PSEDYS | TECHNICAL REFERENCE MANUAL V3.0

EOM — Ease of Movement

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Technical Reference Manual v1.0

PSEDYS | Complete Edition
Midpoint Move / Box Ratio · Efficient Movement vs Volume · Zero Cross · EOM vs CHOP · MTF · Bot vs TradingView

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1. What is EOM? Concept and Origin

EOM (Ease of Movement) was created by **Richard Arms** (creator of the Arms Index/TRIN) and measures how **easily** the price moves relative to the volume used. A price that moves significantly with low volume = "easy" movement (strong trend with little effort). A price that moves slightly with high volume = "heavy" movement (price resistance or distribution).

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2. Calculation Formula — Complete

```
Midpoint Move[i] = (High[i]+Low[i])/2 - (High[i-1]+Low[i-1])/2

Box Ratio[i] = (Volume[i] / scale) / (High[i] - Low[i])
  where scale = normalization factor (e.g., 1,000,000 or 100,000)

EOM_raw[i] = Midpoint_Move[i] / Box_Ratio[i]
           = Midpoint_Move[i] × (High[i]-Low[i]) / (Volume[i]/scale)

EOM[i] = SMA(EOM_raw, period)    ← standard period=14
```

Simplified:

```
EOM_raw[i] = ((H+L)/2[i] - (H+L)/2[i-1]) × (H[i]-L[i]) / Volume[i] × scale
```

Standard period for SMA: 14

Physical interpretation:
- EOM > 0: midpoint moved up easily (low volume relative to movement) → efficient bullish
- EOM < 0: midpoint moved down easily → efficient bearish
- EOM ≈ 0: either the price did not move, or it moved with difficulty (high volume, small movement)

Verification bar 15 (first EOM value with SMA 14):

```
EOM_raw calculated for bars 2-15 → SMA over 14 values = 0.016661  ✓
(Positive = slight bullish trend on our dataset)
```

EOM Table bars 15–50 (selection):

Bar	EOM (SMA14)	Interpretation
15	+0.01666	Slight bullish movement
20	+0.02743	Efficient bullish
30	+0.02794	Efficient bullish
40	+0.02852	Efficient bullish
50	+0.02164	Moderate bullish

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3. Interpretation and Levels

```
EOM > 0 (positive): price moves up easily relative to volume → bullish
EOM < 0 (negative): price moves down easily → bearish
EOM ≈ 0: either sideways market, or high volume without movement (accumulation/distribution)

Extremely positive EOM: active bullish trend, buyers with reduced pressure
Extremely negative EOM: active bearish trend, active sellers
```

Levels: calibrated on the instrument (the scale is arbitrary).

4. Lag and Warm-up

```
EOM_raw first value: bar 2 (requires previous bar for midpoint)
EOM (SMA14) first value: bar 2+14-1 = bar 15
Warm-up: 15 bars
Lag: SMA lag = (14-1)/2 = 6.5 bars
```

5. Trading Signals

Zero Cross

```
EOM cross zero bullish (from negative to positive):
  Price movement becomes more efficiently bullish
  → Moderate Long signal

EOM cross zero bearish:
  → Moderate Short signal
```

Trend Confirmation

```
Rising price + rising positive EOM: efficient bullish trend → Long riding
Rising price + declining EOM (towards zero): bullish trend requires more effort → caution
Rising price + negative EOM: price rises but with high volume → suspect (hidden distribution)
```

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Divergences

```
Price HH + EOM LH: new high requires more "effort" (volume) → possible top
Price LL + EOM HL: new low requires less effort → bearish exhaustion → possible bottom
```

6. EOM vs CHOP vs VO — Comparison

Aspect	EOM	CHOP	VO
Measures	Efficiency of movement vs volume	Trending vs Choppy	Volumetric activity
Volume included	Yes (direct)	Yes (TR)	Yes (direct)
Direction	Yes (+/-)	No (trending/ choppy)	No (quantity)
Smoothing	SMA(14)	None	EMA
Usage	Trend quality	Market regime	Breakout confirmation

7. MTF and PSEDYS

```
# EOM trend quality filter
trend_efficient = eom > 0 and eom > eom_avg   # efficient and accelerating trend
trend_labored   = eom > 0 and eom < eom_avg   # trend with increased effort

# Entry filter
entry_ok = eom > 0 and trend_efficient and ema_stack_bullish
```

Level	Timeframe	Usage
Macro	4H	EOM > 0 = bullish trend quality
Meso	1H	Rising EOM = increasing efficiency
Entry	5M	Not recommended directly

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8. Bot vs TradingView Validation

```
□ Midpoint Move = (H[i]+L[i])/2 - (H[i-1]+L[i-1])/2
□ Box Ratio = (Volume/scale) / (H-L)
□ EOM_raw = Midpoint_Move / Box_Ratio
□ EOM = SMA(EOM_raw, 14)
□ Scale: TradingView uses 1,000,000 by default (check)
□ First value: bar 15
```

Python Script:

```
def eom(highs, lows, volumes, period=14, scale=1e6):
    n = len(highs)
    raw = [None]*n
    for i in range(1, n):
        mid_move = (highs[i]+lows[i])/2 - (highs[i-1]+lows[i-1])/2
        hl = highs[i]-lows[i]
        if hl > 0 and volumes[i] > 0:
            box_ratio = (volumes[i]/scale) / hl
            raw[i] = mid_move / box_ratio
    eom_v = [None]*n
    for i in range(period, n):
        vals = [raw[j] for j in range(i-period+1, i+1) if raw[j] is not None]
        if len(vals) == period: eom_v[i] = sum(vals)/period
    return eom_v
```

9. Practical Exercises

Exercise 1: Negative EOM with Rising Price

Situation: BTC 4H. Price rises 2% over 3 bars. EOM = −0.015 (negative). High volume on these bars.

Answer: Rise with high effort — suspect. Negative EOM with rising price = bullish movement requires disproportionate volume → masked distribution or strong resistance. Reduce sizing, tighten SL. Could be institutional accumulation against the trend or distribution at resistance.

Exercise 2: EOM cross zero bullish after sideways

Situation: ETH 1H. Sideways market for 5 days. EOM shifts from −0.008 to +0.012. ADX = 18.

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Answer: Preparation signal — not direct entry. Bullish EOM cross = price movement becomes more efficiently bullish, but ADX = 18 = trend still unclear. Wait for ADX > 20 and clear EOM > 0 for confirmed entry.

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10. Cheat Sheet

Concept	Value / Formula
Midpoint Move	`(H+L)/2[i] - (H+L)/2[i-1]`
Box Ratio	`(Vol/scale) / (H-L)`
EOM_raw	`Midpoint_Move / Box_Ratio`
EOM	`SMA(EOM_raw, 14)`
> 0	Efficient bullish trend
< 0	Efficient bearish trend (or rising price with effort)
≈ 0	Sideways or inefficient movement
Zero cross bull	Efficiency becomes bullish → Long signal
Period SMA	14
Warm-up	15 bars
Scale	1,000,000 (TradingView)
Cause #1 error	Different scale → non-comparable values

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