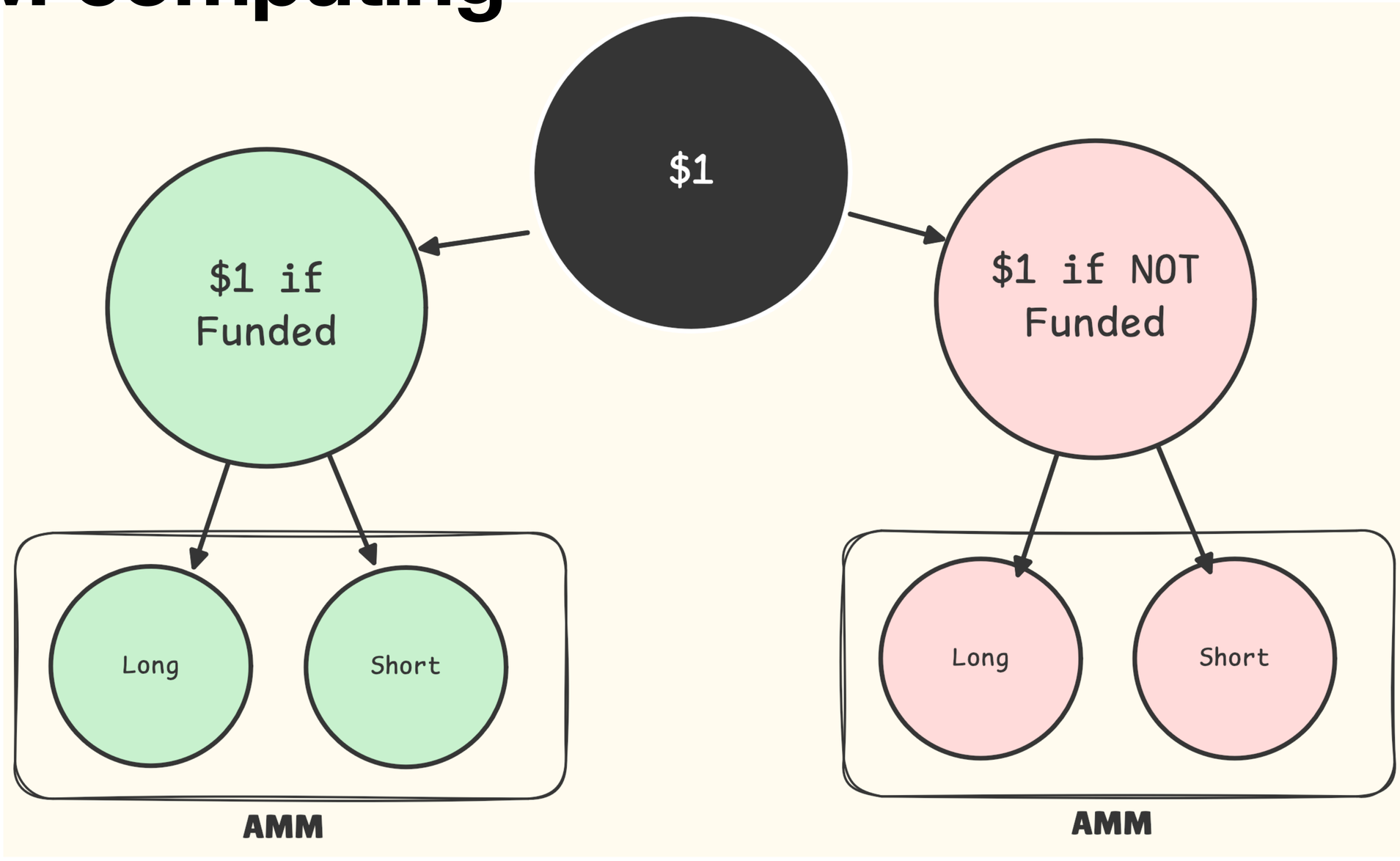
CFM fine tuning

@lajarre @ GG 25

CFM computing



CFM engineering

$$\eta = \frac{\text{Metric}}{\text{Funding} + \text{Subsidies}}$$

efficiency

Deployer must value the metric

$$\eta = \frac{u(\text{Metric})}{\text{Funding} + \text{Subsidies}}$$

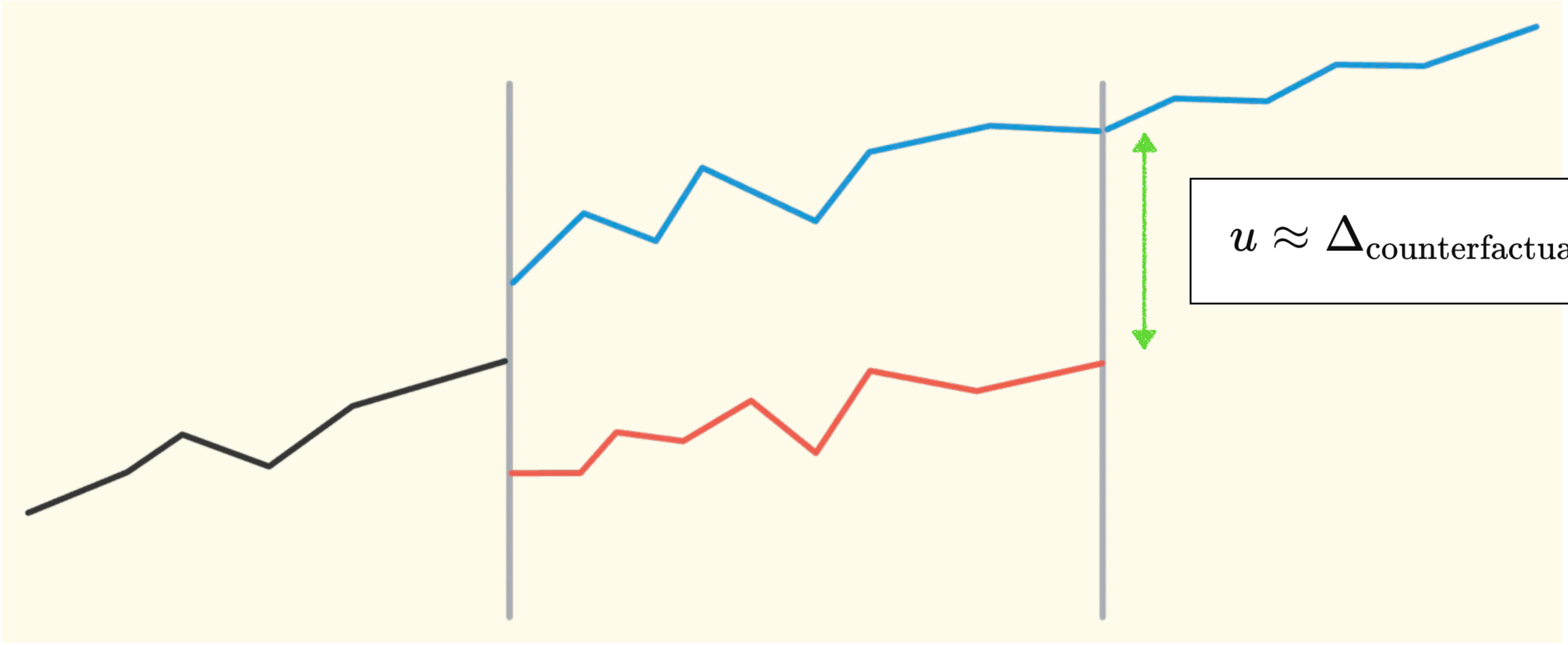
Deployer expects:

$$\eta > 1$$

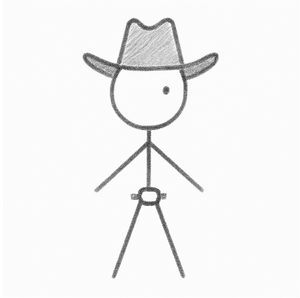
Bare minimum:

$$u_{\min} = \text{Funding} + \text{Subsidies}$$

counterfactual spread is all you need?



info release



Private info trader costs:

transaction costs (research…)

opp costs

Trade only if:

$$\text{Payoff} > \text{Costs}$$

Profit:

$$\text{Payoff} \approx \text{Liquidity} \times (\Delta_{\text{Price}})^2$$

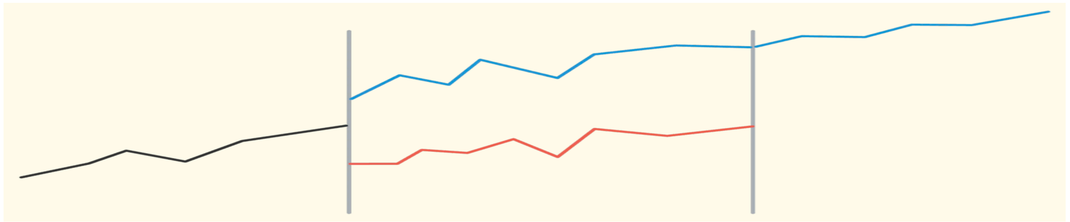
x P(proposal)

conditional probability/EV accuracy

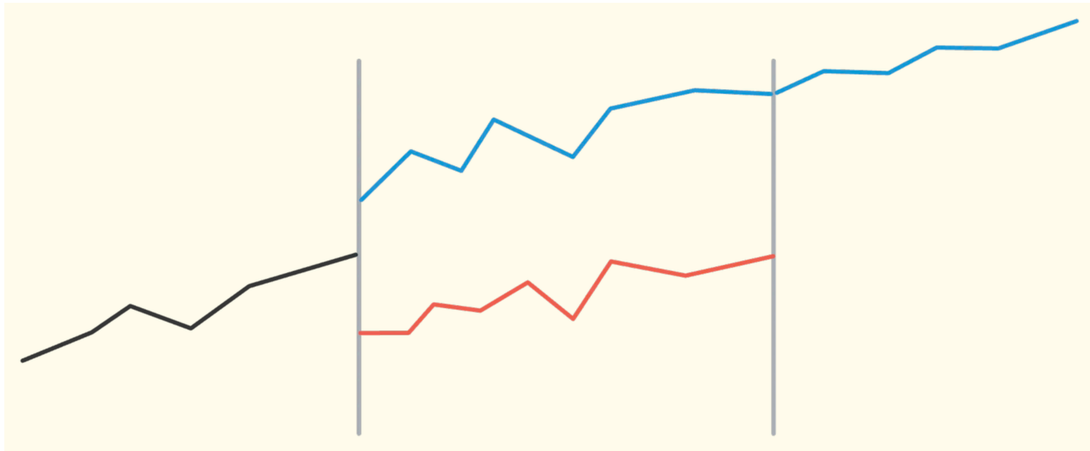
$$\text{Accuracy} = -\left|\left|\text{metric}_{\text{predicted}} - \text{metric}_{\text{observed}}\right|\right|_2$$

$$u \approx \Delta_{\text{counterfactual spread}}\, e^{\text{Accuracy}}$$ *(kinda)*

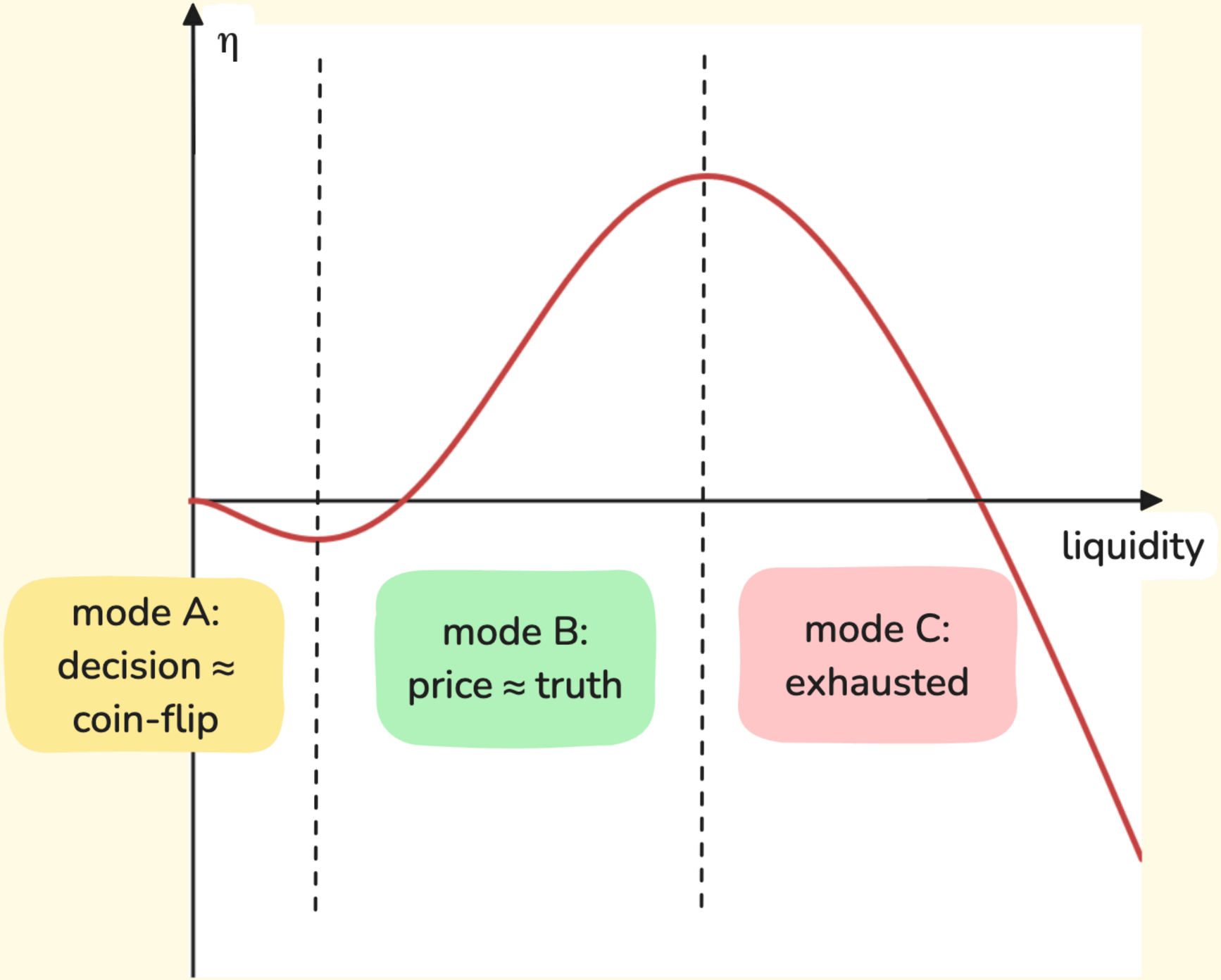
need more accuracy



need less



returns to subsidies

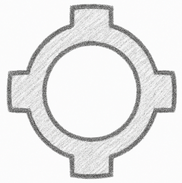


decision accuracy

Need a guarantee:

$$\text{volatility} \times \Delta_{\text{counterfactual spread}} < \text{Constant}$$

engine parts



CFM base params:

duration ***metric type*** ***decision rule***

market model: bayesian updates

$$\text{Noise} \sim \mathcal{N}\left(0,\ \sigma_n^2\right)$$

$$\text{Reveal} \sim \mathcal{N}\left(\mu_r,\ \sigma_r^2\right)$$

Perform bayesian updates on market model for a given set of CFM params.

Observe $u_{\min}$ $\bar{u}$

darwinian updates

Pick base params

Run bayesian updates

If $\bar{u}$ < $u_{\min}$ Kill

Else, scale CFMs!

thanks!