What Is SOPR in Bitcoin?

A single ratio that asks a deceptively simple question of every coin that moves — is it being sold at a profit, or a loss?

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AT A GLANCE

WHAT IT IS
Spent Output Profit Ratio — price sold ÷ price paid, per coin moved

THE PIVOT
A reading of 1.0 — the aggregate breakeven line

ABOVE 1
Coins moving in profit; below 1, moving at a loss

ORIGIN
Introduced by Renato Shirakashi, ~2019

KEY VARIANTS
aSOPR, STH-SOPR, LTH-SOPR, entity-adjusted

THE HONEST CAVEAT
A behavioral gauge, not a timing trigger

Every time a bitcoin moves on-chain, it leaves a receipt. Because the network records the price at which a coin was last transacted, and the price at which it moves again, it is possible to know — without any names or accounts — whether that coin changed hands at a profit or a loss. SOPR, the Spent Output Profit Ratio, is the metric that turns this raw fact into a single number for the entire market. It answers one blunt question every day: on the coins that actually moved, are holders realizing gains or swallowing losses? This report explains what SOPR measures, the mechanism that makes it possible, how to read its pivotal line at 1.0, the variants that sharpen it, its behavior across market cycles, and the honest limits of leaning on it.

01 — What SOPR actually measures

SOPR is, at its core, a ratio of two prices. For every coin — more precisely, every spent output — that moves on a given day, you take the value in dollars at the moment it is spent and divide it by the value in dollars at the moment it was created, meaning the last time it moved. Aggregate that across the whole network and you get SOPR: the realized value of everything spent divided by the cost at which it was originally acquired. Because it is a ratio, it is dimensionless — a pure number with no units. A SOPR of 1.0 means coins are, on aggregate, being moved at exactly the price they were acquired for; the market is realizing neither profit nor loss. Above 1.0, the coins in motion are in profit; below 1.0, they are being sold at a loss. That single line at 1.0 is the axis the entire metric turns on. It is worth stressing what SOPR does not measure: it says nothing about the coins that stayed still. A holder sitting on an enormous unrealized loss contributes nothing to today's reading unless and until they actually move those coins. SOPR is therefore a metric of decisions taken, not of paper positions held — it captures the moment of realization, the instant a holder converts an intention into an on-chain fact, which is precisely what makes it a behavioral gauge rather than a valuation one.

02 — The UTXO engine: why Bitcoin reveals profit and loss

SOPR is possible because of how Bitcoin is built. The network uses a UTXO model — unspent transaction outputs, discrete chunks of bitcoin each stamped with the moment and price of their creation. When you spend bitcoin, you consume these outputs and create new ones, and the blockchain permanently records the timestamp of each. That timestamp can be matched to the market price on that day, giving every moving coin an implied cost basis and an implied sale price. This is the same "value at last move" foundation behind **Bitcoin's realized price**, which values each coin at the price it last transacted rather than the current spot price. SOPR simply applies that cost-basis logic to the flow of coins being spent, exposing realized profit and loss across the network in real time — something no traditional market, where cost basis is private, can offer.

03 — Reading the number: above, below, and the line at one

The interpretation is intuitive once the pivot is clear. When SOPR sits comfortably above 1.0 and stays there, the market is a machine of profit realization: coins are moving into stronger hands at prices well above their acquisition cost, which typically accompanies rising or euphoric markets. When SOPR falls below 1.0, the opposite is happening — participants are, in aggregate, sending coins at a loss, a behavior that clusters in corrections and bear markets when fear overrides the instinct to wait. The magnitude matters as much as the direction. A

SOPR pressed only slightly above 1.0 suggests thin, reluctant profit-taking; a SOPR spiking far above 1.0 signals aggressive, possibly exhausting profit realization that can mark local tops. Read the number, then read how far it strays from the line.

> The power of the 1.0 line is behavioral, not mechanical. It works because human beings are loss-averse: given the choice, most holders would rather wait for breakeven than crystallize a loss. That reluctance is what makes 1.0 a genuine battleground rather than an arbitrary midpoint — it is where the aggregate decision to sell or hold is most finely balanced.

04 — The pivotal "1": support in bull, resistance in bear

The most widely cited SOPR pattern concerns how the metric behaves around 1.0 in different regimes. In a bull market, SOPR tends to dip toward 1.0 during corrections and then bounce off it, as if the breakeven line were a floor. The logic is behavioral: as coins approach a loss, holders who bought earlier refuse to sell below cost, selling pressure dries up, and the market recovers — 1.0 acts as support. In a bear market, the pattern inverts. SOPR repeatedly rises toward 1.0 from below and gets rejected, because holders who are finally back at breakeven rush to exit the position they have been underwater on, capping the rebound — here 1.0 acts as resistance. Watching which side of 1.0 the metric respects has become a rough gauge of which regime the market is in, though, as later sections stress, it is a heuristic and not a guarantee. The asymmetry is what makes the pattern useful: in both regimes, the breakeven line is where the largest cluster of holders faces the same psychological decision at once, and their collective flinch — to hold through a small loss, or to bail the moment they are whole again — is what bends price at that level.

05 — The variants that sharpen it

Raw network-wide SOPR is noisy, so analysts rely on refined versions. The most common is adjusted SOPR, or aSOPR, which strips out outputs younger than one hour — coins that move almost immediately, often internal shuffling rather than genuine economic selling — producing a cleaner read of real profit-taking. Beyond that, SOPR is split by holder age. Short-Term Holder SOPR isolates coins younger than 155 days, capturing the behavior of recent buyers and speculators, while Long-Term Holder SOPR covers coins older than that line, reflecting seasoned conviction; the 155-day threshold is a statistically derived boundary beyond which coins have historically been far less likely to move. These cohorts map directly onto the framework in our note on **long-term holders**. A further refinement, entity-

adjusted SOPR, removes transfers between wallets owned by the same entity, so that an exchange moving its own coins is not mistaken for a holder selling.

06 — SOPR across the cycle: tops, bottoms, and capitulation

Viewed over a full cycle, SOPR sketches a recognizable shape. Near market tops, it tends to print large, sustained readings above 1.0, the signature of mass profit-taking as long-dormant coins move to eager new buyers at rich valuations. Near cycle bottoms, it does the reverse, plunging well below 1.0 as capitulating holders send coins at deep losses — a spasm of realized pain that has historically coincided with exhaustion and the transfer of supply to patient accumulators. Short-Term Holder SOPR is especially telling here: when it breaks below 1.0 and stays there, it means recent buyers are underwater and selling into fear; when it reclaims 1.0, it is read as sentiment beginning to heal. None of this arrives with precise thresholds, and the exact values differ every cycle, but the qualitative rhythm — profit at the top, loss at the bottom — is one of the more durable regularities in on-chain analysis. Part of the reason it holds is that it is self-reinforcing: capitulation transfers coins from weak hands to strong ones at low cost bases, which raises the aggregate breakeven of the surviving supply and sets the stage for the next expansion, while heavy profit realization at the top exhausts the pool of coins willing to sell, thinning the very supply that a rally needs to keep feeding on.

07 — Where SOPR sits among the metrics

SOPR is best understood as one member of a family built on the same cost-basis idea. If realized price supplies the network's aggregate cost basis, then **MVRV** — the ratio of market value to realized value — measures the unrealized profit or loss sitting in every coin, spent or not. SOPR is the flow-based cousin of that stock-based measure: rather than asking how much paper gain the whole supply holds, it asks what is actually being realized by the coins in motion today. MVRV tells you how stretched the market is; SOPR tells you what holders are doing about it. Used together, they are complementary — a high MVRV warns that enormous unrealized profit exists, and a spiking SOPR confirms that holders have begun to cash it in. Neither is complete alone, which is precisely why on-chain desks read them as a panel rather than in isolation.

08 — How to use it honestly

For all its elegance, SOPR carries real limitations that an honest reading must respect. It is a coincident-to-lagging behavioral signal — it describes what holders are doing now or have just done, not what price will do next. Its famous rules, like "1.0 is support in bull markets," are drawn from only a handful of past cycles and risk overfitting; a strong trend can blow straight through the line the pattern says should hold. Raw SOPR is easily distorted by exchange and internal transfers unless the entity-adjusted version is used, and a single day's print says little — the signal lives in sustained readings and the crossing of the 1.0 line, not in one candle. The disciplined approach is to treat SOPR as one voice in a chorus, read alongside price, realized price, MVRV, and the holder cohorts, letting agreement build conviction and disagreement raise caution. It is a remarkably honest window into market psychology — but a window, not a crystal ball.

"For which of you, intending to build a tower, sitteth not down first, and counteth the cost?"

LUKE 14:28

METHODOLOGY & SOURCES

This explainer synthesizes the standard definition of SOPR — the Spent Output Profit Ratio, realized value divided by value at creation for each spent output, aggregated network-wide — as introduced by Renato Shirakashi around 2019 and popularized by on-chain data platforms including Glassnode and CryptoQuant. The pivot at 1.0, the support/resistance behavior around it, and the variants (adjusted SOPR excluding sub-one-hour outputs; Short-Term and Long-Term Holder SOPR split at the ~155-day threshold; entity-adjusted SOPR) reflect widely documented, standard usage.

Cycle behavior (sustained readings above 1.0 near tops, deep readings below 1.0 near capitulation) is described qualitatively, with approximate language rather than false-precision values, because exact thresholds differ every cycle. SOPR-based heuristics are presented as historically observed patterns drawn from a limited sample, not causal laws, and are explicitly framed as best used alongside realized price, MVRV, and holder-cohort data. The 155-day short-versus-long-term boundary reflects Glassnode research. Nothing here is investment advice.