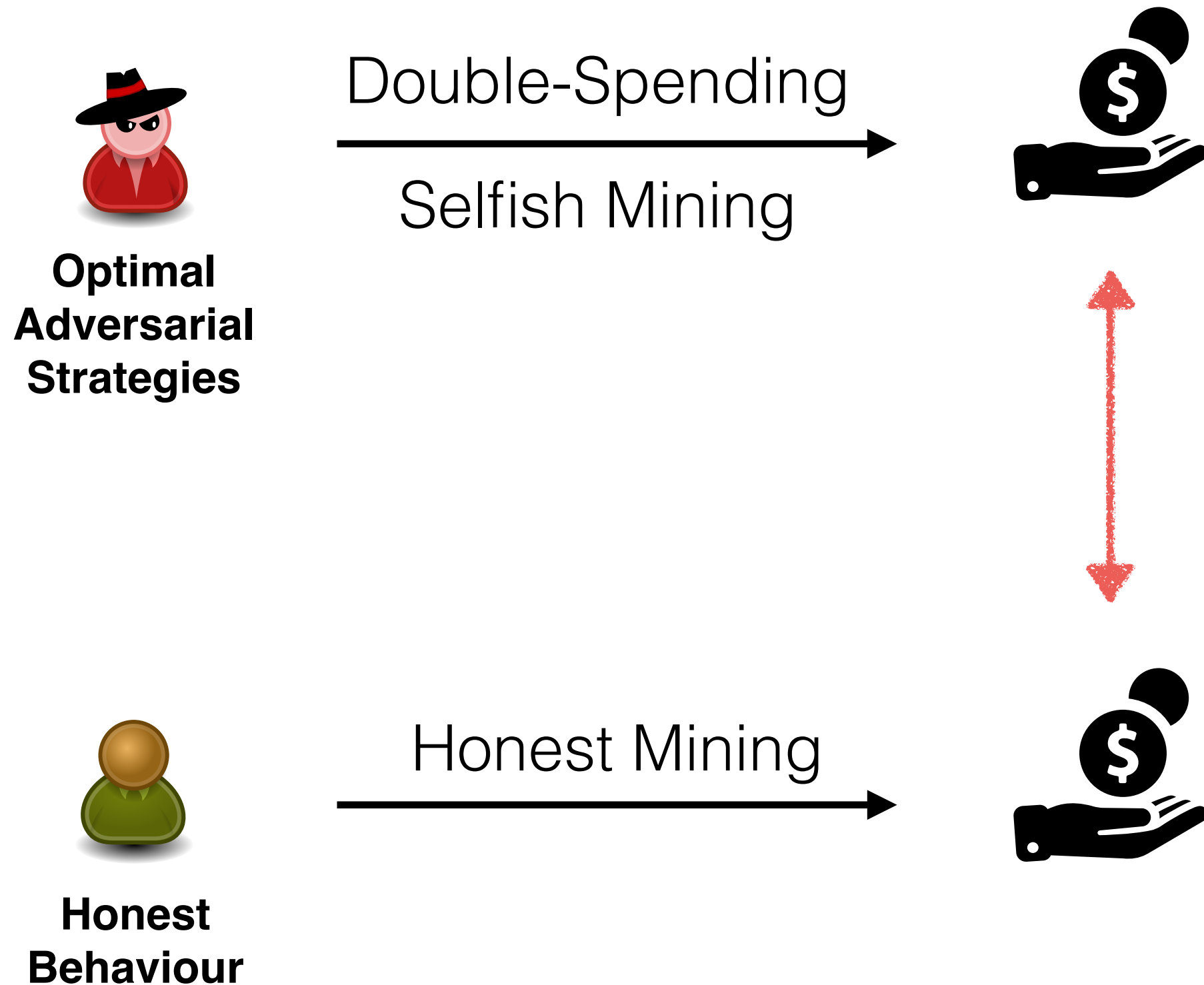




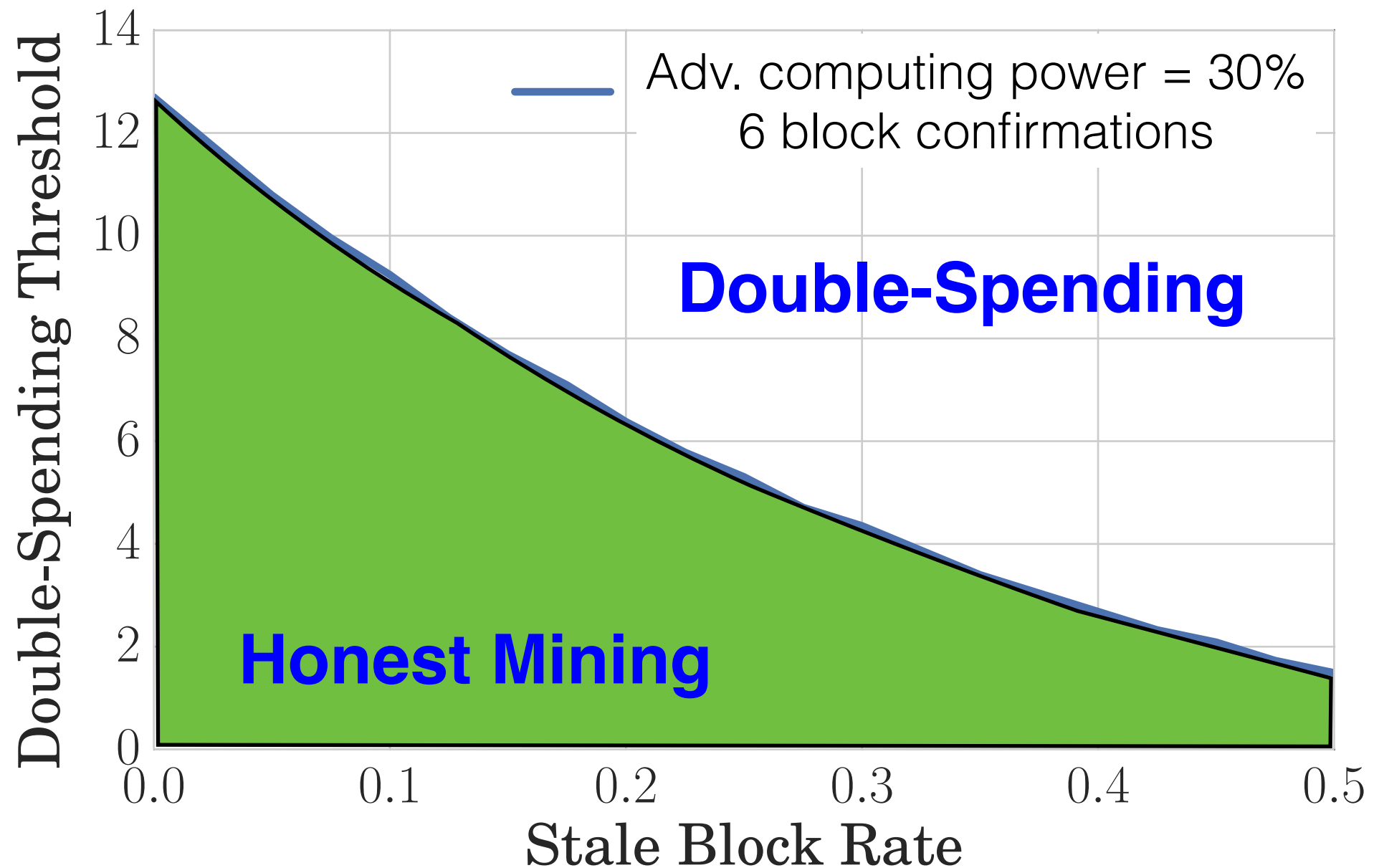
# Quantifying Security with an MDP

# Quantifying Blockchain Security



# Double-Spending Threshold

Profitability depends on transaction value.



# Double-Spending Defence - Confirmation Time

Ethereum



Bitcoin



Litecoin



Dogecoin



Block  
confirmations



37

about  
**10 minutes**

6

about  
**60 minutes**

28

about  
70 minutes

47

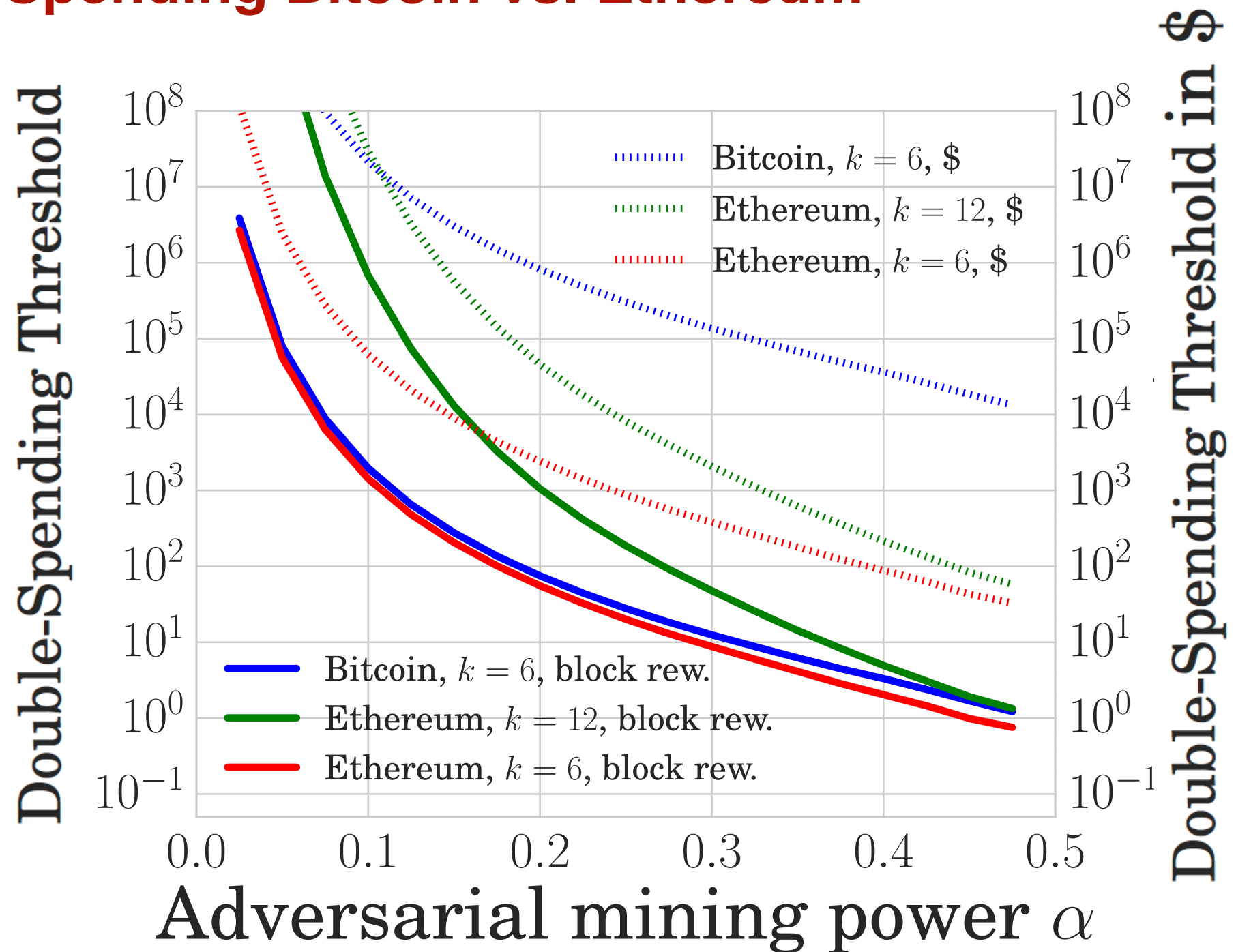
about  
47 minutes



30% of the total  
computing power



# Double Spending Bitcoin vs. Ethereum



Double-spending resistance of  
Ethereum ( $k$  in  $\{6, 12\}$ ) vs. Bitcoin ( $k=6$ )