

# Choppiness Regime Breakout

Expert Advisor Documentation

## PLATFORM

MetaTrader 5 (MT5)

## TYPE

Volatility Regime Breakout

## TIMEFRAME

H1 (any — single timeframe)

## WEBSITE

[www.algotbot.live](http://www.algotbot.live)

**⚠ Important Disclaimer** This document is for educational and informational purposes only. It does not constitute financial or investment advice. Trading forex, CFDs, and other leveraged instruments involves substantial risk of loss and is not suitable for all investors. Past backtest performance does not guarantee future results. Never trade with capital you cannot afford to lose.

## Overview

**Choppiness Regime Breakout** is an Expert Advisor that trades the *transition* from consolidation to trend. Rather than reacting to a price level alone, it waits for the market to change its *character* — to stop chopping sideways and start travelling directionally — and only then acts on a structural break.

The engine of the strategy is the **Choppiness Index (CI)**, a bounded, non-directional measure of how efficiently price is moving. A high CI means price is coiling and whipsawing inside a range (energy is being stored); a low CI means price is travelling cleanly in one direction (energy is being released). The most reliable breakouts are born from tight coils, so the EA insists on seeing *both* phases: a recent coil followed by a fresh release.

To avoid the classic breakout trap of false thrusts, the EA layers four additional confirmations on top of the regime shift — a Donchian structure break, an EMA position-and-slope filter, a volume participation check, and a spread ceiling — and manages every trade with a volatility-scaled stop, a fixed reward:risk target, and an optional chandelier trailing stop.

### The Choppiness Index formula

$$CI = 100 \times \log_{10} \left( \frac{\text{sum}(\text{TR}, n)}{(\text{maxHigh}(n) - \text{minLow}(n))} \right) / \log_{10}(n)$$

CI compares the total distance travelled (sum of true ranges) against the net span of the window. Values near **61.8+** signal a choppy, range-bound market; values near **38.2-** signal an efficient, trending market.

## How It Works

The strategy is fully **symmetric**: a long requires all five bullish conditions, and a short requires the same five conditions mirrored. Every indicator is computed on **closed bars only** — the EA acts on the just-closed bar (shift 1) when a new bar opens — so nothing repaints.

### Entry Logic — the five conditions

1. **Coiled recently** — the Choppiness Index printed at or above `CoilThreshold` (default 61.8) somewhere within the last `CoilLookback` bars. The market was genuinely range-bound and storing energy.
2. **Released now** — the Choppiness Index of the just-closed bar has dropped below `TrendThreshold` (default 38.2). The coil is resolving into a trend.
3. **Structure break** — the just-closed candle closes beyond the Donchian high (long) or low (short) of the prior `BreakoutLookback` bars. This defines both the trigger and the direction.
4. **Regime agreement** — price is on the correct side of the `EmaPeriod` EMA, *and* that EMA's slope (measured over 3 closed bars) agrees with the break. This filters counter-trend fakeouts.
5. **Participation** — the breakout bar's tick volume expands above `VolMult` × its `VolMaPeriod` average. Real breakouts carry volume; drift-throughs usually do not. (Set `VolMult = 1.0` to disable.)

In addition, the trigger candle must be directional — a bullish candle ( `close > open` ) for longs, a bearish candle for shorts. If all five conditions align, a single position is opened in the direction of the break.

### Example — a long setup

EUR/USD has chopped inside a tight range for several bars, printing CI readings above 62 (coiled). On the current bar CI collapses to 34 (released). The candle closes above the 20-bar Donchian high, above a rising 50-EMA, on tick volume 1.5× its 20-bar average. All five bullish conditions are satisfied → the EA buys at the ask, places a stop 1.5×ATR below entry, and a take-profit 2× the stop distance above entry.

### Exit Logic — stop, target, and trail

- **Stop loss** — placed `AtrSlMult` × ATR below (long) or above (short) the entry price. The stop is volatility-scaled, so it widens in fast markets and tightens in quiet ones.
- **Take profit** — a fixed reward:risk target at `RewardRatio` × the stop distance (default 2.0, i.e. 2R). Both SL and TP are attached to the order at entry.

- **Chandelier trail** — an optional ATR trailing stop set `TrailAtrMult` × ATR from current price. It only ever *tightens* toward price and never loosens, locking in profit as a trend extends. Set `TrailAtrMult = 0` to disable trailing entirely.

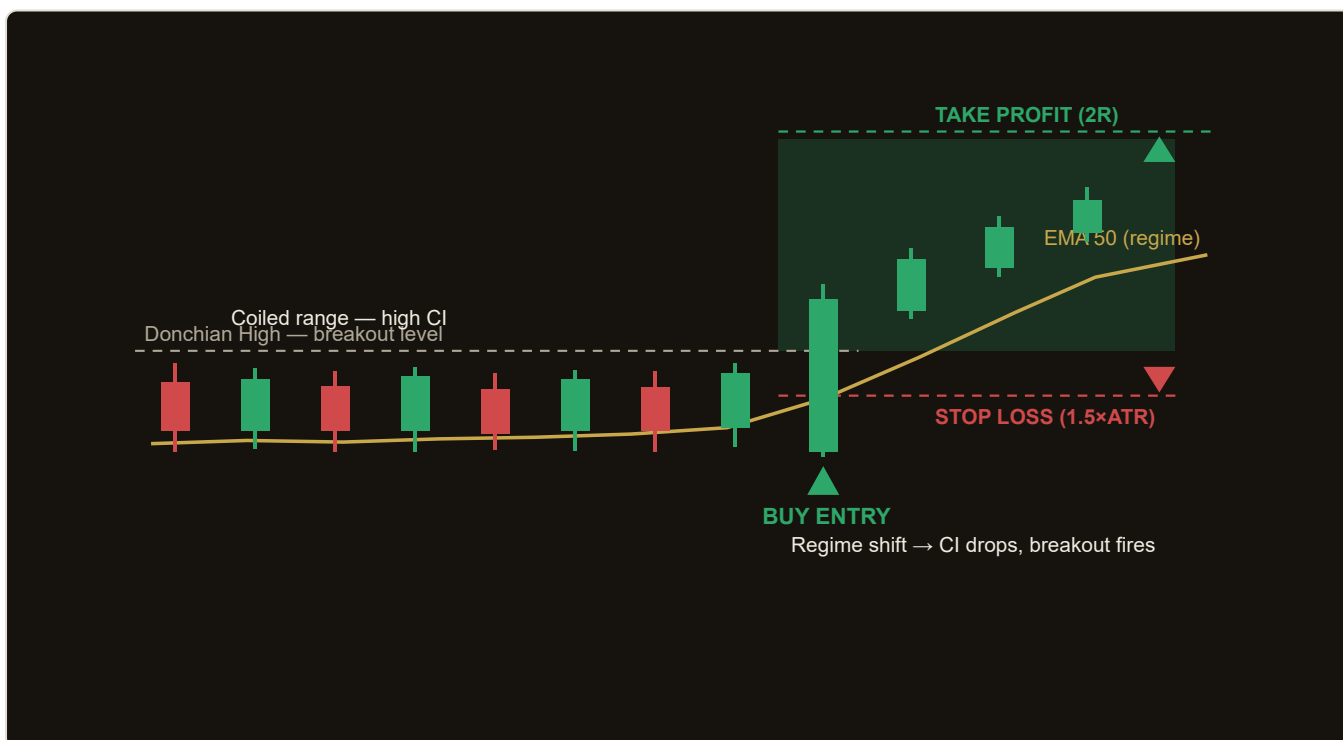
## Money Management & Filters

- **Fixed-fractional sizing** — the base lot (`BaseLots`) is scaled by account growth (current balance ÷ reference balance at init) and clamped to `MaxLots`. The MQL5 build additionally snaps the result to the broker's volume min/max/step.
- **One position per magic** — the EA never stacks; while a position is open it only manages the trail.
- **Spread ceiling** — entries are skipped when the current spread exceeds `MaxSpreadPoints`.
- **Warm-up guard** — no trades are taken until enough closed bars exist for every component (Choppiness, Donchian, EMA, ATR, and the volume average) plus the coil lookback.

**Single timeframe, no repainting.** Every price and indicator read uses the chart's own timeframe (`_Period` in MQL5 / `ctx.PrimaryTimeframe` in C#), and all calculations reference only completed bars. The EA therefore runs on whatever timeframe the chart is set to — no multi-timeframe dependencies.

## Strategy in Action

The illustration below shows an example of how the strategy identifies a setup and triggers its entry and exit. This is a simplified, illustrative example for educational purposes — not real market data.



*Illustrative example only. Actual market behaviour varies.*

## Parameters

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Parameter	Default	Description
ChoppinessPeriod	14	Choppiness Index window, in bars (range 8–30). Longer smooths the regime read; shorter reacts faster.
CoilThreshold	61.8	CI must have printed at or above this value within the lookback to count as "coiled" (range 50.0–75.0).
TrendThreshold	38.2	CI of the just-closed bar must be below this to count as "released" into a trend (range 25.0–50.0).
CoilLookback	6	How many recent bars to scan for the coil that preceded the release (range 2–20).
BreakoutLookback	20	Donchian channel length whose high/low break defines the breakout and its direction (range 10–50).
EmaPeriod	50	Regime EMA period; price and the EMA's slope must both agree with the break (range 20–200).
AtrPeriod	14	ATR window used to size the stop and the trail (range 7–30).
AtrSIMult	1.5	Stop distance as a multiple of ATR (range 0.5–4.0). Higher = wider, more forgiving stop.
RewardRatio	2.0	Take-profit distance as a multiple of the stop distance, i.e. reward:risk (range 1.0–5.0).
TrailAtrMult	2.5	Chandelier trail distance as a multiple of ATR (range 0.0–6.0). Set to 0 to disable trailing.
VolMaPeriod	20	Averaging window for the volume participation filter (range 5–60).
VolMult	1.3	Breakout bar volume must exceed this × its average (range 1.0–3.0). Set to 1.0 to switch the filter off.
MaxSpreadPoints	40	Skip entries when the current spread (in points) exceeds this ceiling (range 5–300).
BaseLots	0.10	Base lot size, fixed-fractionally scaled by account growth (range 0.01–1.0).
MaxLots	5.0	Hard ceiling on the scaled lot size (range 0.1–50.0).
Magic	5187	Magic number identifying this EA's positions; enforces one position per magic.

## Recommended Settings

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The strategy is designed for instruments and timeframes that alternate between clean consolidations and decisive breakouts. As a starting point:

- **Symbols** — major FX pairs (EUR/USD, GBP/USD, USD/JPY) and liquid indices that respect range structure. Avoid perpetually choppy, low-volatility instruments where breakouts routinely fail.
- **Timeframe** — H1 is a sensible default; the logic is timeframe-agnostic, so M30–H4 are all reasonable. Higher timeframes produce fewer, cleaner signals.
- **Regime thresholds** — the defaults (61.8 coil / 38.2 release) are the classic Fibonacci-derived Choppiness bands. Widen the gap (e.g. 65 / 35) to demand a sharper regime shift and fewer trades; narrow it for more frequent, lower-conviction entries.
- **Stop & target** — `AtrSlMult 1.5` with `RewardRatio 2.0` gives a balanced 2R target. Trend-followers may raise the reward ratio and lean on the chandelier trail; range-to-trend scalpers may lower it.

**Tip:** Because sizing scales with account balance, run the MT5 Strategy Tester and optimizer on your chosen symbol/timeframe first to confirm the regime thresholds and ATR multiples suit that market's volatility before going live. Validate on a demo account.

**Volume caveat:** The participation filter uses *tick volume*, not real exchange volume. On FX this is a proxy for activity and varies by broker feed. If the filter blocks too many valid breakouts on your feed, lower `VolMult` toward 1.0 (which disables it).

## How to Install on MetaTrader 5

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- 1 Copy `ChoppinessRegimeBreakout.ex5` to your MT5 `MQL5\Experts\` folder
- 2 Restart MetaTrader 5 and refresh the Navigator panel
- 3 Drag the EA onto a chart matching the recommended symbol and timeframe
- 4 Configure the input parameters and click **OK**
- 5 Enable **Algo Trading** in the MT5 toolbar

## Risk Warning

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