**EA on 50% bar distribution**

1. **Description.**

The EA counts the number of bearish and bullish bars over a certain time interval and counts the prevalence of one group of bars over another in %. The final obtained value is the prevalence percentage of one group of bars over another. If bullish bars are prevalent, perform SELL operations. If bearish bars are more numerous, perform BUY operations. Rather than opening a single position, profit/loss is taken on each new bar after a certain calculated number of bars.

1. **Working algorithm.**

The settings allow defining four main parameters: start of the range for calculating the excess, range end, step and excess percentage.

This means that there is the minimum number of bars, within which we should look for an excess with the specified percentage, and the maximum number of bars forming the search range. Moving through the range is done with a certain step and stopped upon reaching the upper range limit or the desired excess percentage.

After the EA finds the number of bars, at which the percentage condition is fulfilled, it remembers the number and continues moving through the range to detect the maximum percentage. To achieve this, it iterates over the entire range with a given step and remembers all values greater than or equal to the percentage specified in the settings. Then it chooses the biggest one and uses it to perform all calculations.

In a simplified form, the algorithm looks as follows: **scan the entire range – find the greatest excess – define, which bars are more numerous (bearish or bullish) – define how many bars correspond to the percentage – calculate the lot –define the position opening direction – open a position – wait for the next bar.**

After defining the excess percentage and the number of bars, at which it occurs, we need to calculate how many bars ahead this forecast is made. To do this, calculate the number of prevailing bars (NB) and subtract the number of remaining bars from it (NM). Get the difference S (NB-NM=S). This is the number of missing bars for obtaining 50% of the distribution of all bars within the specified range. Now add to N bars the obtained value of S to get the minimum theoretical number of bars leading to the equilibrium between bearish and bullish bars. This is the minimum possible value that should be multiplied by the irregularity ratio specified in the settings (К). Therefore, the forecast value is (N+S)\*K=R bars in total are needed for the equilibrium. Now, R-N=Е. This is the maximum possible number of bars, at which there will be equilibrium between rising and falling bars. This is the number we are guided by when choosing a lot.

**Lot selection.**

Since positions are opened on each subsequent bar and the maximum number of positions =Е bars, then we need to calculate the acceptable lot. Take the specified percentage from the entire deposit. Suppose that the deposit is 2000, the percentage is 50. This means, we should take $1000 for calculations. For more simplicity, assume that $1000= 1 lot ($500= 0.5 etc.). Divide this lot by Е and get the lot for opening each position. Round up to the nearest correct value (with the step of 0.01) and open a position.

**Tracking positions.**

Thus, there is the minimum (S) and maximum (E) numbers of open positions. After the number of open positions reaches S, we need to calculate the current excess in bars for the period of N+number of bars after opening the first position. As soon as it becomes less or equal to the amount of percentage specified in the settings, all positions are closed. To close a position, the excess is specified in the settings separately. This looks as if a position is opened when the excess is 80% and closed when it is 55%. If the excess failed to reach the specified value, while Е bars have passed, all positions are closed. After that, everything starts anew. Here, we need to keep track of which bars are getting more numerous. While for the first position we simply calculate the percentage of prevailing bars, here we calculate the percentage of bars that were prevailing. For example, bullish bars were prevailing, which means we use them to calculate the percentage for closing positions and close positions if it is less or equal to the one specified in the settings. The third option for closing positions is when the profit becomes equal to the one specified in the settings. All positions are closed and the EA starts searching for entry points. Profit calculation features a nuance. In the settings, the profit is specified in USD for 1 lot. Since positions are always closed by a different lot, the value should be recalculated for the current lot. However, since more than one position is opened, the profit is recalculated for each new position. For example, in the settings, $50/lot, but one position was opened with 0.1 lot, which means 50/10=$5. Thus, the profit is $5/0.1 lot for this lot. Now let's see how many open positions we have. For a single open position, the profit =$5. But if it does not close with profit, while the next one is opened, we already have 2 positions of 0.1 each, which means 5\*2=10. Now, in order for the series to be closed with profit, the profit should be $10 or more. Thus, if we have 20 positions at 0.1, 5\*20=$100. Thus, the trading series are completed when one of the three conditions is met (depending on which one is met first).

**Example:**

The deposit is $10,000

The specified parameters are as follows:

1. Initial calculation period = 40 bars

2. Maximum calculation period = 200 bars

3. Step = 2 bars

4. Irregularity ratio 1.5

5. Excess percentage for opening a position = 70%

6. Closure percentage = 50%

7. Deposit usage percentage = 50%.

40 last bars are taken on the newly formed bar. Within this range, the numbers of bullish and bearish bars are determined together with the excess percentage. Suppose that the result is 18 bullish and 22 bearish candles, thus 22/(18+22)\*100=55%. This does not fit the 70% condition. Therefore, take 42 bars in history, say 18 bullish and 24 bearish ones, 24/(18+24)\*100=57.14%. Go further and iterate over the range with the step of 2 bars. When reaching 62 bars, we obtain 18 bullish and 44 bearish ones, 44/(18+44)\*100=70.97%. This exceeds 70 fitting our conditions. Scan the range further. If no higher value is found, use the current one. Suppose that this is the case. Bearish bars are prevailing, which means 44-18=26. This is the number of bars that may lead to the (minimum) equilibrium. Now let's calculate how many bars ahead the forecast is made for. To do this, 62+26=88\*1.5=132. This means that the 50% equilibrium should occur in just 132 bars. Now, define the maximum number of positions 132-62=70. So, the maximum of 70 positions is opened on each subsequent bar. Calculate the lot for each position. To do this, $10,000\*0.5=$5000. For more simplicity, let's assume that we are able to open 5 lots with $5000 (rough approximation is acceptable here). 5 lots are divided by 70. 5/70=0.07143, round to the nearest correct lot of 0.07. Now the EA should buy 0.07 lots on each new bar. After 26 positions, the EA calculates the current excess. Suppose that within 88 bars (total number), 33 are bullish and 55 are bearish. So, the bearish bars are prevailing. There are 62.5% of them meaning that the closure condition is not met. Re-calculate the excess on each new bar. Suppose that on 100 bars the number of bullish bars has become=50, while the number of bearish ones=50, which means the excess has become =50%. Check the condition (closure percentage). If the condition is met (it is met here), close all positions. Wait for the next bar to start new calculations. If the condition is not met after the total number of 132 bars (70 positions), all positions are closed

1. **Working conditions**

The EA is meant for the tester. All calculations start only after a new bar is opened. If the EA is unable to detect the necessary excess, no positions are opened. The EA waits for the new bar and repeats the calculation. It should work on all pairs including the ones of the 0.0000 format. The format of 000.00 is enough for 5-digit quotes. If the bar's open=close, this bar is not included into the number of bullish or bearish ones and is simply ignored.

1. **Options**

1. Initial calculation period

2. Maximum calculation period

3. Step

4. Irregularity ratio

4. Excess percentage for opening a position

5. Closure percentage

6. Deposit usage percentage

7. Deposit (0 if the real one is used, or any other number to simulate a stable deposit). It is necessary to enable/disable automatic lot increase.

8. Profit in $/lot to close all positions.