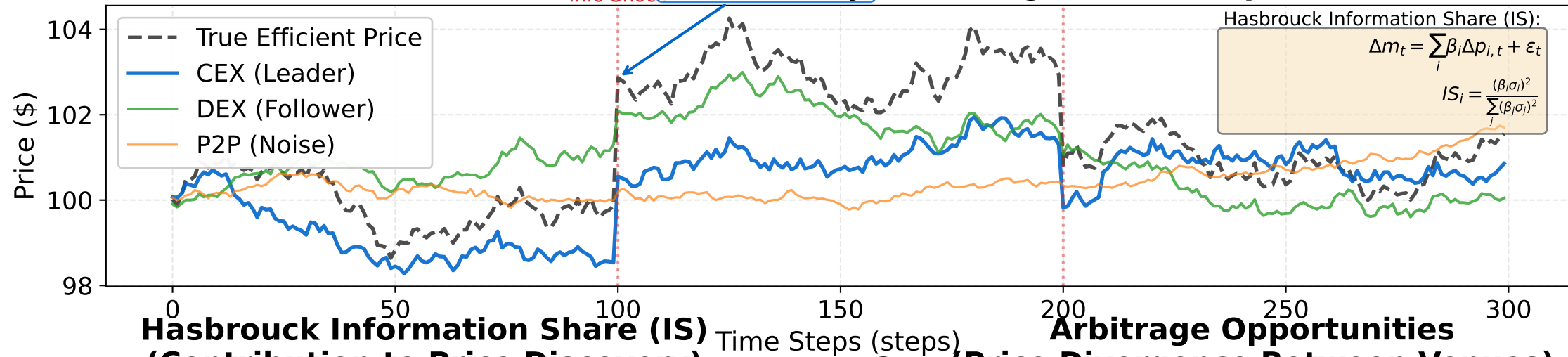
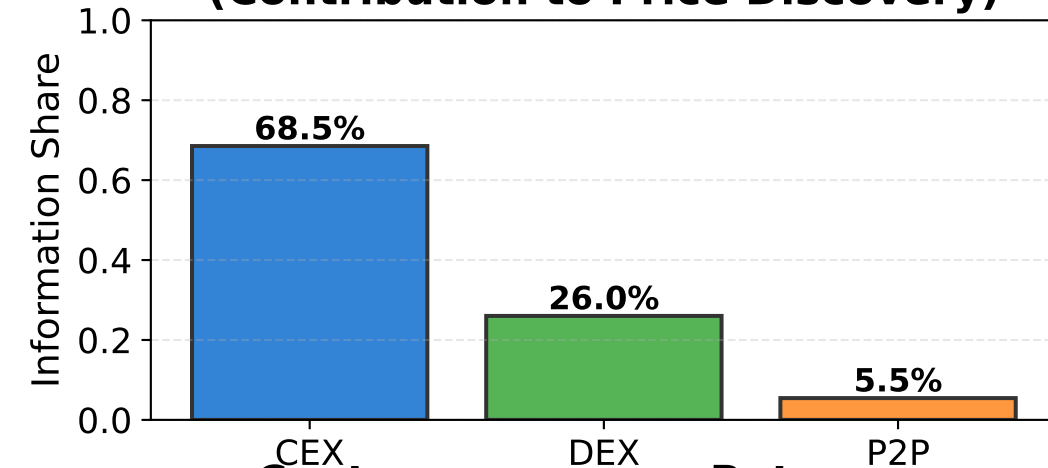


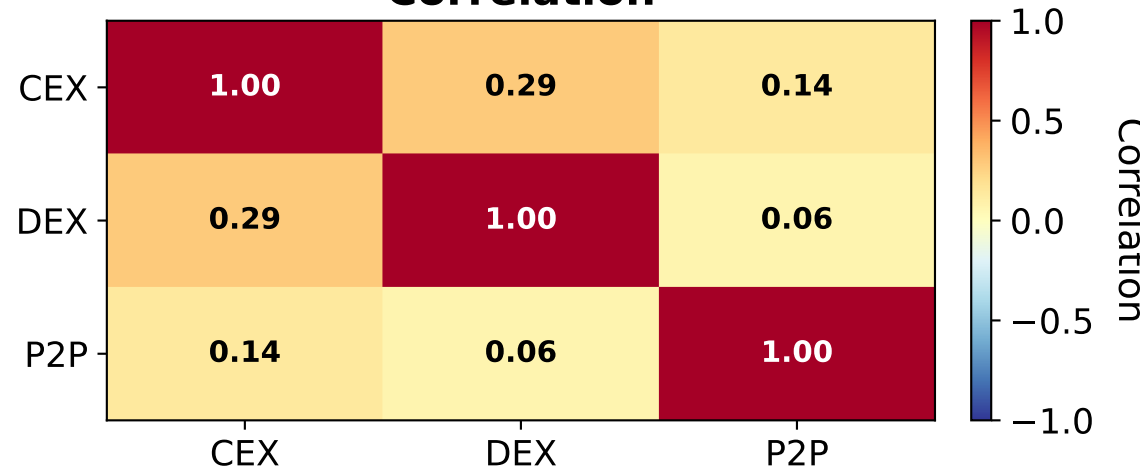
# Multi-Venue Price Discovery: Lead-Lag Relationships



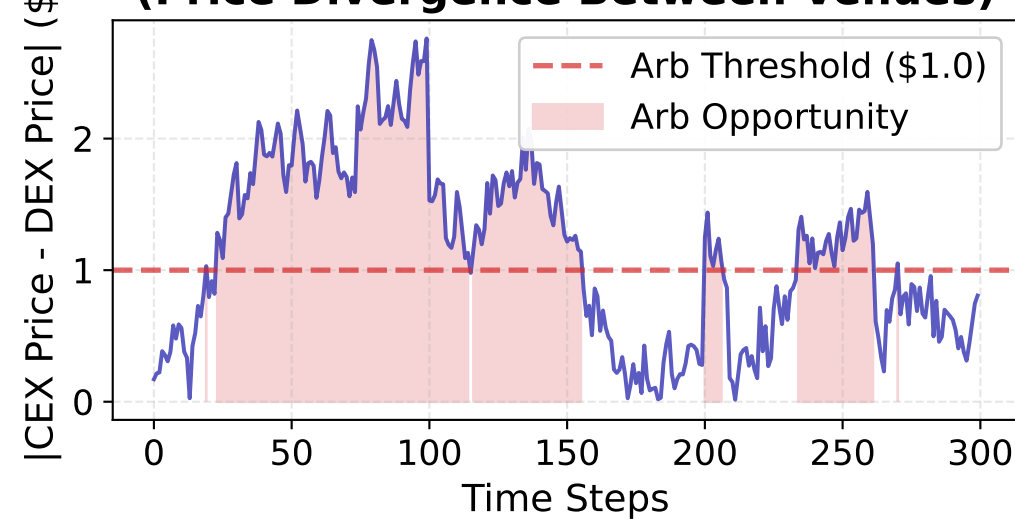
## Hasbrouck Information Share (IS) (Contribution to Price Discovery)



## Contemporaneous Return Correlation



## Arbitrage Opportunities (Price Divergence Between Venues)



### Price Discovery Statistics

#### Information Share (Hasbrouck 1995):

CEX: 68.5% (Leader)  
DEX: 26.0% (Follower)  
P2P: 5.5% (Noise)

#### Lead-Lag Structure:

CEX lag: 1 step(s)  
DEX lag: 3 step(s)  
P2P lag: 5 step(s)

#### Arbitrage:

Opportunities: 169 periods  
Avg spread: \$1.145  
Max spread: \$2.761

#### Interpretation:

- CEX dominates price discovery (~69%)
- DEX follows with lag, contributes ~26%
- P2P has minimal impact (~5%)
- Arbitrageurs exploit temporary spreads