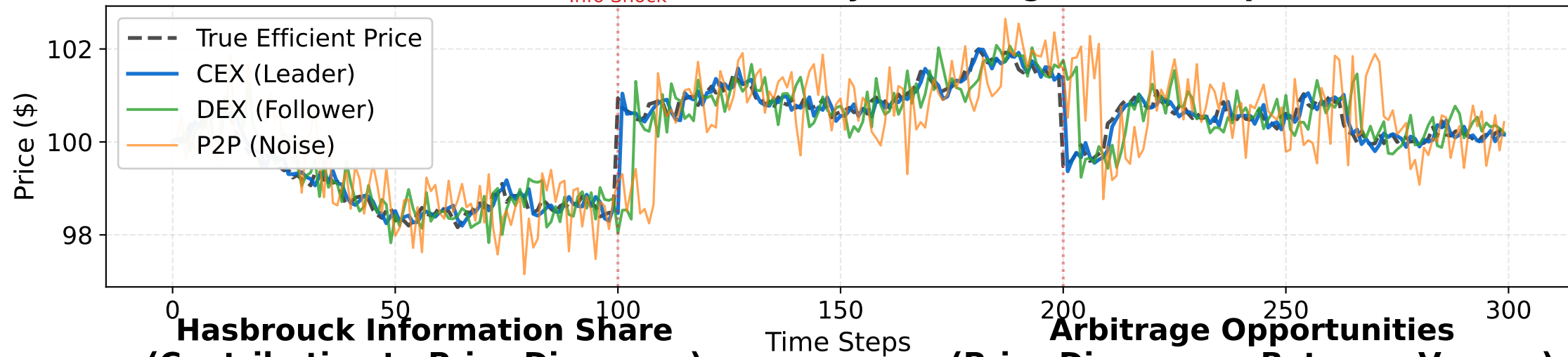
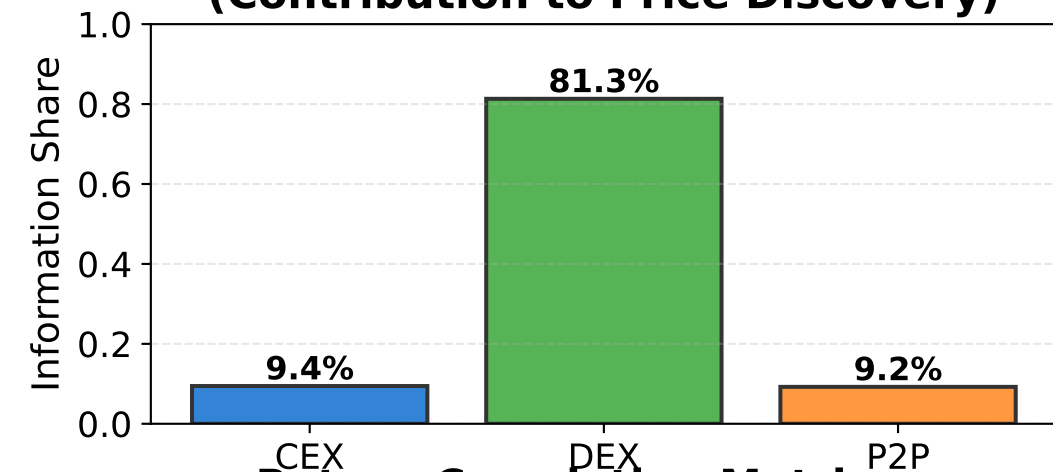


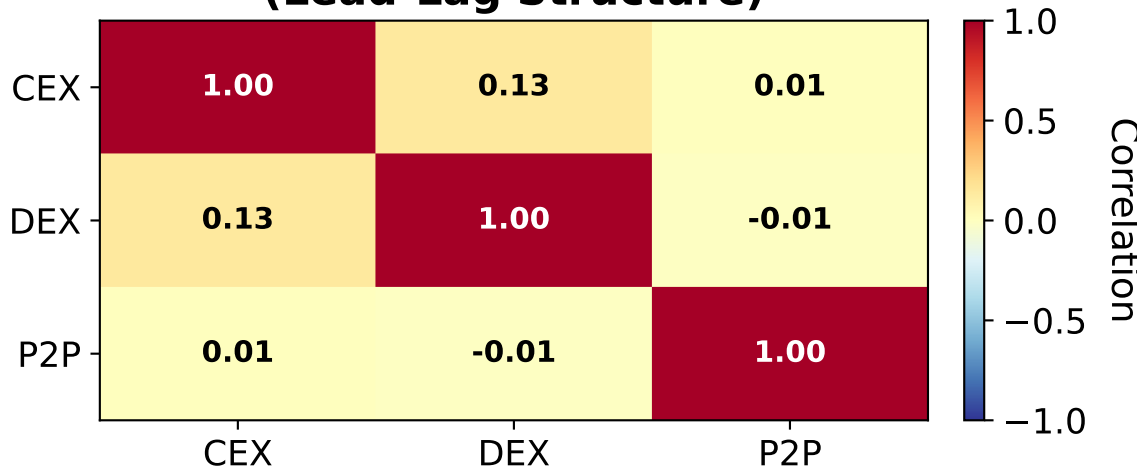
Multi-Venue Price Discovery: Lead-Lag Relationships



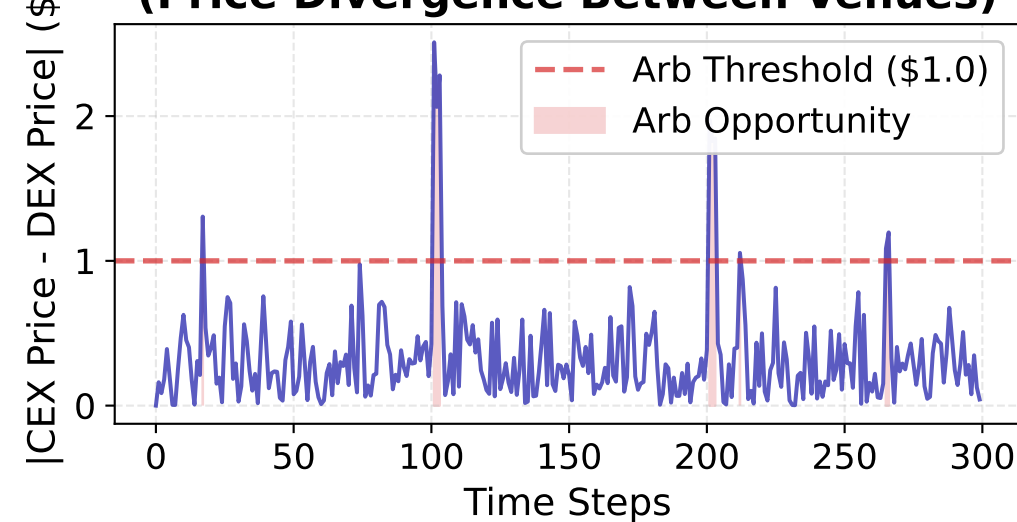
Hasbrouck Information Share (Contribution to Price Discovery)



Return Correlation Matrix (Lead-Lag Structure)



Arbitrage Opportunities (Price Divergence Between Venues)



Price Discovery Statistics

Information Share (Hasbrouck 1995):

CEX: 9.4% (Leader)
DEX: 81.3% (Follower)
P2P: 9.2% (Noise)

Lead-Lag Structure:

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

Arbitrage:

Opportunities: 10 periods
Avg spread: \$0.328
Max spread: \$2.510

Interpretation:

- CEX dominates price discovery (~9%)
- DEX follows with lag, contributes ~81%
- P2P has minimal impact (~9%)
- Arbitrageurs exploit temporary spreads