

Playing the Game - Average Bid Auctions

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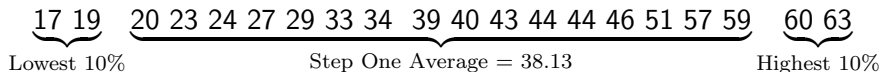
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Average Bid Auctions

- 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.

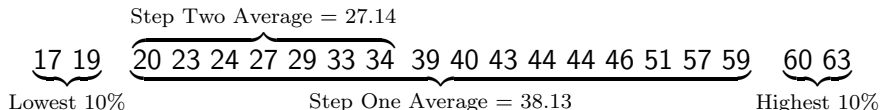
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- Consider the format applied all Italian cities with government-reserve price below \$6.5 million. After receiving the sealed bids, the first step is to exclude the lowest 10% and the highest 10%. The remaining bids have an average equal to 38.13



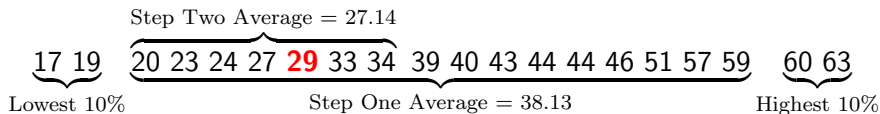
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- Step two is to calculate the average of bids that at or below the average calculated in Step One, which is 27.14 for those bids ranging from 20 -34



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- 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 pay 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 $\varepsilon > 0!$