



Comparing Quantitatively Layer 1 Security

How to Compare PoW Blockchains?



Bitcoin

10 min



Ethereum

15 sec



Litecoin

2.5 min



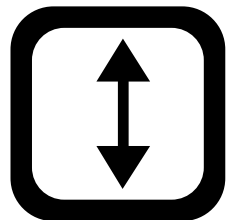
Dogecoin

1 min

- 2 parameters



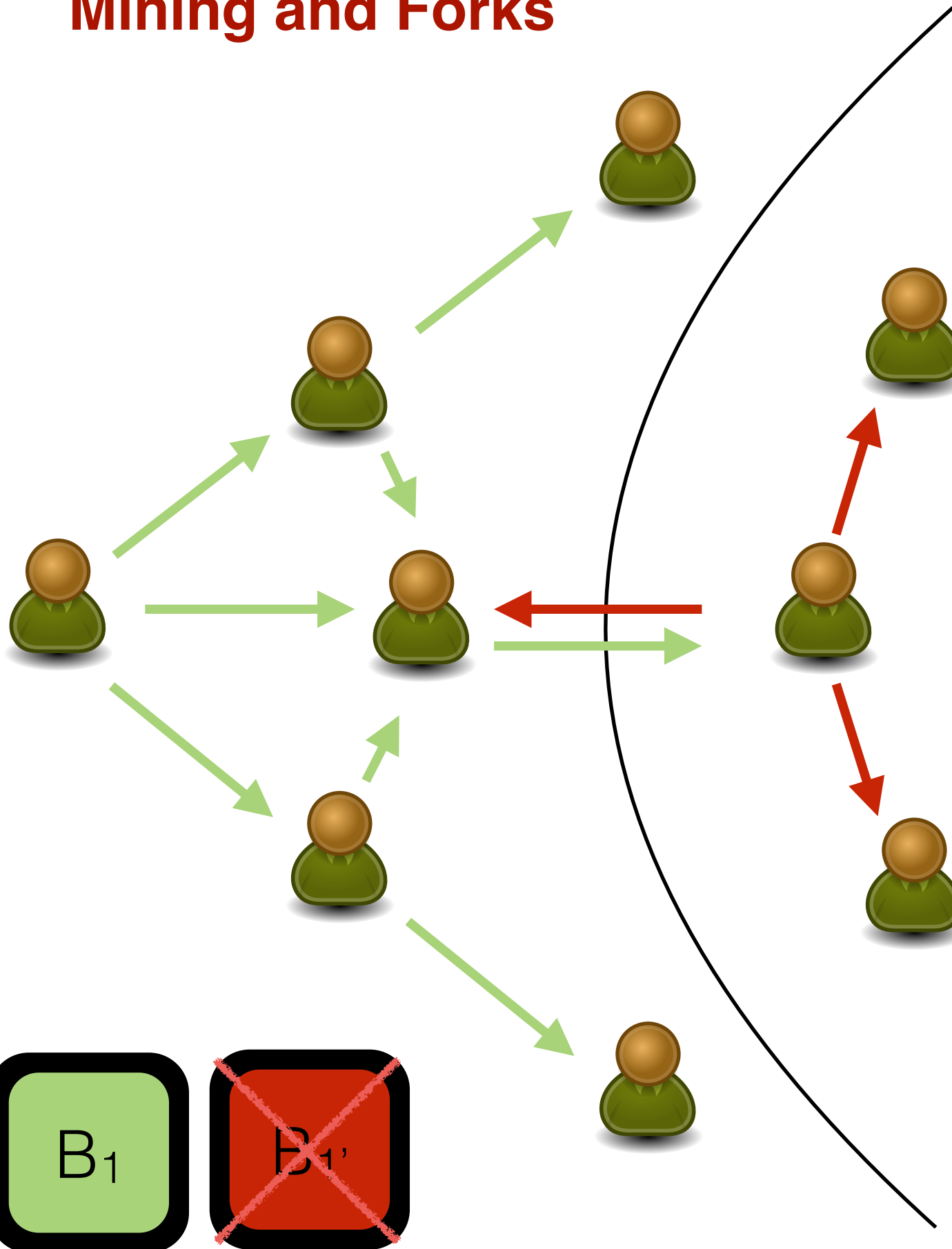
Faster block generation → Faster payments



Bigger block size →

More throughput/
Slower propagation

Mining and Forks



Stale blocks = lost efforts



Stale Block rates

Bitcoin

0.4%

Litecoin

0.3%

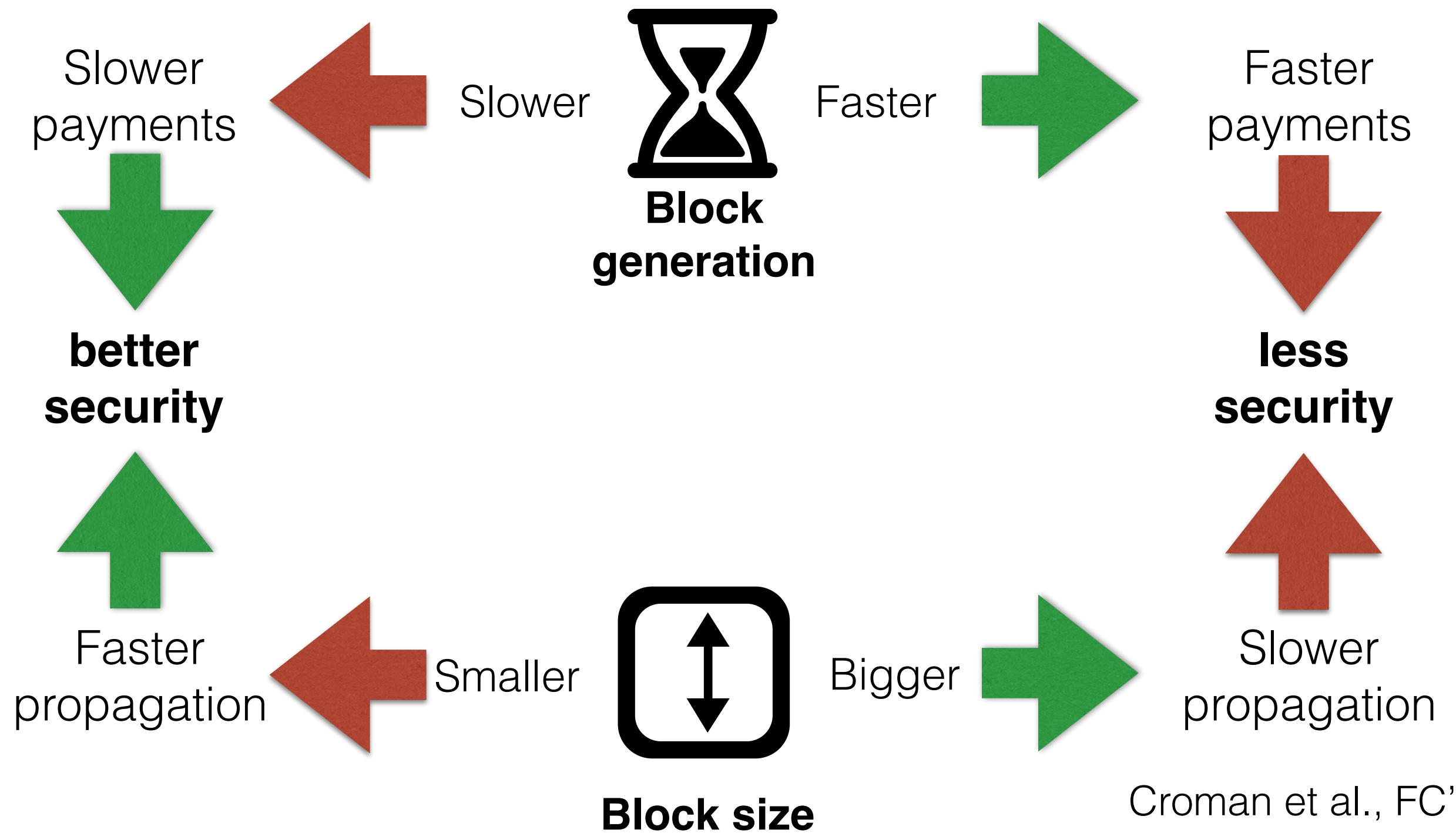
Dogecoin

0.6%

Ethereum

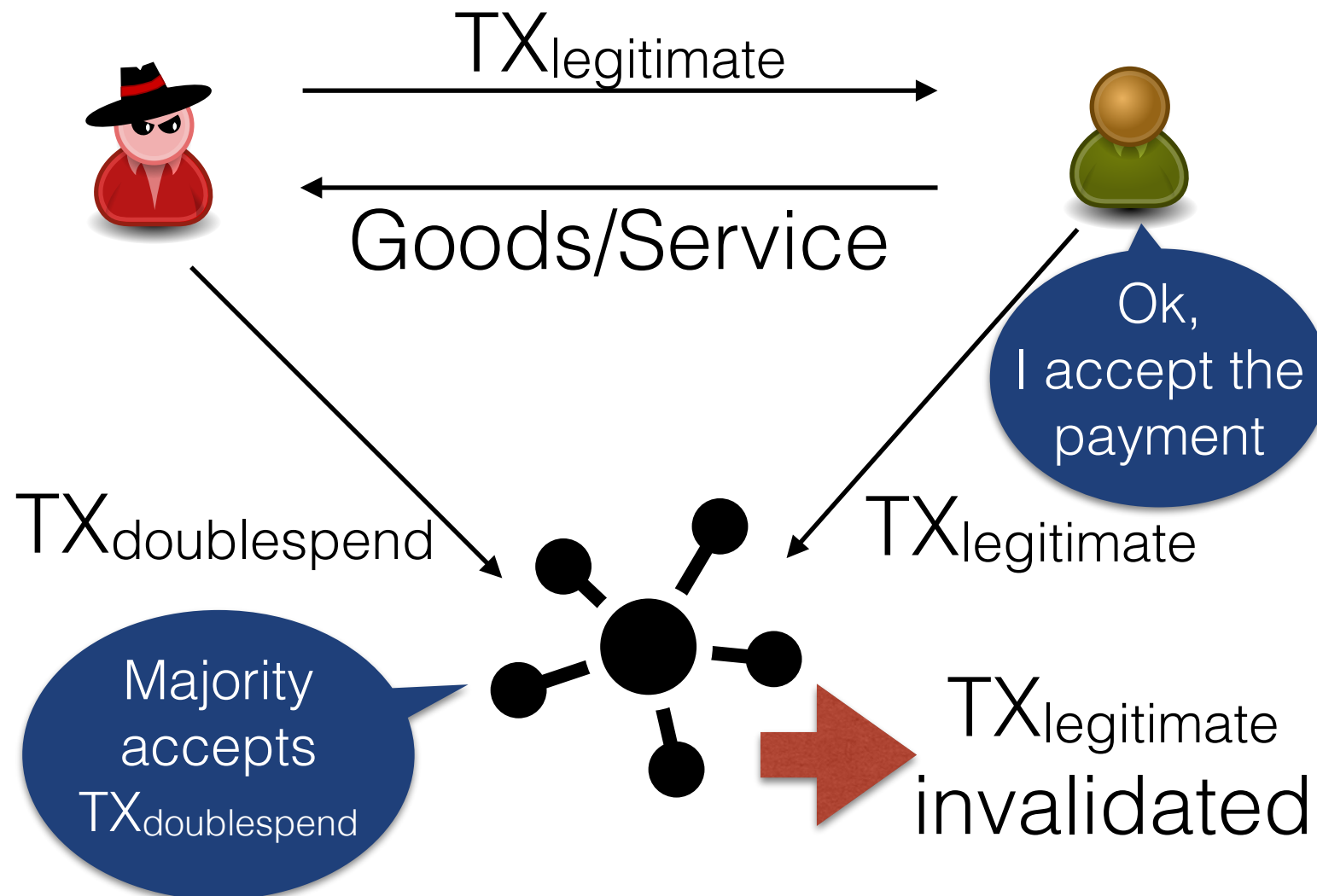
6.8%

Security vs. Scalability in Blockchains



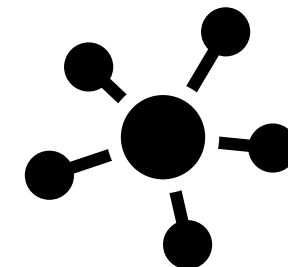
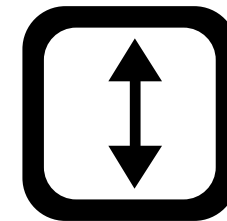
Croman et al., FC'16
Sapirshtein et al., FC'16
Sompolinsky et al., FC'15
Garay et al., Eurocrypt '15

Comparing PoW Blockchain Security



or Parameters

**Network-Layer
Parameters**



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