indicator to produce more correct signals; that is the aim of optimization.

The second step of testing is based upon the work of an already optimized indicator. The indicator must make correct signals in real time. Traders should learn how to recognize these signals – also in real time. There can be a different number of correct signals, which is why traders will need to make an optimization again.

The third step is combining the signals from all chosen indicators and methods of classic technical analysis to a signal which will determine the moment for entering the market (buying and selling) and exiting the position.

For instance, the signal for entering a short position can be the following situation:

An uptrend is on the market, the last event allowed traders to determine a reversal engulfing pattern (candlestick analysis), at the moment of this pattern’s formation histograms MACD (computer analysis) did not show a new maximum relative to the previous maximum, which means that an opportunity of divergence appeared. A following reduction confirmed that supposition, the breakdown of the uptrend line (trend analysis) became an additional confirmation of the previous signals about a probable trend reversal, the stochastics chart left an overbought area and a downward direction completed the list of necessary components for the signal which was accepted by the trader for the opening of a short position.

Systems optimized up to 90% of success are rare. So please do not attempt impossibilities: a ratio 70% to 30% can be considered as sufficient for successful trading on the market.

Let us now try to create our own trading system. Pay attention to the logic concept which must be used when building a trading system, based upon the theoretical knowledge and observation practice.

So let us first clarify that we are newbies and will follow the main rule – TRADE IN THE DIRECTION OF THE TREND, so our trading system should be developed as a system of trend following. From the beginning we should determine which instrument the trading will be built upon. Then choose the time period of the chart. It depends on what type of trading we prefer. If it is intraday trading, then the time period should be short – 5 – 30 min charts. If trading will continue longer, then chart should cover a longer period of time. I would advise you to start from the time interval which seems to you the most informative. Afterwards, during the correction and optimization of the trading system the optimum alternative will be found.

Let us start the selection of instruments which will be the basis of the trading system (TS). From theory and observations it is known that trend formation is accompanied by the consequent formation of maximums and minimums. These cardinal points are the completion of the formation of continuation patterns (flag, pennon, triangle), which is why they are the first object for our selection, particularly the precise moment of the completion of their formation. In addition, to be sure that trend is continuing it is better to choose a trend indicator. We advise you to include in the set of instruments the following: simple moving average (MA), even better two MAs with different periods, let’s say 21 and 34 (Fibonacci numbers), and, of course, one oscillator because the formation of the above-mentioned patterns occurs in a range, and oscillators work best exactly in a wide-band consolidation of the price, probably a slow stochastic will not be a bad choice. The overall picture of the chart with the applied set of instruments of technical analysis will look as follows (see pic. 1).

Pic. 1. The full set of instruments included in the process of TS development is presented in this picture. The stochastic indicator, MA (21. 34), and trend lines (red dotted line) limit the model of investigation, in this case a pennon continuation patter.

After the strategy and instruments of technical analysis are determined, let us start the chart's analysis and signals' determination. As it was underlined above, we should start with the history (see pic. 2).

Pic. 2. An adjustment pattern was forming on the market (2), the previous price movement and consequently MA (1) shows that it is an uptrend. So the most probable formation is of one of the continuation patterns (it appeared to be "pennon" in this case), so we should consider the option of opening a long position, i.e. buying of the asset. Then we should note that both minimums of the adjustment pattern were accompanied by a divergence formation at the stochastic (3). The next signal indicated the contingency of the growth continuation appearing after the breakthrough from the downward upward MA (4), a signal at point (5) begs to consider the "pennon" as a completed pattern and the uptrend as a continuing one because the formation of continuation patterns is considered to be complete after the breakthrough of the trend lines which clamp them. The signal in point (6) is a confirmation because it is a reverse movement testing the broken trend line concerning the support levels.

Now let us make a line of the signals as they become available:

1- The stochastic outcome from the oversold area and the resulted divergence;
2- The breakthrough of the MA from below by the price;
3- The breakthrough of the trend line which clamps the pennon from above;
4- Test the price of the broken trend line concerning the support.

From these observations the conclusion can be made that we should buy after signal 4 appears. Now we should establish where the order limiting the losses, i.e. stop-loss, must be put. The ideal case is to place it below the MA, closer to the point of breakthrough by the price of the moving averages (in picture 2 point (4)). The less attractive and more costly option is below the trend line which clam the “pennon” from below. The price target which will be the boundary for order execution and a signal which will lead to closing the position before the planned exit must be determined. As it was mentioned in the lectures about continuation patterns, the price target for position retention after the continuation model can be the level equal to the market movement preceding the model formation. We will measure the vertical distance from the previous model to the formed one and plot it upwards, so we can find the target point. A signal for premature exit can be the breakthrough of the MA lined from above, the breakthrough from above the MA of the short period by the MA of the longer period, etc. You can see in picture 3 that the signal for premature exit appeared earlier. The price broke through the MA (7), which became a basis for execution of reversing trade.

Pic. 3. Signal for premature exit appeared earlier, before we hit the target. In point 7 the price crossed both the MA and gave solid grounds for predicting the probable trend reversal.

You should not extend the analysis of one case. The observation of the history should be made until all the options of possible patterns (flag, triangle) cannot be considered and the most number of peculiarities connected with price behavior in the process of models’ formation cannot be determined. After that you can start designating these signals on charts in real time. During this step more concrete remarks and conclusions about the significance of some tools of technical analysis and more viable for real trading points of entering a position. The next step is optimization. The options for changing the data of the tools used should be considered – the change of the stochastic and MA settings (the change of simple moving averages into scientific ones is possible), the work view of the TS at other time periods on the chart, etc. After receiving the optimal results you should start testing your trading system on demo accounts. The more tests for the TS the better; 70% of positive enters and 30% of negative ones is an acceptable result. However, as practice has shown, it is not enough. The last and the most important test will be trying the TS on a live account. The thing is that the most important factor appears only on live trading accounts– the psychological or emotional factor, i.e. trader checks how his trading system corresponds with his psychological individuality and also receives the opportunity to train discipline which is very important in trading. Of course, this step is better to hold on accounts with small deposits which would not cause a great loss. Someone might say that small deposits will not give you full vision of the psychological pressure, and that is true. Still, you can pretend that a deposit of 500 USD is 50 000 USD, or that a position opened with 1000 USD was opened with 100 000 USD, i.e. bring the situation to the amount which is planned for future trading.

Test questions:

1. What is a trading system?
2. Specify the steps for constructing a trading system.
3. What tools of technical analysis, in your opinion, must be used for building the trading system? Explain why.
4. How do you explain the term “testing the trading system”?