Gender-Differentiated Digital Credit Algorithms Using Machine Learning

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Gender gaps in access to credit

• Among men and women with comparable creditworthiness, women face:
  • Bias in the amount lenders are willing to provide
  • Higher interest rates

• Traditional credit scoring models
  • Use data that may be biased against women
    • Especially lower-income women with limited credit histories
    • Less likely than men to have formal labor earnings
    • Less likely to have legal ownership of joint assets
  • Omit gender or include it as binary predictor variable
    • Doesn’t incorporate the ways gender could interact with other predictors
Big data and machine learning can help

• Big data
  • New, rich data to predict creditworthiness
  • Mobile phone call detail records
    • Nearly universal (nearly everyone has a cell phone)
    • High-frequency
    • Information about communication patterns, geographic mobility, social networks
    • Useful to predict creditworthiness

• Machine learning
  • Allows for high-dimensional interactions with gender
  • Can create a model jointly optimized on two stratified populations (women and men)
This study

- Partnering with large bank and telecommunications company in developing country
- Combines novel algorithm development with an impact evaluation (randomized control trial)
THANK YOU!

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