

# Playing the Game - Average Bid Auctions

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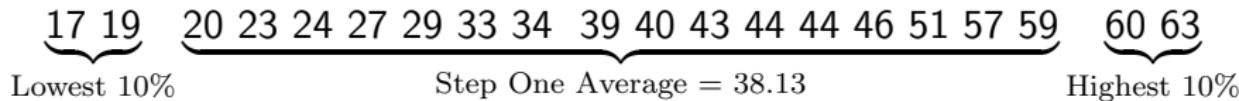
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## Average Bid Auctions

- Some public works projects - such as the maintenance of the road - are often provided by outside contractors who wins the project by bidding in an auction
- In most auctions the contract will generally be given to those who provides the lowest bidding price
  - One common concern is that the winning bidder may later try to renegotiate to receive a higher price and renege if it fails to do so
- In 1993, two civil engineering professors proposed an auction format known as *average bid auction* intended to disqualify bids that are seen too low to be credible. It has been adopted by local governments in many countries such as China, Italy, and the U.S.

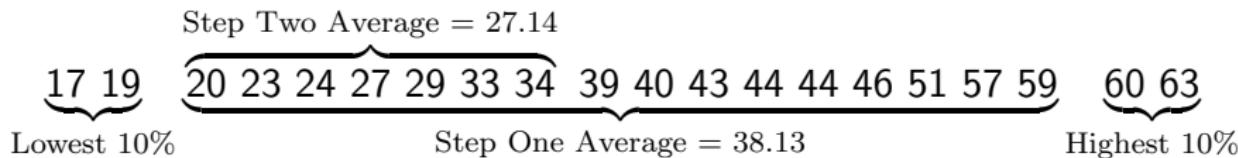
## Average Bid Auctions

- Consider the format applied all Italian cities with government-reserve price below \$6.5 million. After receiving the sealed bids, the first step is to exclude the lowest 10% and the highest 10%. The remaining bids have an average equal to 38.13



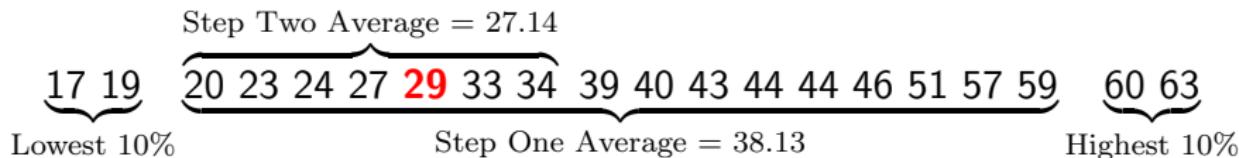
## Average Bid Auctions

- Step two is to calculate the average of bids that at or below the average calculated in Step One, which is 27.14 for those bids ranging from 20 -34



## Average Bid Auctions

- The third and last step is to award the contract to the bidder whose bid is the lowest bid that exceeds the step two average, which is 29



## Average Bid Auctions

- The average bid auction process will have the government pays the highest price!
  - Let  $r$  be the government's reserve price and there are  $n$  bidders, all of whom have a cost  $c$  for fulfilling the project, assume  $c < r$
  - Consider a strategy in which all bidders bid  $r$ . Both step one and step two average would then be  $r$ , and the winning bidder will be randomly chosen and thus bidding  $r$  leads to an expected payoff of  $(r - c)/n$  for each bidder
  - What if bids greater or smaller than  $r$ ? They will both be excluded in the first two steps!
  - The equilibrium bid will be exactly the reserve price  $r$  - the highest price for the government

# Average Bid Auctions

- But it is worse than that! Not only the reserve price  $r$  is an equilibrium price, but it is also the only equilibrium price
  - Consider all bidders submit a bid  $b$  so that  $c < b < r$
  - Each bidder will have an expected payoff of  $(b - c)/n$
  - If it bids below  $b$ , it will be excluded in the first step as being seen incredible
  - If it bid  $b + \varepsilon$  with  $0 < \varepsilon < r - b$ , it will be above the step two average price and be given the contract
  - But it has the incentive to bid higher until  $b + \varepsilon = r$  since it will win the auction anyway as long as  $\varepsilon > 0$ !