



# MEV explained: who profits from the order of Ethereum transactions

Whoever orders the transactions in an Ethereum block can capture extra value, which searchers find, builders package, validators mostly collect and some users now get back.

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Every Ethereum block is a list, and someone decides the order. That choice can be worth money, because a trade placed just before or just after another trade can profit from it. Maximal extractable value, or MEV, is the name for that extra value: what can be made from including, leaving out or reordering transactions, on top of the normal block reward and fees <sup>[2]</sup>.

For an ordinary user, MEV shows up as a worse price on a swap or as a refund from a wallet that sells its order flow. For validators, the computers that propose Ethereum's blocks, it is a second income stream on top of staking rewards. For Ethereum as a whole, it is a pressure toward the operators best equipped to capture it.

The term began in research. In 2019, Philip Daian and co-authors called it "miner extractable value (MEV)" and described it as a phenomenon "that poses concrete, measurable, consensus-layer security risks" <sup>[1]</sup>. Ethereum.org now says "maximal," because validators replaced miners after the Merge <sup>[2]</sup>.

## How ordering becomes money

The work starts with "searchers," who, per [ethereum.org](#), "run complex algorithms on blockchain data to detect profitable MEV opportunities" <sup>[2]</sup>. [Ethereum.org](#) names three common ones. Arbitrage buys a token where it is cheap and sells it where it is dear. Liquidation closes a borrower's under-collateralized loan on a lending protocol for a fee. Sandwich trading places one trade just before a large pending swap and another just after it <sup>[2]</sup>.

Searchers do not build blocks themselves. Under proposer-builder separation, or PBS, "block builders become responsible for creating blocks and offering them to the block proposer in each slot," and the proposer can "simply choose the most profitable one" <sup>[3]</sup>. On Ethereum today, validators reach builders through MEV-Boost, which [Flashbots](#) describes as "open source middleware run by validators to access a competitive block-building market" and as "an implementation of proposer-builder separation (PBS)" <sup>[4]</sup>. Relays sit in the middle, checking blocks and passing them from builders to proposers <sup>[5]</sup>.

**Analogy, not the mechanism itself:** think of an auction house where scouts find underpriced lots, dealers bundle them into packages, and the auctioneer sells the slot to the highest-bidding dealer.

## Where the money goes

Competition pushes most of the value to the end of the chain. [Ethereum.org](#) says a rational searcher will pay fees of "up to 100% of the searcher's MEV," and for contested opportunities such as arbitrage, searchers "may have to pay 90% or even more" <sup>[2]</sup>.

Order-flow auctions send part of it back to users. [Flashbots](#) describes MEV-Share as a way for users, wallets and applications "to internalize the MEV that their transactions create ('orderflow auction')" <sup>[6]</sup>. Searchers bid to act on a user's transaction, and the user gets back a "specified percentage (by default 90%)" of the MEV it creates <sup>[6]</sup>.

The figures below are invented to show the split. They describe no real trade.

| Step                                                                | Illustration                             |
|---------------------------------------------------------------------|------------------------------------------|
| Price gap found between two pools, on 10 tokens                     | \$10 per token, so \$100                 |
| Searcher pays the builder 90%                                       | \$90; searcher keeps \$10                |
| Builder bids for the proposer's slot                                | \$85 to the proposer; builder keeps \$5  |
| Same trade routed through an order-flow auction, backrun worth \$50 | \$45 back to the user at the 90% default |

## The case for and against

Not all MEV harms users. Ethereum.org says "MEV is not all bad": DEX arbitrage "ensures that users get the best, most correct prices for their tokens," and lending protocols rely on fast liquidations so that lenders are repaid <sup>[2]</sup>.

The case against is about users and about decentralization. Ethereum.org says sandwich trading results "in an unequivocally worse experience for users," who "face increased slippage and worse execution on their trades" <sup>[2]</sup>. Flashbots says "MEV is a centralizing force on Ethereum" <sup>[4]</sup>. Ethereum.org's PBS page explains why: capturing MEV takes skill and custom software, so "staking returns are likely to be higher with centralized operators," which "disincentivizes home staking" <sup>[3]</sup>. PBS is meant to counter that by letting any proposer pick from builders' bids rather than search for MEV itself <sup>[3]</sup>.

## How to tell it touched a trade

Ethereum.org's description of a sandwich gives the sign: a searcher buys "immediately before the large trade" and sells "immediately after," so the victim's trade fills at a higher price <sup>[2]</sup>. In Le Coin's view, a swap that fills worse than its quote, with the same token bought just before it and sold just after it in the same block, fits that pattern. A refund line from a wallet or app that routes orders through an order-flow auction is the opposite sign: some of the MEV a trade created came back <sup>[6]</sup>.

In Le Coin's view, the useful question about any MEV figure is what it counts: which strategies, whether payments to validators are included, and whether user refunds are netted out.

## What is not yet known

How much MEV exists is not directly observable. The "maximal" value is a ceiling; any measured figure counts only the strategies a given dataset can detect.

Whether PBS moves into the protocol itself is open. Ethereum.org's PBS page says in-protocol PBS has "no finalized specification yet" and calls it "likely a year away or more" <sup>[3]</sup>. Until then, PBS on Ethereum runs through outside software such as MEV-Boost, which Flashbots' glossary describes as software that "sits between the consensus client and the execution client," while it defines PBS itself as "a change to the base Ethereum protocol" <sup>[5]</sup>.

In Le Coin's view, MEV is a share-out of the value that transaction ordering creates. Searchers, builders and proposers split it today, and order-flow auctions are a route that returns some of it to the people whose trades create it.

# Sources

1

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