

Gini Impulse Breakout

Expert Advisor Documentation

PLATFORM	TYPE	TIMEFRAME	WEBSITE
MetaTrader 5 (MT5)	Trend / Breakout Ignition	H1 (adaptable)	www.algobot.live

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Overview

Gini Impulse Breakout is a trend and breakout Expert Advisor built around an unusual measurement borrowed from economics: the **Gini coefficient**. In economics the Gini coefficient measures inequality — a value of `0` means perfect equality (everyone holds the same), while a value approaching `1` means one participant holds virtually everything.

Gini Impulse Breakout applies this same statistic to price behaviour. Instead of income, it measures the *inequality of recent bar-to-bar movement*. Over the last `W` bars it collects each absolute return `r = |close[k] - close[k-1]|` and asks a single question: was the window's movement spread **evenly** across every bar, or was it **concentrated** into just a handful of dominant, explosive bars?

- **Low Gini (~0.2–0.4):** motion is evenly distributed — grinding, directionless chop with no dominant bar.
- **High Gini ($\geq$ threshold):** motion is dominated by a few large bars — a genuine impulse igniting out of an otherwise quiet base.

The core idea is that real trends are born from *concentrated bursts*, not from uniform drift. When the Gini coefficient of returns freshly crosses above its threshold, the EA interprets that as a concentration “**ignition**”. It then takes the direction of the window's net displacement (where the burst actually pushed price) and only acts when a trend EMA agrees — a filter designed to reject one-off exhaustion spikes. All risk is scaled to current volatility using ATR.

What makes it different: This is neither a moving-average crossover nor a plain price-range breakout. The trigger is a *distributional* (inequality) property of the return series itself — it fires on *how* the movement was distributed, not merely on how far price travelled.

How It Works

The EA evaluates its logic once per **closed bar** on the chart's primary timeframe. Bar 0 is still forming; when its timestamp advances, the prior bar has closed and a fresh evaluation runs. All indicator values are read at the just-closed bar.

1. Compute the Gini Coefficient of Returns

For the window of the last `GiniWindow` (W) bars, the EA gathers the absolute returns $r_k = |close[k] - close[k-1]|$ and sorts them ascending. It then applies the rank-weighted Gini formula:

$$\text{Gini} = (2 \cdot \sum i \cdot x(i)) / (W \cdot \sum x) - (W + 1) / W \quad \rightarrow \quad \text{range } [0, 1)$$

where $x(i)$ is the i -th smallest absolute return and i runs from 1 to W . A degenerate flat window (total movement of zero) is treated as Gini `0` and produces no signal.

2. Detect a Fresh Concentration “Ignition”

The EA stores the previous bar's Gini value. A signal is only armed when the coefficient **freshly crosses up** through the threshold on the current bar:

$$\text{ignited} = (\text{prevGini} < \text{GiniThreshold}) \text{ AND } (\text{gini} \geq \text{GiniThreshold})$$

Because it requires a fresh cross — not merely a value that is already high — the strategy fires once at the moment concentration ignites, rather than repeatedly while it stays elevated.

3. Determine Direction from Net Displacement

Direction is taken from where the concentrated burst pushed price over the window — the net displacement from the bar W periods ago to the just-closed bar:

$$\text{disp} = \text{close}[\text{now}] - \text{close}[\text{now} - W]$$

A positive displacement points to a long bias; a negative displacement points to a short bias.

4. Regime Gate (Trend EMA)

To filter one-off exhaustion spikes against the prevailing trend, the burst direction must agree with a trend EMA of closes (period `TrendEmaPeriod`):

- **Long signal:** `disp > 0` and the last close is **above** the EMA — a concentrated up-burst with price above trend.
- **Short signal:** `disp < 0` and the last close is **below** the EMA — a concentrated down-burst with price below trend.

5. Entry, Stop Loss & Take Profit

When a valid signal fires and no position already exists for this magic number, a single market order is sent. Risk is scaled to the current `AtrPeriod` ATR:

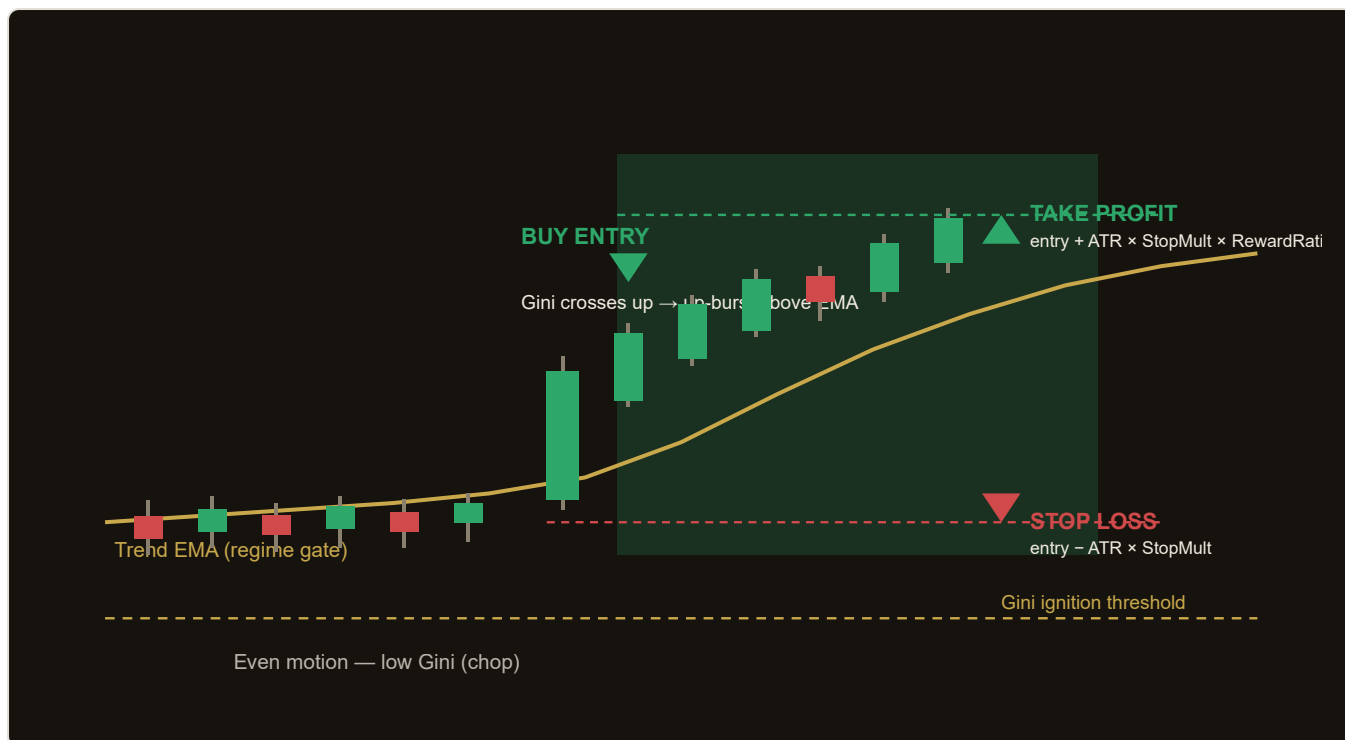
- **Stop distance:** `stopDist = ATR × StopMult`
- **Long:** entry at Ask, SL = entry – stopDist, TP = entry + stopDist × RewardRatio
- **Short:** entry at Bid, SL = entry + stopDist, TP = entry – stopDist × RewardRatio

Only **one live position per magic number** is permitted at a time. There is no active trade management beyond the fixed ATR-based SL and TP — the position is left to reach its stop or target.

Note: The stop and target are fixed at entry from the ATR reading of the just-closed bar. Because the take profit is `RewardRatio` multiples of the stop distance, the default `RewardRatio = 2.0` targets a 2:1 reward-to-risk profile on every trade.

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

Parameter	Default	Description
GiniWindow	20	Number of bars (W) of absolute returns used to compute the Gini coefficient. Range 8–60, step 2. Smaller = more reactive; larger = smoother.
GiniThreshold	0.55	Concentration ignition threshold. The Gini of returns must freshly cross up through this value to arm a signal. Range 0.35–0.80, step 0.05.
TrendEmaPeriod	50	Period of the trend EMA used as the regime gate. Longs require price above the EMA; shorts require price below. Range 10–200, step 5.
AtrPeriod	14	ATR period used to size the stop and target to current volatility. Range 5–40, step 1.
StopMult	1.6	ATR multiplier for the stop-loss distance ($\text{stopDist} = \text{ATR} \times \text{StopMult}$). Range 0.5–4.0, step 0.1.
RewardRatio	2.0	Reward-to-risk ratio for the take-profit (TP distance = $\text{stopDist} \times \text{RewardRatio}$). Range 0.5–5.0, step 0.1.
Lots	0.10	Fixed trade volume in lots. Range 0.01–1.0, step 0.05.
Magic	8021	Magic number identifying this EA's positions. Only one live position per magic is allowed at a time.

Recommended Settings

The strategy is designed to catch trends igniting out of quiet bases, so it tends to perform best on liquid instruments and on timeframes where impulse bars are meaningful rather than noise.

- **Symbols:** Major FX pairs (e.g. EURUSD, GBPUSD, USDJPY) and liquid indices where clean directional bursts occur.
- **Timeframe:** H1 is a sensible starting point. Lower timeframes increase signal frequency but also noise; higher timeframes yield fewer, cleaner ignitions.
- **GiniThreshold:** Start at the default `0.55`. Raise it (e.g. 0.60–0.65) to demand more extreme concentration and fewer, higher-conviction entries; lower it for more frequent signals.
- **Risk:** Keep `StopMult` and `RewardRatio` aligned with the instrument's typical follow-through. The default 2:1 reward-to-risk favours trends that extend.

Example configuration — EURUSD H1

GiniWindow = 20, GiniThreshold = 0.55, TrendEmaPeriod = 50, AtrPeriod = 14, StopMult = 1.6, RewardRatio = 2.0, Lots = 0.10. With these settings the EA waits for the concentration of recent returns to ignite above 0.55, confirms the burst direction against the 50-period EMA, and brackets each trade with an ATR-scaled stop and a 2× target.

Tip: Always validate any parameter set in the MT5 Strategy Tester on your broker's data before live use. Because signals depend on the distribution of returns, spread and instrument tick behaviour can materially affect results.

How to Install on MetaTrader 5

- 1 Copy `GiniImpulseBreakout.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

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