SUFFICIENT STATISTICS FOR WELFARE ANALYSIS: A BRIDGE BETWEEN STRUCTURAL AND REDUCED-FORM METHODS(RAJ CHETTY 2009)

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RELATION TO CLASS MATERIAL

- Sufficient Statistics is one of our most recent topics of study which we have used to find Efficient Labor Market Tightness
- This paper utilizes old ideas to form new techniques for modern applied economics, which delves into policy evaluation, something we've discussed previously(ex. European Job matching firms)
- strong focus on welfare which we recently began learning about in Beveridgean Models
- Uses a Plethora of papers that include Authors we are familiar with such as Emmanuel Saez and Peter Diamond

RESEARCH QUESTION

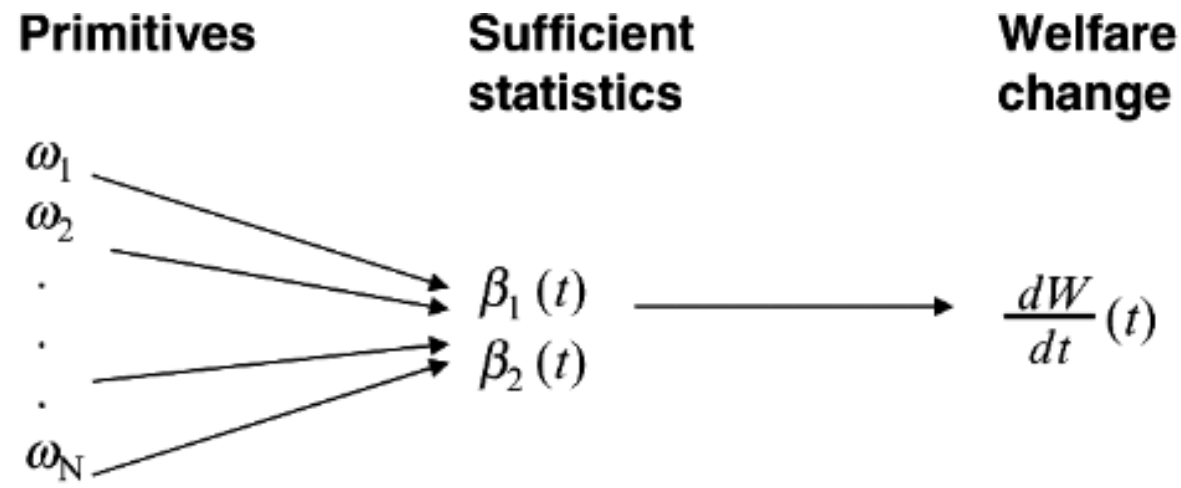
How can Sufficient Statistics be utilized to map Welfare change based on methods from Structural & Reduced-form methods through Program Evaluation?

- Structural approach: specifying what goes into economic effects(explains the "why")
- Reduced-form approach: focuses of estimating relationships using observed data(explains the "what")
- Both methods, Chetty states, have developed independently of each other yet try to tackle the same problems
- Program Evaluation: the analysis of all gathered sufficient statistics

ANSWER AND ITS ELEMENTS

- These Sufficient statistics can be utilized for normative(welfare) analysis and public economics literature as a whole
- Sufficient Statistics: welfare policy can be expressed in terms of high-level elasticities, avoiding parametric assumptions & the estimation of structural primitives
- Six-step rubric on sufficient statistics: Specify structure, Express dW/dt, Substitute multipliers by marginal Utilities, recover marginal utilities from observed choices, Empirical implementation, and Model Evaluation
- Provides a middle ground between the two methods

GRAPHICAL FIGURE



ω = preferences, constraints

ω not uniquely identified

$\beta = f(\omega, t)$
$y = \beta_1 X_1 + \beta_2 X_2 + \varepsilon$

β identified using program evaluation

dW/dt used for policy analysis

Chetty R. 2009.
Annu. Rev. Econ. 1:451–87

POSITIONING: HOW DOES THIS CONTRIBUTE TO PREVIOUS LITERATURE

- Harberger (1964): measured excess burden of commodity taxes using an elasticity-based formula; Chetty references his work as a precedent to modern literature on sufficient statistics
- Feldstein (1999): Created a solution to calculating the cost of taxation in a model with multidimensional LS choices; critically important to estimating taxation cost instead of assuming it is equal to the actual tax
- Work that showed an optimal level of unemployment benefits can be expressed as a function of a small set of parameters in a static model which Chetty built from using sufficient statistics Gruber (1997), Chetty (2006), Shimer & Werning (2007), Chetty (2008), Einav et al. (2008), and Chetty & Saez (2008)

CONCLUSION

- Sufficient statistics provide an efficient balance between the Structural and Reduced-form approach
- Using program evaluation for high-level parameters this method is more efficient compared to making assumptions about primitives

Implications

- Macroeconomics; testing permanent-income hypothesis
- Labor; minimum wage effect and effect of a return to schooling
- Development; With less than sufficient data, sufficient statistics can give precise policy questions in developing areas
- To a lesser degree Industrial Organization due to the difference in interactions that IO produces