Discussion of Pitfalls in the Implementation of Non-Discriminatory Premiums: The Case of Unisex Tariffs in the German Automobile Insurance Market

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What will happen to auto insurance premiums when gender cannot be used as a risk classification variable?

Paper regresses premium data on risk classification variables to find relationship between gender and premiums charged for auto insurance.

A second regression is calculated in which the same risk classification variables except for gender are used.

Authors find that gender is related to engine power of car, mileage driven, age of car and period of ownership.

Discussion: Implementation of Non Discriminatory Premiums
• Social pricing models prohibit the use of variables over which the insured has no control (like age or gender).
• But many social pricing models allow for use of variables over which the insured has control (like type of car and distance driven).
• The fact that those choice variables are correlated with age or gender should not make them inadmissible for pricing.
What is the Underlying Pricing Model?

• How is insurance actually priced?
  • If insurance is not priced using a regression model, then impact may be mis-specified.
  • Pricing model assumes price is a linear function of risk variables.
  • But pricing function could be multiplicative:

\[
\text{Premium} = \text{Base Premium} \prod_{j=1}^{n} \text{Risk Factor}_j
\]
Losses or Premiums?

- Paper analyzes relationship between risk classification variables and premiums.
- Premiums also depend on competition in market (which may not be the same across all insured groups), regulations, and insurer costs.
- Why not look at losses?
Compulsory vs. Optional Coverages

- You may want to restrict your data set to compulsory 3rd party coverage only
  - Only 30% of drivers carry comprehensive and 45% carry collision.
  - Unclear as to what sort of bias this creates in the data
Discrimination by gender for insurance pricing is not banned in the U.S.

Most important justification of risk based pricing is that it improves road safety.

Regression results may be statistically significant but not economically significant.