

# Playing the Game - Beliefs on Types in the Market for Automobiles

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# Beliefs on Types in the Market for Automobiles

- You are considering buying an SUV from a car retailer. While you don't know what price to suggest, you also realize that the salesperson doesn't know how high a price you're willing to take
  - This is a natural setting to model as a game of incomplete information
  - A buyer's type is his maximum willingness to pay, and a seller's type is his minimum willingness to sell
  - Once specifying beliefs over types, game theory can derive some implications about how the buyer and seller will behave
- But from where do these beliefs come?

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- An experiment conducted by two legal scholars sheds light on this issue and find evidence that a buyer's race and gender influence the beliefs of a seller regarding the buyer's type
  - Researchers hired 38 people ("testers") to visit auto dealerships. The experimental design was structured to make them appear as similar as possible with the exceptions of gender and race. All testers were of average attractiveness, 28 to 32 years of age, and 3 to 4 years of college education. They wore similar style clothes and arrived at the dealership in similar rented cars. Every tester had the same script to use when bargaining and went through a training to enhance uniformity in his or her delivery. Two testers went to each dealership a few days apart. These 38 testers bargained for 306 new automobiles at 153 dealerships

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- The following table reports dealer profit based on the dealer's initial price and on the price at the conclusion of bargaining

	Profit to Dealer Based on Initial Price Offer	Profit to Dealer Based on Final Price Offer	Reduction from Initial to Final Offer
White Males	\$1,019	\$564	45%
White Females	\$1,127	\$657	42%
Black Females	\$1,337	\$975	27%
Black Males	\$1,954	\$1,665	15%

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- Within a game theoretic framework, there are two sources of the relationship between a seller's price offer and a buyer's race and gender
  - First, it could be due to the payoffs (preferences) of the auto dealers
    - Such as animus or bigotry in terms of race or gender
  - Second, and more likely, it could be due to the beliefs of a seller regarding a buyer's type
    - In a bargaining setting, a buyer's type encompassing traits related to the cost of search, cost of bargaining, and market knowledge
    - If a seller feels she is facing someone who has a higher cost of search, dislike bargaining more, and/or is less aware of the prices for automobiles, then she will find it optimal to make higher-prices offers

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- In answer to our original questions, beliefs over types may partly come from observable traits that are believed to be correlated with unobservable traits
  - In the context of a market such as that for automobiles, it is also possible that beliefs about the correlation between observable traits and willingness to pay could prove self-fulfilling
  - If all auto dealers believe that black males are more willing to buy at higher prices, then all auto dealers will offer them higher prices, in which case black males will have no choice but to accept higher prices