**Instructions for the strategy**

1. **Main information about the strategy**

**1.1** For this strategy we use just two trend indicators: **main** and **signal**. StepMA VMA (125,0.2) is **the main indicator**, StepMA VMA (25,0.2) is **the signal indicator[[1]](#footnote-0)**.

**1.2** In this instruction I use the terms “whole trade” (or w-trade) and “partial trade” (or p-trade). Whole trade may be one only, i.e. it can be bullish or bearish when we decide to buy or sell the financial instrument. But there can be many partial trades that are included in the whole trade.

I also use the term “trend at the moment” (m-trend). M-trend is defined by the signal indicator; it can change many times while w-trade is remaining unchanged.

**1.3** The main strategy's idea is in crossing these indicators: when the signal indicator crosses the main indicator from bottom to top, we open a bullish w-trade; when the signal indicator crosses the main indicator from top to bottom, we open a bearish w-trade.

**1.4** The strategy works on the Tradingview, so you have to write code using Pine Script.

**1.5** Let's define

**–** all trading **v**olume as V. For example, if we want to trade 200 lots, then V=200;

**– l**ot **s**ize (number of units in 1 lot) as LS. For example, 1 lot of natural gas futures contains 100 units (1 LS = 100);

**–** DDP as a number of **d**igits after the **d**ecimal **p**oint of the instrument price we are trading. For example, if we trade natural gas futures and its price equals 2,7639, then DDP=4.

**1.6** All variables (numbers that can change) here are colored blue, all parameters (they are defined in advance and cannot be changed) are colored green, all abbreviations are colored orange.

**1.7** Timeframe by default is 1 second but also there can be another timeframe (for example, 5 seconds or 1 minute).

**1.8** There is only one (so called) mechanism of opening the trades **–** CIOM which means “**C**rossing **I**ndicators trades **O**pening **M**echanism” (we put 100% of V we need to open by pending limit/market order and waiting until it completes) and three different mechanisms of closing the trades (we close trades gradually by pending limit/market orders using TMCM, SICM and CICM (**T**arget **M**argins trades **C**losing **M**echanism, **S**ignal **I**ndicator trades **C**losing **M**echanism, **C**rossing **I**ndicators trades **C**losing **M**echanism).

**1.9** You have to create a window with input data on the screen (let's call it **I**nput data **W**indow, or IW) with different buttons where I can set periods of indicators, set the features of functioning of some mechanisms, etc. Also you have to create a window where output information (opened and closed prices, volumes, profits etc) must be displayed - let’s call it **O**utput data **W**indow, or OW. The structure and a view of both windows (IW and OW) are in the *attached Excel file.*

**1.10** Let’s assume (as an example for this instruction) that we open a bullish g-trade on natural gas futures. The timeframe is 1 second.

**Opening the trades**

**2.1** **CIOM** is “Crossing Indicators trades Opening Mechanism”.

**2.2** On the picture below you can see a screenshot of opening a bullish w-trade. The signal indicator crosses the main indicator from down to bottom.



**2.3** How do we open a trade exactly? By limit order or by market order (IW must contain a dropdown button with two elements. The name of the button is “Method of opening p-trades in CIOM", the names of dropdown elements are "CIOM: Limit orders" and "CIOM: Market orders").

**2.3.1 Situation "CIOM: Limit orders**".

Let's imagine we open a bullish w-trade. When the signal indicator has just crossed the main indicator (candle must be closed, i.e. not in progress) from down to bottom, we have to place an order of 100% of V at the bid which is CIOM\_OLO ("**O**ffset **l**imit **o**rder in CIOM") pips lower than the current highest bid. For example, at 10:20:30 the signal indicator crosses the main indicator from down to bottom. Candle at 10:20:30 is closed, current ask is 2,6789 and current bid is 2,6788. If CIOM\_OLO=2 pips we have to put a limit order at the next candle (10:20:31) at 2,6788 - 0,0002 = 2,6786 price level. What's next? We wait till our order executes. How long do we wait? We have to define it in IW (let's call it "**W**aiting **P**eriod for **l**imit **o**rders in CIOM"; you have to create a space in IW where I can set the used time interval in seconds **–** for example, it can be 1, 2, 3 etc. seconds; define this parameter as CIOM\_WPLO).

| **10:20:30 has just ended** | | | The signal indicator has just crossed the main indicator from down to bottom at 10:20:30. We are ready to open a bullish w-trade at the beginning of the next (10:20:31) candle | | |
| --- | --- | --- | --- | --- | --- |
| **Price** | **Order book** | |
| 2,6793 |  | 75 |
| 2,6792 |  | 678 |
| 2,6791 |  | 56 |
| 2,6790 |  | 334 |
| 2,6789 |  | 115 |
| 2,6788 | 44 |  |
| 2,6787 | 89 |  |
| 2,6786 | 47 |  |
| 2,6785 | 165 |  |
| 2,6784 | 124 |  |

| **10:20:31 (the first second of 1st CIOM\_WPLO) has just ended** | | | We are placing an order of 100% of V (let's V=200 lots) at the current highest bid minus CIOM\_OLO = 2 pips. This is 2,6786 price level. Also now CIOM\_WPLO is starting. Let's define CIOM\_WPLO = 3 seconds (it means we wait for 3 seconds **–** 10:20:31, 10:20:32 and 10:20:33 **–** until all 100% of V are opened). | | |
| --- | --- | --- | --- | --- | --- |
| **Price** | **Order book** | |
| 2,6793 |  | 75 |
| 2,6792 |  | 678 |
| 2,6791 |  | 56 |
| 2,6790 |  | 334 |
| 2,6789 |  | 115 |
| 2,6788 | 44 |  |
| 2,6787 | 89 |  |
| **2,6786** | **247 (47 others plus 200 ours)** |  |
| 2,6785 | 165 |  |
| 2,6784 | 124 |  |

**2.3.1.1 Volume is fully satisfied during 1st CIOM\_WPLO.**

In the best scenario our order will be fully fulfilled during 1st CIOM\_WPLO seconds (it means that 100% of V was bought).

| **10:20:32 (the second second of 1st CIOM\_WPLO) has just ended** | | | The sellers are active. All our 200 lots were executed at 2,6786 during the first CIOM\_WPLO = 3 seconds. | | |
| --- | --- | --- | --- | --- | --- |
| **Price** | **Order book** | |
| 2,6793 |  | 75 |
| 2,6792 |  | 678 |
| 2,6791 |  | 56 |
| 2,6790 |  | 334 |
| 2,6789 |  | 115 |
| 2,6788 |  | 65 |
| 2,6787 |  | 8 |
| **2,6786** | **47 (47 others)** |  |
| 2,6785 | 98 |  |
| 2,6784 | 124 |  |

**2.3.1.2 Volume is not fully satisfied during 1st CIOM\_WPLO**

The less favorable scenario is when our order is not fulfilled during 1st CIOM\_WPLO seconds (it means that less than 100% of V was bought or nothing was executed at all). Then **we have to cancel the limit order and make a new one to buy the rest or (again) 100% of V**.

For example, none of V were executed during the 1st CIOM\_WPLO. Then we fully cancel our order (cancel 100% of V). Then (at the beginning of the 2nd CIOM\_WPLO) we put a new one order (again 100% of V) at the current bid minus CIOM\_OLO pips. And we see next that (for example) only 35% of V was bought during the 2nd CIOM\_WPLO. Then we cancel 65% of V and again put a new order **–** now we need to buy only 65% of V during the 3rd CIOM\_WPLO. Luckily 65% of V were fulfilled during the 3rd CIOM\_WPLO.

| **10:20:32 (the second second of 1st CIOM\_WPLO) has just ended** | | | The price is rising (115 lots at 2,6789 were bought), new bids (25 lots) were placed at 2,6789. Our order becomes further (to be executed) than it was. | | |
| --- | --- | --- | --- | --- | --- |
| **Price** | **Order book** | |
| 2,6793 |  | 75 |
| 2,6792 |  | 678 |
| 2,6791 |  | 56 |
| 2,6790 |  | 334 |
| 2,6789 | 25 |  |
| 2,6788 | 44 |  |
| 2,6787 | 89 |  |
| **2,6786** | **247 (47 others plus 200 ours)** |  |
| 2,6785 | 165 |  |
| 2,6784 | 124 |  |

| **10:20:33 (the third second of 1st CIOM\_WPLO) has just ended** | | | The price is going up further (300 lots at 2,6790 were bought), more new bids (30 lots) were placed at 2,6789. Our order is still not completed. | | |
| --- | --- | --- | --- | --- | --- |
| **Price** | **Order book** | |
| 2,6793 |  | 75 |
| 2,6792 |  | 678 |
| 2,6791 |  | 56 |
| 2,6790 |  | 34 |
| 2,6789 | 55 |  |
| 2,6788 | 44 |  |
| 2,6787 | 89 |  |
| **2,6786** | **247 (47 others plus 200 ours)** |  |
| 2,6785 | 165 |  |
| 2,6784 | 124 |  |

| **10:20:34 (the first second of the 2nd CIOM\_WPLO) has just ended** | | | The first CIOM\_WPLO is over. We have to cancel an order (200 lots at 2,6786), then make a new order (again 200 lots) at 2,6787 price level (the current highest bid (2,6789) minus CIOM\_OLO = 2 pips). | | |
| --- | --- | --- | --- | --- | --- |
| **Price** | **Order book** | |
| 2,6793 |  | 75 |
| 2,6792 |  | 678 |
| 2,6791 |  | 56 |
| 2,6790 |  | 34 |
| 2,6789 | 55 |  |
| 2,6788 | 44 |  |
| **2,6787** | **289 (89 others plus 200 ours)** |  |
| 2,6786 | 47 |  |
| 2,6785 | 165 |  |
| 2,6784 | 124 |  |

| **10:20:35 (the second second of the 2nd CIOM\_WPLO) has just ended** | | | The price is going down, but only 35% (70 of our 200) lots were executed at 2,6787. 65% (130 of our 200) lots are still not executed. | | |
| --- | --- | --- | --- | --- | --- |
| **Price** | **Order book** | |
| 2,6793 |  | 75 |
| 2,6792 |  | 678 |
| 2,6791 |  | 56 |
| 2,6790 |  | 34 |
| 2,6789 |  | 129 |
| 2,6788 |  | 78 |
| **2,6787** | **219 (89 others plus 130 ours)** |  |
| 2,6786 | 98 |  |
| 2,6785 | 165 |  |
| 2,6784 | 124 |  |

| **10:20:36 (the third second of the 2nd CIOM\_WPLO) has just ended** | | | Nothing changes during this second. | | |
| --- | --- | --- | --- | --- | --- |
| **Price** | **Order book** | |
| 2,6793 |  | 75 |
| 2,6792 |  | 678 |
| 2,6791 |  | 56 |
| 2,6790 |  | 34 |
| 2,6789 |  | 129 |
| 2,6788 |  | 78 |
| **2,6787** | **219 (89 others plus 130 ours)** |  |
| 2,6786 | 98 |  |
| 2,6785 | 165 |  |
| 2,6784 | 124 |  |

| **10:20:37 (the first second of the 3rd CIOM\_WPLO) has just ended** | | | Sellers are active again. The rest of our volume (130 lots) was executed at 2,6787. | | |
| --- | --- | --- | --- | --- | --- |
| **Price** | **Order book** | |
| 2,6793 |  | 75 |
| 2,6792 |  | 678 |
| 2,6791 |  | 56 |
| 2,6790 |  | 34 |
| 2,6789 |  | 129 |
| 2,6788 |  | 78 |
| **2,6787** | **89 (89 others)** |  |
| 2,6786 | 98 |  |
| 2,6785 | 165 |  |
| 2,6784 | 124 |  |

Thus, as you see above, the whole process of opening limit orders can last pretty long (several CIOM\_WPLO) till all 100% of V is fulfilled.

**2.3.2 Situation "CIOM: Market orders**".

This situation is pretty easy and is supposed to be used for the financial instruments with low commission fees for market orders (or when commission for market and limit orders is the same).

Again let's imagine we open a bullish trade. When the signal indicator crosses the main indicator from bottom to top, just place a market buying order of 100% of V.

**2.4** After opening all 100% of V (doesn’t matter by using limit or market order) we have to set a variable **–** average weighted price of opening (define this variable as CIOM\_OP, which means CIOM **o**pening **p**rice). Display the value of CIOM\_OP in the OW.

**CIOM example**

As an example, you can see on the screen below how a bullish w-trade on natural gas futures was opened (CIOM\_OP equals 2,4935 USD; assume that we use “CIOM:Limit orders” where CIOM\_WPLO = 3 seconds and CIOM\_OLO = 2 pips). All information on the screen you need for CIOM is colored purple.



1. **Closing the trades**

How do we close trade? As I wrote before we close the trades gradually by using three mechanisms: the first is “Target Margins trades Closing Mechanism” (TMCM), the second is “Signal Indicator trades Closing Mechanism” (SICM), and the third is “Crossing Indicators trades Closing Mechanism” (CICM).

**3.1 TMCM**

**3.1.1** In TMCM (“**T**arget **M**argins trades **C**losing **M**echanism”) we use only limit orders.

**3.1.2** This mechanism is something like our guarantee **–** we set several fixed take profit margins that we are waiting to close almost immediately after opening. Doesn't matter how long (how profitable) will the w-trade last afterwards (because the next two mechanisms **–** SICM and CICM **–** don’t suggest known in advance fixed margins).

**3.1.3** In TMCM we set in advance 5 margins (as % of CIOM\_OP) and 5 volume levels (as % of V) we would like to close.

**3.1.4** In IW we have to define TMCM target margins and volume levels. Let’s call them TMCM\_M1 and TMCM\_V1 for the first margin and first volume … TMCM\_M5 and TMCM\_V5 for the fifth margin and fifth volume.

**3.1.5** Target prices for TMCM levels will be indicated as TMCM\_P1, TMCM\_P2 … till TMCM\_P5.

The following five formulas are applied for a bullish w-trade:

**TMCM\_P1 = CIOM\_OP \* (100% + TMCM\_M1)** … till

**TMCM\_P5 = CIOM\_OP \* (100% + TMCM\_M5)**

And next for a bearish:

**TMCM\_P1 = CIOM\_OP \* (100% - TMCM\_M1)** … till

**TMCM\_P5 = CIOM\_OP \* (100% - TMCM\_M5)**

NOTE: all margins are set in IW must always be positive (even for a bearish w-trade)!

**3.1.6** Next table must be included in IW.

| TMCM level | Target margin (as % of CIOM\_OP) | Volume (as % of V) |
| --- | --- | --- |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |

**3.1.7** The best scenario is when all 5 margins and volume for TMCM are achieved, and we can continue to SICM.

But if only were closed some of 5 TMCM margins or a part of one TMCM margin (doesn’t matter which one exactly), then we automatically continue to CICM, where we have to close the rest (what was not closed in TMCM) volume (of course, the volume intended for CICM must be closed as well).

Define total **p**lanning **v**olume we have to close in the TMCM as TMCM\_PV, total **a**ctual **v**olume we closed as TMCM\_AV (it equals to sum of TMCM\_AV1, TMCM\_AV2…TMCM\_AV5 depends on how many lots were closed), the **r**emaining **v**olume we will close in CICM as TMCM\_RV; then next formulas are applied:

**TMCM\_PV = TMCM\_AV + TMCM\_RV**

**TMCM\_AV = TMCM\_AV1 + TMCM\_AV2 +...+TMCM\_AV5** (depends on how many lots were closed)

**3.1.8** When TMCM is finished (doesn’t matter if it was realized fully or partly) we define the average weighted closing price (calculate TMCM\_CP). Also we calculate TMCM\_PROFIT. Use the next formula:

**TMCM\_PROFIT = (TMCM\_CP - CIOM\_OP) \* TMCM\_AV \* LS**

**If no one lot was opened in TMCM, then TMCM\_PROFIT = 0.**

**3.1.9** Display the value of TMCM\_AV, TMCM\_CP, TMCM\_PROFIT in OW.

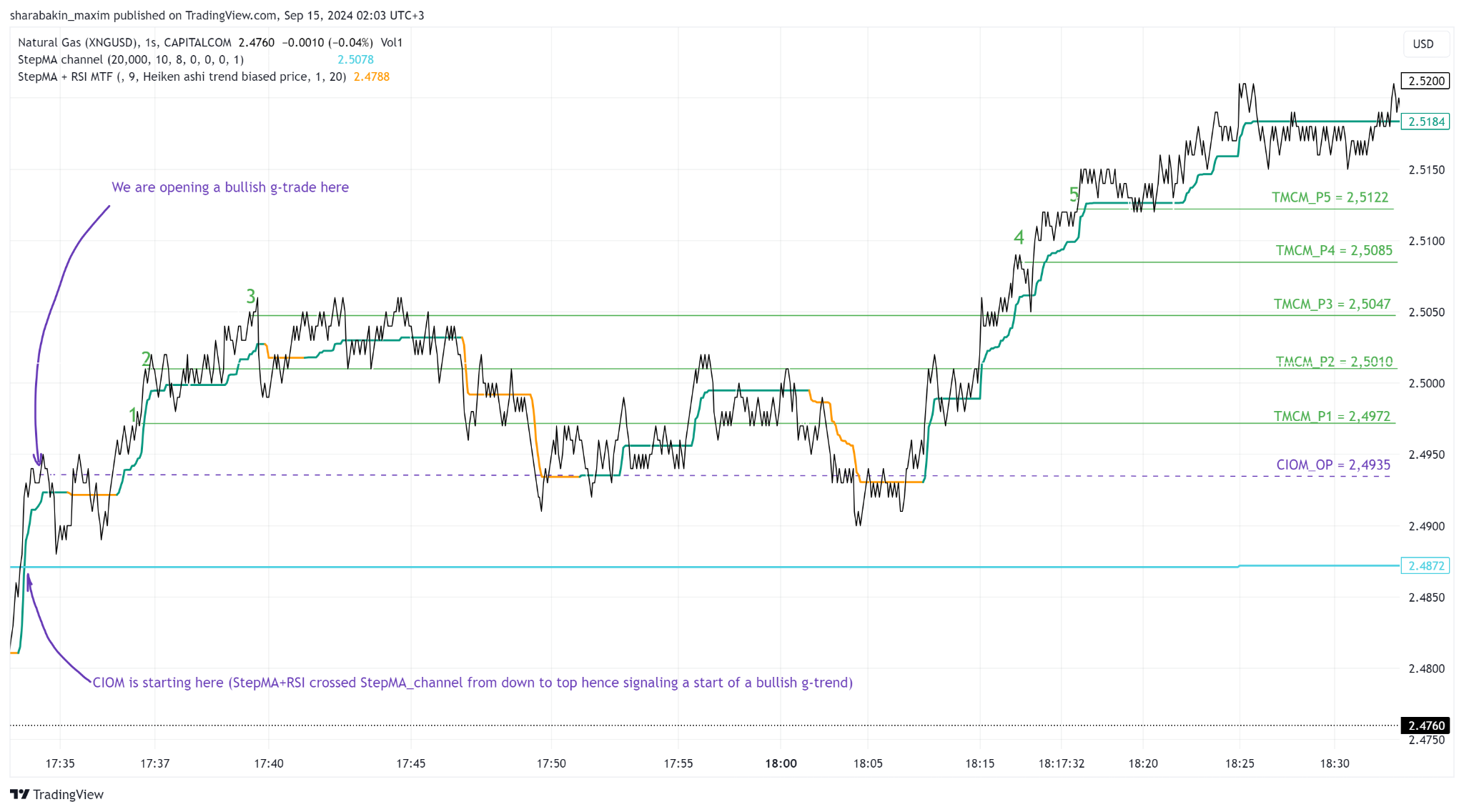
**TMCM example**

Let’s continue with our example, where CIOM\_OP = 2,4935 USD and V = 200 lots. Assume that the TMCM target margins and volumes are as follows:

| TMCM level | Target margin  (as % of CIOM\_OP) | Volume  (as % of V) |
| --- | --- | --- |
| 1 | 0,15% | 8% |
| 2 | 0,30% | 7% |
| 3 | 0,45% | 7% |
| 4 | 0,60% | 7% |
| 5 | 0,75% | 6% |

Then target price for the first TMCM level (TMCM\_P1) equals 2,4935 \* (100%+0,15%) = 2,4972 USD[[2]](#footnote-1) and volume (TMCM\_AV1) equals 8% \* 200 = 16 lots[[3]](#footnote-2), target price for the second TMCM level (TMCM\_P2) equals 2,4935 \* (100%+0,30%) = 2,5010 USD and volume (TMCM\_AV2) equals 7% \* 200 =14 lots, etc…

The screenshot below shows CIOM\_OP and (at this given example) all five TMCM levels that were fully executed (the places where profit p-trades were closed are shown as green digits 1, 2, 3, 4, and 5). All information you need for TMCM is colored green.



In the example above all TMCM levels were fully executed. Hence:

TMCM\_CP = (2,4972\*0,08+2,5010\*0,07+2,5047\*0,07+2,5085\*0,07+2,5122\*0,06) / (0,08+0,07+0,07+0,07+0,06) = 2,5043 USD

TMCM\_AV = TMCM\_PV = (0,08+0,07+0,07+0,07+0,06)\*200 = 70 lots; TMCM\_RV = 70 - 70 = 0

TMCM\_PROFIT = (2,5043 - 2,4935) \* 70 \* 100 = 75,60 USD

**3.2 SICM**

**3.2.1** "**S**ignal **i**ndicator trades **c**losing **m**echanism" (SICM) can be used only after all 5 TMCM levels were fully executed.

**3.2.2** The main idea of SICM is that we follow the signal indicator indicator. As I wrote before, TMCM is for trades that are closed by the fixed margins and volume levels which are defined in advance. SICM assumes that our trades are closed when the signal indicator turns back (signaling that m-trend has just finished).

In SICM we evaluate the behavior of the signal indicator indicator only after all 5 TMCM levels were fully executed. Doesn’t matter the behavior of the signal indicator indicator during TMCM.

**3.2.3** Let's imagine we open a bullish w-trade. We don't take care of the signal indicator indicator during TMCM, but after all TMCM levels are reached, we have to follow the signal indicator indicator. Once the signal indicator turns back (becomes bearish), it is necessary to check how far has the price moved (from CIOM\_OP) and depending on this difference we close the p-trades by a certain % of V.

**3.2.4** The first SICM p-trade can be closed on any SICM level **–** the further the price moves without changing the direction of the signal indicator the higher SICM level will be achieved.

**3.2.5** After the first SICM p-trade has been closed (on any SICM level), we check the behavior of the the signal indicator indicator again: when the direction of the the signal indicator indicator will be the same as a direction of the w-trade, we wait till the the signal indicator indicator turns back with a purpose of closing the second SICM p-trade on the higher (contrary to first SICM p-trade) SICM level. This process can last further **–** it means that hypothetically there can be third, fourth… seventh SICM p-trades.

The movement from upper to lower SICM level is impossible (i.e. we don’t close p-tardes when the potential closing price is getting worse, even though a behavior of the signal indicator indicator suggests closing conditions in SICM stage…but, of course, when the price becomes so bad that the w-trade changes, then we apply CICM approach).

**3.2.6** Only one p-trade can be closed on any SICM level. It means that we exclude closing p-trades too often, even though the signal indicator changes in such a way that we are needed to close p-trades.

**3.2.7** This content must be in IW (we have to fulfill an array from SICM\_LL1 to SICM\_LL7; from SICM\_V1 to SICM\_V7). Here LL means **l**ower **l**imits (in fact they are like margins in TMCM, see part 3.2.8 for more details).

| SICM level | Lower limit (as % of CIOM\_OP) | Volume (as % ov V) |
| --- | --- | --- |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |
| 6 |  |  |
| 7 |  |  |

NOTE: all lower limits are set in IW must always be positive (even for a bearish w-trade)!

NOTE: TMCM\_M5 < SICM\_LL1 < SICM\_LL2 < SICM\_LL3 < SICM\_LL4 < SICM\_LL5

**3.2.8** The tables below represent the conditions, price levels, volume for SICM p-trades:

| SICM level | Necessary conditions for given SICM level  (for a **bullish w-trade**) | Price at which p-trade will be closed | Volume  (as % of V) |
| --- | --- | --- | --- |
| 1 | (100% + SICM\_LL2) \* CIOM\_OP > SICM\_CP1 >= (100% + SICM\_LL1) \* CIOM\_OP | SICM\_CP1 | SICM\_V1 |
| 2 | (100% + SICM\_LL3) \* CIOM\_OP > SICM\_CP2 >= (100% + SICM\_LL2) \* CIOM\_OP | SICM\_CP2 | SICM\_V2 |
| 3 | (100% + SICM\_LL4) \* CIOM\_OP > SICM\_CP3 >= (100% + SICM\_LL3) \* CIOM\_OP | SICM\_CP3 | SICM\_V3 |
| 4 | (100% + SICM\_LL5) \* CIOM\_OP > SICM\_CP4 >= (100% + SICM\_LL4) \* CIOM\_OP | SICM\_CP4 | SICM\_V4 |
| 5 | (100% + SICM\_LL6) \* CIOM\_OP > SICM\_CP5 >= (100% + SICM\_LL5) \* CIOM\_OP | SICM\_CP5 | SICM\_V5 |
| 6 | (100% + SICM\_LL7) \* CIOM\_OP > SICM\_CP6 >= (100% + SICM\_LL6) \* CIOM\_OP | SICM\_CP6 | SICM\_V6 |
| 7 | SICM\_CP7 >= (100% + SICM\_LL7) \* CIOM\_OP | SICM\_CP7 | SICM\_V7 |

| SICM level | Necessary conditions for given SICM level  (for a **bearish w-trade**) | Price at which p-trade will be closed | Volume  (as % of V) |
| --- | --- | --- | --- |
| 1 | (100% - SICM\_LL2) \* CIOM\_OP < SICM\_CP1 <= (100% - SICM\_LL1) \* CIOM\_OP | SICM\_CP1 | SICM\_V1 |
| 2 | (100% - SICM\_LL3) \* CIOM\_OP < SICM\_CP1 <= (100% - SICM\_LL2) \* CIOM\_OP | SICM\_CP2 | SICM\_V2 |
| 3 | (100% - SICM\_LL4) \* CIOM\_OP < SICM\_CP1 <= (100% - SICM\_LL3) \* CIOM\_OP | SICM\_CP3 | SICM\_V3 |
| 4 | (100% - SICM\_LL5) \* CIOM\_OP < SICM\_CP1 <= (100% - SICM\_LL4) \* CIOM\_OP | SICM\_CP4 | SICM\_V4 |
| 5 | (100% - SICM\_LL6) \* CIOM\_OP < SICM\_CP1 <= (100% - SICM\_LL5) \* CIOM\_OP | SICM\_CP5 | SICM\_V5 |
| 6 | (100% - SICM\_LL7) \* CIOM\_OP < SICM\_CP1 <= (100% - SICM\_LL6) \* CIOM\_OP | SICM\_CP6 | SICM\_V6 |
| 7 | SICM\_CP7 <= (100% - SICM\_LL7) \* CIOM\_OP | SICM\_CP7 | SICM\_V7 |

**3.2.9** In SICM (contrary to TMCM) we can’t forecast in advance the best scenario for us. Let me explain why. Assume a w-trade is bullish. If the trend is not strong but it has several bearish p-trends, then applying SICM is a good idea (we will fix profits before the w-trade becomes bearish). On the other hand, if the w-trade is very strong without bearish p-trends, then SICM is not so good for us (we will fix smaller profits while w-trade continues to be bullish).

**3.2.10** Closing a part of SICM level (doesn’t matter which one exactly) may only happen if the signal indicator crosses the main indicator **–** it means we are (automatically) in the last closing stage (CICM). But don’t forget to close the rest (which was not closed in SICM) volume in CICM (of course, the volume intended for CICM must be closed as well). Define the **a**ctual **v**olume is closed in SICM as SICM\_AV, the **r**emaining **v**olume we have to close in CICM as SICM\_RV.

**SICM\_AV = SICM\_AV1 + SICM\_AV2 +...+ SICM\_AV5**

(depends on how many lots on which SICM level were closed)

**3.2.11** How do we close trades in SICM (by market or limit orders)? Technology is the same as used in “CIOM: Limit orders” and “CIOM: Market orders”. It means in SICM we can use either limit orders or market orders. IW must contain a dropdown button with two elements. Name of the button is "Method of opening p-trades in SICM", the names of dropdown elements are "SICM: Limit orders" and "SICM: Market orders". The principles of functioning are the same as used in “CIOM: Limit orders”[[4]](#footnote-3) and “CIOM: Market orders”.

**3.2.12** When SICM is finished (doesn’t matter if it was realized fully or partly) we have to define the average weighted closing price for SICM (calculate SICM\_CP). Also calculate SICM\_PROFIT. Display the value of SICM\_AV, SICM\_CP and SICM\_PROFIT in OW.

**SICM\_PROFIT = (SICM\_CP – CIOM\_OP) \* SICM\_AV \* LS**

**If no one lot was opened in SICM then SICM\_PROFIT = 0.**

**SICM example**

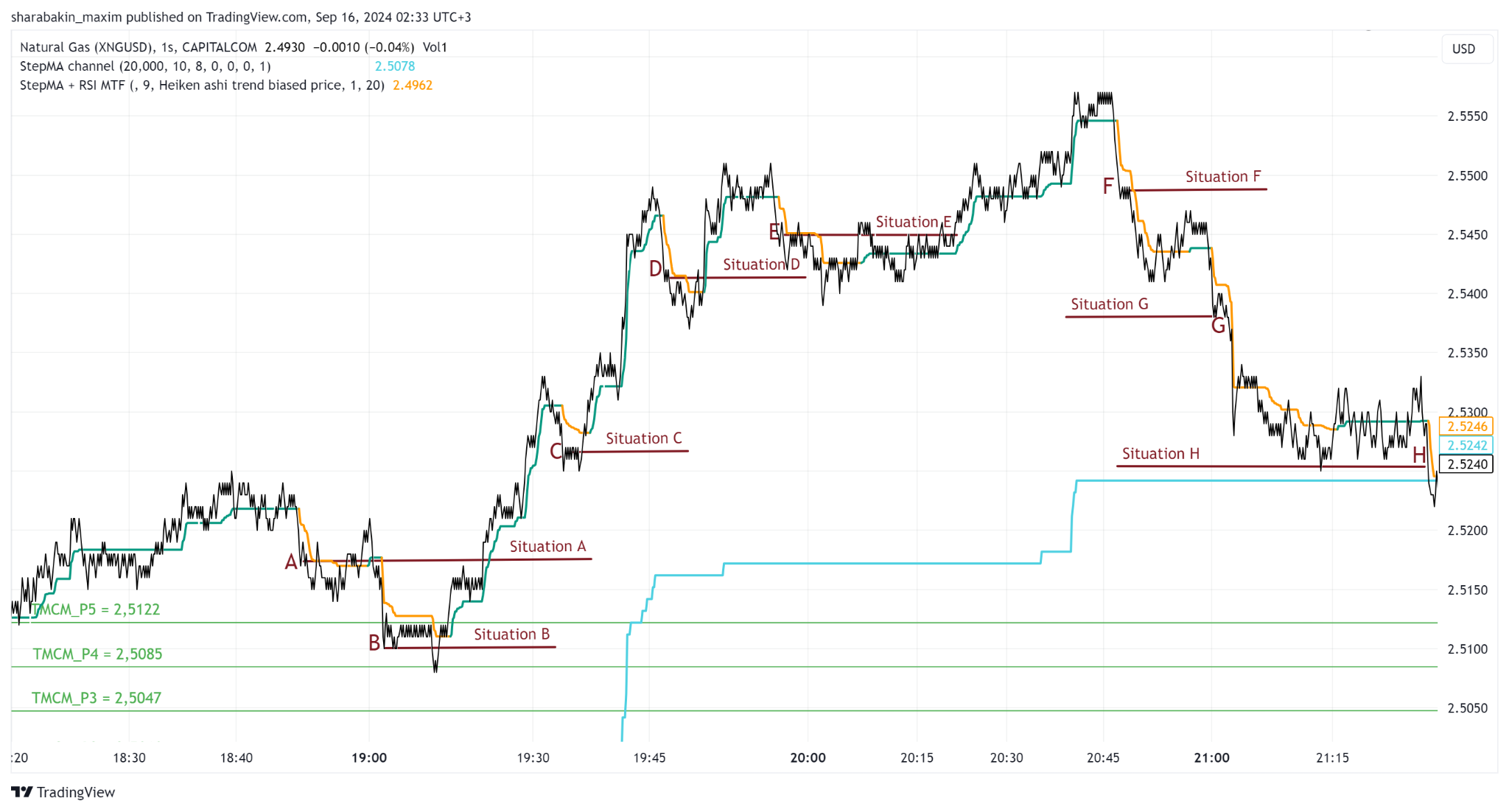
Let’s continue with our example. Assume that we use “SICM:Limit orders” where SICM\_WPLO = 3S and SICM\_OLO = 2 pips, also we suggest that the lower limits and volumes for SICM are as follows:

| SICM level | Lower limit  (as % of CIOM\_OP) | Volume  (as % ov V) |
| --- | --- | --- |
| 1 | 1,00% | 6% |
| 2 | 1,25% | 6% |
| 3 | 1,50% | 5% |
| 4 | 1,75% | 5% |
| 5 | 2,00% | 5% |
| 6 | 2,25% | 4% |
| 7 | 2,50% | 4% |

It means that next conditions for SICM levels must be satisfied:

| SICM level | Necessary conditions for given SICM level  (for a **bullish w-trade**) |
| --- | --- |
| 1 | 2,5247 > SICM\_CP1 >= 2,5184 |
| 2 | 2,5309 > SICM\_CP2 >= 2,5247 |
| 3 | 2,5371 > SICM\_CP3 >= 2,5309 |
| 4 | 2,5434 > SICM\_CP4 >= 2,5371 |
| 5 | 2,5496 > SICM\_CP5 >= 2,5434 |
| 6 | 2,5558 > SICM\_CP6 >= 2,5496 |
| 7 | SICM\_CP7 >= 2,5558 |

All information you need for SICM is colored brown on the screenshot below (look at the capital letters A,B,C…H).



**Situation A**: It’s the first time when the signal indicator turns back after all 5 TMCM levels were fully executed, so we may potentially close the p-trade. But the price is 2,5174 USD here, the potential condition for SICM level 1 (2,5247 > SICM\_CP1 >= 2,5184) is not satisfied, so we can’t close the p-trade. Just do nothing here.

**Situation B**: It’s the second time when the signal indicator turns back (becomes bearish again), so we may potentially close the p-trade. The price is 2,5100 USD **–** it’s less than TMCM\_M5 (see 3.2.7), so we can’t close the p-trade. Just do nothing here.

**Situation C**: It’s the third time when the signal indicator turns back (becomes bearish again), so we may potentially close the p-trade. The price is 2,5266 USD, the condition for SICM level 2 (2,5309 > SICM\_CP2 >= 2,5247) is satisfied, so we set an order to close 12 lots (because SICM\_V2 = 6%) at SICM\_CP2 = 2,5266 USD. Assume that all 12 lots were closed (SICM\_AV2 = 12 lots).

**Situation D**: It’s the fourth time when the signal indicator turns back (becomes bearish again), so we may potentially close the p-trade. The price is 2,5413 USD, the condition for SICM level 4 (2,5434 > SICM\_CP4 >= 2,5371) is satisfied, so we set an order to close 10 lots (because SICM\_V4 = 5%) at SICM\_CP4 = 2,5413 USD. Assume that all 10 lots were closed.

**Situation E**: It’s the fifth time when the signal indicator turns back (becomes bearish again), so we may potentially close the p-trade. The price is 2,5450 USD here, the condition for SICM level 5 (2,5496 > SICM\_CP5 >= 2,5434) is satisfied, so we set an order to close 10 lots (because SICM\_V5 = 5%) at SICM\_CP5 = 2,5450 USD. Assume that only half of them were closed (hence, SICM\_RV = 0,5\*SICM\_V5 = 0,5\*5% = 2,5% or 5 lots).

**Situation F**: It’s the sixth time when the signal indicator turns back (becomes bearish again), so we may potentially close the p-trade. The price is 2,5488 USD here, the condition for SICM level 5 (2,5496 > SICM\_CP5 >= 2,5434) is satisfied, but the p-trade was already closed at SICM level 5 (we know from 3.2.6 that only one p-trade can be closed on any SICM level), so we can’t close p-trade. Just do nothing here.

**Situation G**: It’s the seventh time when the signal indicator turns back (becomes bearish again), so we may potentially close the p-trade. The price is 2,5382 USD here, the condition for SICM level 4 (2,5434 > SICM\_CP4 >= 2,5371) is satisfied, but the movement from the upper (namely, 5th) to lower (4th) SICM level is impossible (see 3.2.5), so we can’t close p-trade. Just do nothing here.

**Situation H**: It’s the eighth time when the signal indicator turns back (becomes bearish again), so we may potentially close the p-trade. The price is 2,5217 USD here, the condition for SICM level 1 (2,5247 > SICM\_CP1 >= 2,5184) is satisfied, but the movement from upper (namely, 5th) to lower (1th) SICM level is impossible (see 3.2.5), so we can’t close p-trade. Just do nothing here.

Let’s now calculate SICM\_CP, SICM\_AV and SICM\_PROFIT:

SICM\_CP = (2,5266\*0,06+2,5413\*0,05+2,5450\*0,05/2) / (0,06+0,05+0,025) = 2,5355 USD;

SICM\_AV = 12+10+5 = 27 lots;

SICM\_PROFIT = (2,5355 - 2,4935) \* 27 \* 100 = 113,40 USD.

**3.3 CICM**

**3.3.1** CICM is “**C**rossing **I**ndicators trades **C**losing **M**echanism”.

**3.3.2** The bullish w-trade is finished when the signal indicator crosses the main indicator from top to bottom. And now it’s time for CICM – thefinal (third) step to close the all opening p-trades.

All trades that were not closed in the former two steps (during TMCM and SICM) must be closed here.

We can calculate the **a**ctual **v**olume we have to close in CICM (call it CICM\_AV) as follows:

**CICM\_AV = V – TMCM\_AV – SICM\_AV**

**3.3.3** How do we close trades in CICM (by market or limit orders)? Technology is the same as used in “CIOM: Limit orders” and “CIOM: Market orders” (or “SICM: Limit orders” and “SICM: Market orders”). It means in CICM we can use either limit orders or market orders. IW must contain a dropdown button with two elements. Name of the button is "P-trades closing method for CICM", the names of dropdown elements are "CICM: Limit orders" and "CICM: Market orders". The principles of functioning here are the same as used in “CIOM: Limit orders” and “CIOM: Market orders” (or “SICM: Limit orders” and “SICM: Market orders”).

In case we choose “CIOM: Limit orders”, of course, there can be a situation when orders can be closed too late. For this reason we set the parameters CICM\_WPLO (in seconds) and CICM\_OLO (in pips). Their operating principle is similar to CIOM\_WPLO and CIOM\_OLO, as well as SICM\_WPLO and SICM\_OLO. But CICM\_WPLO can last only once (in contrast to CIOM\_WPLO or SICM\_WPLO). So when the CICM\_WPLO is finished, we have to close the rest by the market order immediately!

**3.3.4** Check whether all opening p-trades in w-trade were closed after all three closing mechanisms (TMCM, SICM, CICM). The given information must be displayed in OW as a row with a text “All 100% of opening volume was closed properly” with a small window for check mark (“yes”/”no”).

**3.3.5** When CICM is finished we have to define the average weighted **C**losing **P**rice for CICM (calculate CICM\_CP). Also calculate profit for CICM. Use formula

**CICM\_PROFIT = (CICM\_CP – CIOM\_OP) \* CICM\_AV \* LS**

**3.3.6** Calculate total profit of the w-trade as follows:

**TOTAL\_PROFIT = TMCM\_PROFIT + SICM\_PROFIT + CICM\_PROFIT**

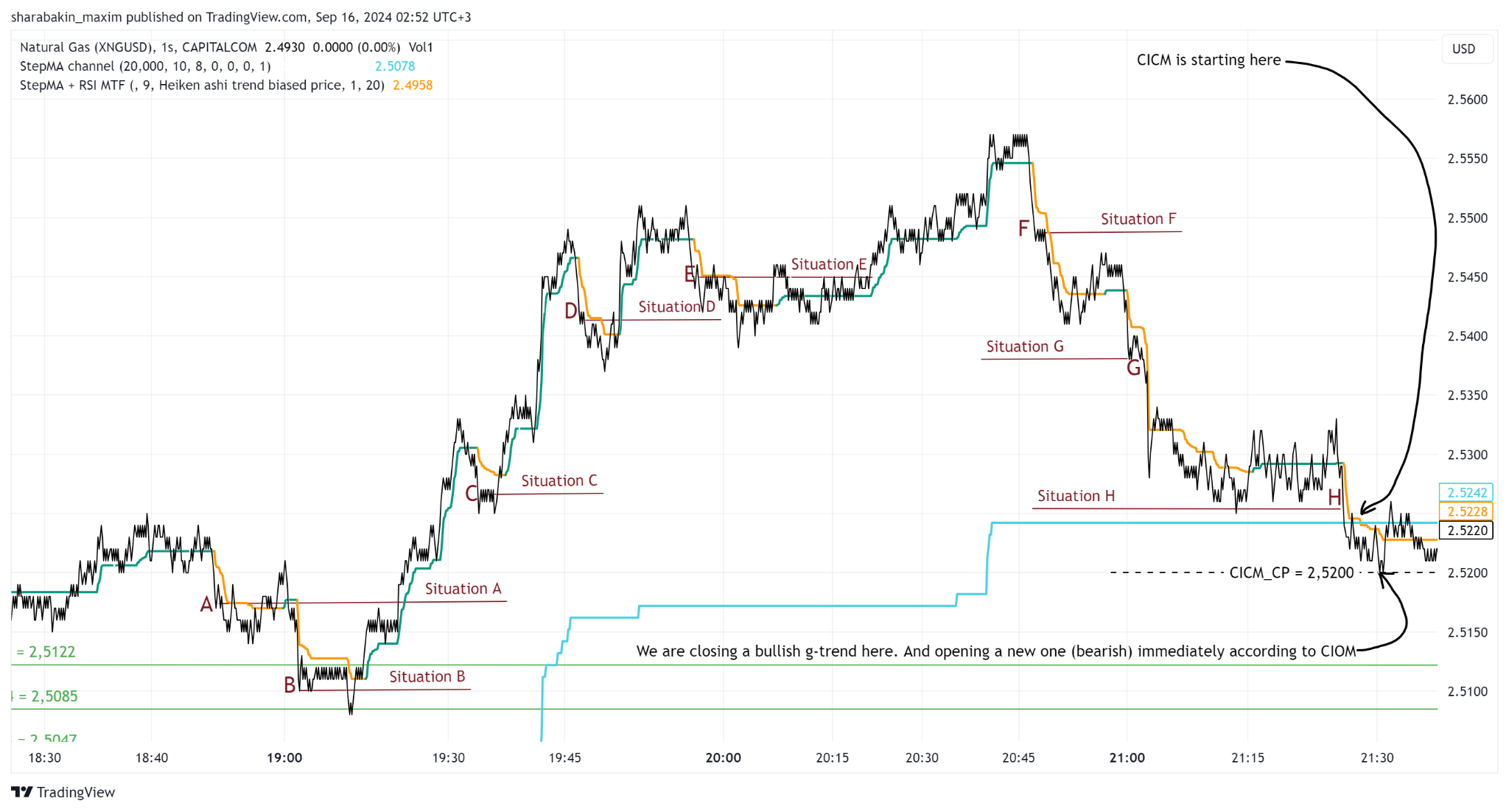
**3.3.7** Display the value of CICM\_AV, CICM\_CP, CICM\_PROFIT, TOTAL\_PROFIT in OW.

**3.3.8 NOTE**: Closing of bullish w-trade in CICM also means that the bearish position must be opened right away the bullish position is closed according to CICM. Trading a new (bearish) w-trade is realizing according to CIOM. Thus, a new (bearish) trend is beginning. The cycle (CIOM, TMCM, SICM, CICM) is repeated again.

**CICM example**

Assume that in our example we use “CICM:Limit orders” where CICM\_WPLO = 10S and CICM\_OLO = 2 pips.

All information you need for CICM is colored black on the screenshot below.

****

The bullish w-trade was finished because the signal indicator crossed the main indicator from top to bottom.

CICM\_CP was 2,5200 USD.

CICM\_AV = 200 - 70 - 27 = 103 lots (all lots were executed by limit order during CICM\_WPLO = 10S).

CICM\_PROFIT = (2,5200 - 2,4935) \* 103 \* 100 = 272,95 USD

Thus, TOTAL\_PROFIT of w-trade equal 75,60 + 113,40 + 272,95 = 461,95 USD

**Appendix: Input Data Window (IW) example**

| **Timeframe (S/M/H/D)** | 1S | |
| --- | --- | --- |
| **Volume (lots)** | 200 | |
| **LS (units in 1 lot)** | 100 | |
|  | | |
| **Main indicator** | | |
| VMA period | 125 | |
| Step Size (pips) | 0,2 | |
|  | | |
| **Signal indicator** | | |
| VMA period | 25 | |
| Step Size (pips) | 0,2 | |
|  | | |
| **CIOM** | | |
| Method of opening p-trades in CIOM | CIOM: Limit orders | |
| CIOM\_WPLO (seconds) | 3 | |
| CIOM\_OLO (pips) | 2 | |
|  | | |
| **TMCM level** | Target margin (as % of CIOM\_OP) | Volume (as % of V) |
| 1 | 0,15% | 8% |
| 2 | 0,30% | 7% |
| 3 | 0,45% | 7% |
| 4 | 0,60% | 7% |
| 5 | 0,75% | 6% |
|  | | |
| **SICM** | | |
| Method of opening p-trades in SICM | SICM: Limit orders | |
| SICM\_WPLO (seconds) | 3 | |
| SICM\_OLO (pips) | 2 | |
|  | | |
| **SICM level** | Lower limit (as % of CIOM\_OP) | Volume (as % ov V) |
| 1 | 1,00% | 6% |
| 2 | 1,25% | 6% |
| 3 | 1,50% | 5% |
| 4 | 1,75% | 5% |
| 5 | 2,00% | 5% |
| 6 | 2,25% | 4% |
| 7 | 2,50% | 4% |
|  | | |
| **CICM** | | |
| Method of opening p-trades in CICM | CICM: Limit orders | |
| CICM\_WPLO (seconds) | 10 | |
| CICM\_\_OLO (pips) | 2 | |

**Appendix: Output Data Window (OW) example**

| **CIOM\_OP** | 2,4935 |
| --- | --- |
|  | |
| **TMCM\_CP** | 2,5043 |
| **TMCM\_AV** | 70 |
| **TMCM\_PROFIT** | 75,60 |
|  | |
| **SICM\_CP** | 2,5355 |
| **SICM\_AV** | 27 |
| **SICM\_PROFIT** | 113,40 |
|  | |
| **CICM\_CP** | 2,5200 |
| **CICM\_V** | 103 |
| **CICM\_PROFIT** | 272,95 |
|  | |
| **All 100% of opening volume was closed properly** | Yes |
|  | |
| **TOTAL\_PROFIT** | 461,95 |

1. On all screenshots at this instruction StepMA VMA (125,0,Close price,0.2) is StepMA\_channel (this is a main indicator), StepMA VMA (25,0,Close price,0.2) is StepMA+RSI (this is a signal indicator). [↑](#footnote-ref-0)
2. we round target price (!) to 4 digits after the decimal point, because DDP for the given instrument (natural gas futures) equals 4 [↑](#footnote-ref-1)
3. all volumes (everywhere at the strategy) must be rounded up to the nearest whole number (!) [↑](#footnote-ref-2)
4. in “SICM: Limit orders” we also define SICM\_WPLO (in seconds) and SICM\_OLO (in pips). Their operating principle is similar to CIOM\_WPLO and CIOM\_OLO. [↑](#footnote-ref-3)