

Market Structure Mapping

(MT4 Indicator + Source Code)

REQUIREMENTS

1. GENERAL REQUIREMENTS

- a. Indicator name: **kv_mapping.ex4**
 - b. Platform: **Meta Trader 4**
 - c. Build each function as a separate module within the source code
 - d. Deliver the full source code upon project completion
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2. MAPPING

- a. Identify swing highs/lows using custom rules (abbreviated as **kv_smc_rules**) defined below
- b. Display **BOS/CHoCH** according to SMC rules after identifying swing highs/lows
- c. Label swing points as **HH-HL, LH-LL** according to SMC rules
- d. Draw a **Zigzag line** connecting the 5 most recent swing points (the number of zigzag connections can be changed in the settings)
- e. Allow saving the values of the last two swing points (**last_SH, last_SL**) into a buffer for use in other indicators later

Reference Appendix 1

3. POIs (Points of Interest)

a. Order Blocks

- i. Find, draw, and display valid Order Blocks (valid OBs defined below) at swing points (default: 2 OBs at Swing Highs and 2 OBs at Swing Lows; number adjustable in settings)
- ii. Display **Volumetric Info (%Buy, %Sell)** inside each OB

b. FVGs (Fair Value Gaps)

- i. Find **Unmitigated FVGs** not located near Order Blocks

Reference Appendix 2

4. FIBONACCI

- a. Draw Fibonacci levels between the last 2 swing points according to market direction:

- -61.8%
- -27.2%
- 0%
- 50%
- 61.8%
- 78.6%
- 100%

- b. Highlight the **61.8% – 78.6% zone** and display text named **OTZ**
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5. LIQUIDITY

- a. Liquidity Pool
- b. **Buyside / Sellside Liquidity (BSL / SSL)**
- c. Swing Lows (SL) / Swing Highs (SH) < 50% Fibo
- d. **Invalid Demand Zone (IDZ) or Invalid Supply Zone (ISZ)**

Reference Appendix 3

6. ALERTS

Allow sending notifications (pop-up, message, sound) when price:

- a. Retraces into the **OTZ zone (61.8% – 78.6%)**
 - b. Retraces into **Order Block zones**
 - c. Breaks out of **Fibo 0% or 100%**
 - d. Creates **BOS/CHoCH**
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7. CONTROL PANEL

Since enabling all functions on one chart can be cluttered, a **control panel** is required in the top-left corner of the screen to allow quick **Enable/Disable** of each function.

TESTING

- The **MAPPING** module is the foundation, so it must be completed, tested, and finalized before moving on to the other modules.

DEFINITIONS

APPENDIX 1 – RULES FOR IDENTIFYING SWING HIGHS/LOWS

1. End of an uptrend → formation of Swing High (SH)

- **Basic case:**
 - **sh_candle (swing-high candle):** the first candle that closes below the low of the immediately preceding candle ($\text{Close} < \text{Low}(n-1)$).
 - **sh_candle_confirm (confirmation candle):** the next candle that closes below the low of the sh_candle.
 - At this point, the candle with the highest high in the group of candles from the most recent Swing Low (SL) up to the sh_candle_confirm is marked as the Swing High (SH).
 - **Special case of sh_candle_confirm:**
 - After the swing-high candle (sh_candle) appears to signal a temporary pause in the uptrend, the confirmation candle (sh_candle_confirm) usually does not appear immediately after it, but rather a few candles later.
 - In this case, set the lowest point of the sh_candle as the **sh_key_level**.
 - Continue scanning subsequent candles until a candle closes below the sh_key_level → that candle is then called the sh_candle_confirm → the highest point in this candle group is marked as a Swing High (SH).
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2. End of a downtrend → formation of Swing Low (SL)

- Apply the reverse rules of the Swing High formation.
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3. Swing Highs/Swing Lows are only drawn and marked when a BOS/CHoCH occurs.

- During price movement from a newly formed Swing Low, before breaking the previous high to create a BOS, the price may form many minor highs/lows called *Internal Structure*.
 - These internal structures are ignored and must not be drawn or marked on the chart.
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4. Valid/Invalid CHoCH

- **Invalid CHoCH:** when the price retraces and closes below the Swing Low by less than 50% of the predefined Fibonacci retracement (or by using the IDZ break rule).
 - **Valid CHoCH:** when the price moves down and closes below the Swing Low by more than 50% of the Fibonacci retracement.
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5. Valid BOS

- A BOS is considered valid only when a candle breaks the previous high and closes above that previous high.

APPENDIX 2 – POIs

A. Valid Order Block (OB)

An Order Block (OB) is considered **valid** if and only if it satisfies all the following conditions:

1. Appears at **swing points**
 2. The price from the OB must create a **clear Break of Structure (BOS) or Change of Character (CHoCH)**
 3. Creates **Fair Value Gaps (FVGs)** when breaking out
 4. Remains **unmitigated**
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B. Fair Value Gaps (FVGs)

- Find and display **Unmitigated FVGs** within the range of the **last 4 swing points** (limited to 2 above and 2 below)(don't find and draw FVG next to Order Blocks)
- Preferably, **highlight candles** instead of drawing rectangles to avoid chart clutter

APPENDIX 3 – LIQUIDITY

1. Liquidity Pool

Signs of identifying a Liquidity Pool:

- **Equal Highs or Equal Lows in sequence**
 - If several equal highs appear close together → this forms a **Buy-side Liquidity Pool** (above).
 - If several equal lows appear close together → this forms a **Sell-side Liquidity Pool** (below).
 - **Clear support/resistance zones**
 - When price bounces multiple times from the same support or resistance zone, traders often place stop losses around that area → creating a Liquidity Pool.
 - **Sideways / Range Market (Accumulation phase)**
 - During accumulation, price is “trapped” between highs and lows.
 - Liquidity builds up both above the range (**Buy-side Pool**) and below the range (**Sell-side Pool**).
 - **Order Block tested multiple times but not broken**
 - When price keeps retesting an OB without breaking through, liquidity accumulates around the upper/lower boundary of that OB → forming a Liquidity Pool.
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2. Buyside / Sellside Liquidity (BSL / SSL)

Conditions for identifying Buyside Liquidity (BSL):

- **Equal Highs:**
 - At least 2 candles (or more) with highs at nearly the same price.
 - Maximum deviation between highs $\leq 1-3$ pips (depending on pair, can also be measured as % ATR).
- **Spacing between touches:**
 - Highs must not be immediately adjacent.
 - Minimum gap of 3–5 candles required to avoid noise.
- **Unmitigated (untaken):**
 - Since formation of the Equal Highs cluster, no candle has closed above that high.
 - If price has already moved above → considered **mitigated** → no longer valid as BSL.
- **Minimum touches:**
 - At least 2 touches required.
 - If more than 2 touches at the same level → reliability of BSL increases.

Conditions for identifying Sellside Liquidity (SSL):

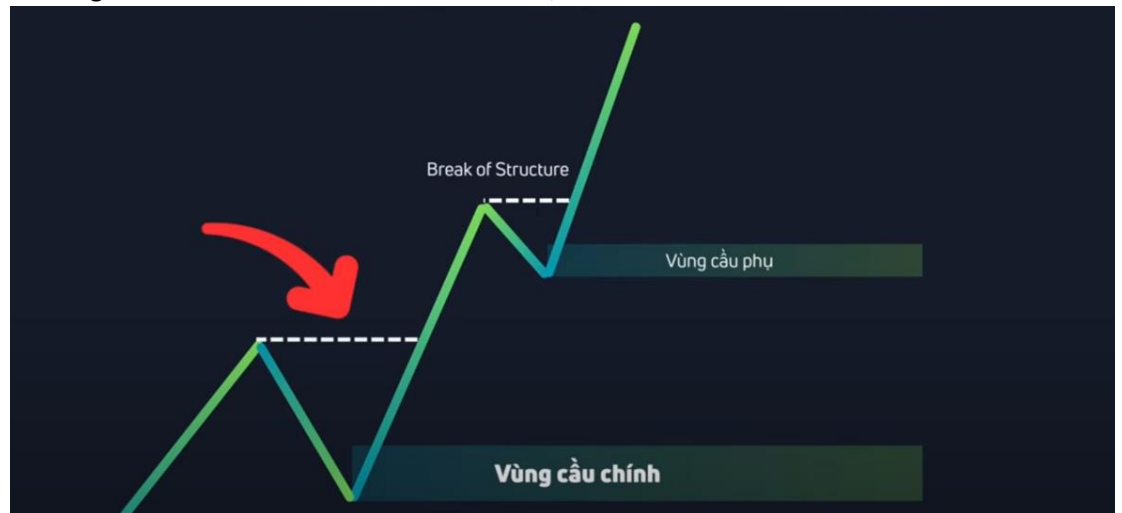
- Simply the opposite of BSL (applied to Equal Lows).
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3. Swing Lows (SL) / Swing Highs (SH) < 50% Fibo

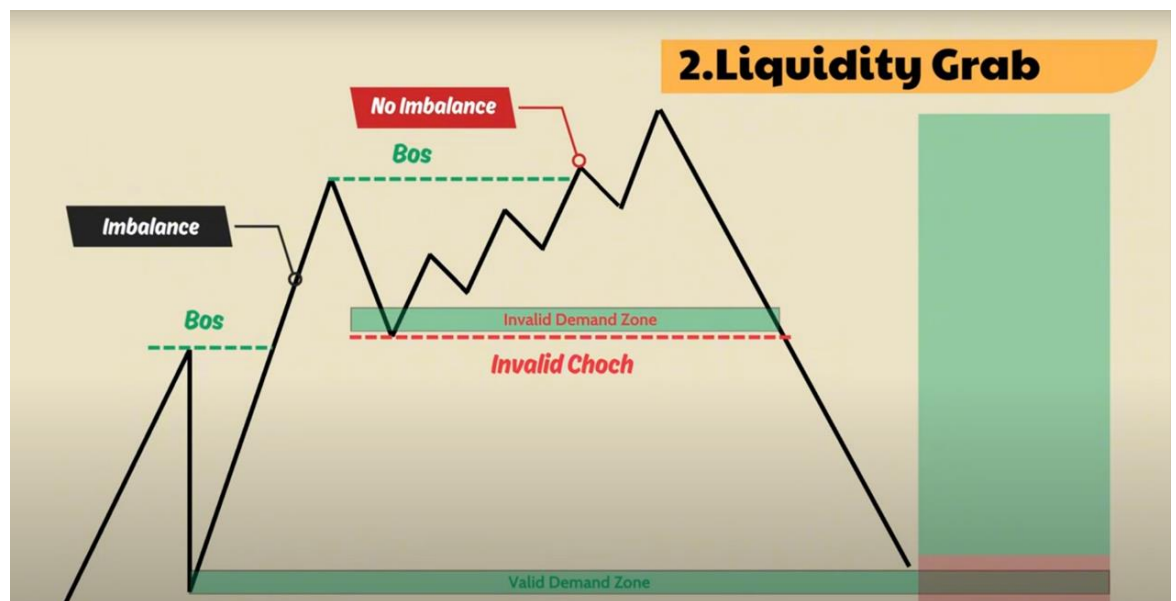
- If a Swing Low (SL) or Swing High (SH) is retraced **less than 50% of Fibo**, it is considered **liquidity**.
 - A line is drawn from that swing point to the current candle and marked as liquidity with the symbol \$.
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4. Invalid Demand Zone (IDZ) or Invalid Supply Zone (ISZ)

- An **Invalid Demand Zone (IDZ)** occurs in the following cases:
 1. The market creates a Swing Low $< 50\%$ Fibbo, then price bounces back up while still forming an FVG and a valid OB. → In this case, that OB is considered an **IDZ**.



2. When price moves upward to break the previous high, creating a BOS and forming a new high, but no FVG (imbalance) is generated from the breakout, then the Demand zone at the Swing Low is also considered an IDZ.



Apply the opposite logic for ISZ (Invalid Supply Zone) in the case of a Downtrend.