

# Interdependent Choices and Social Multipliers: Identification, Methods, and Policy Implications

**Wes Hartmann, Puneet Manchanda, Harikesh Nair**

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# Group members

- Wes Hartmann – Marketing (Stanford)
- Puneet Manchanda – Marketing (Chicago)
- Harikesh Nair – Marketing (Stanford)
  
- Matt Bothner – Sociology (Chicago)
- Peter Dodds – Applied Math (U of Vermont)
- David Godes – Marketing (HBS)
- Kartik Hosanagar – Op/IM (Wharton)
- Catherine Tucker – Marketing (MIT)

# Motivation

- Social networks increasingly salient in the economy
  - 8 Myspace.com sold for \$580 m
  - Monetization by leveraging social interactions
  - Efficient use of marketing dollars
- Academic
  - Establish existence
  - Measure effects
  - Use for policy
  - Data availability spurning renewed interest in study of micro foundations
- Normative goal
- Multidisciplinary focus

# Policy Implications

- Social multiplier
- Relevance of multiplier to
  - Marketing
    - 8 Effect of targeted promotions
  - Public policy
    - 8 Informational campaigns
      - Smoking cessation for teens
  - Development
    - 8 Contraceptive use adoption

# Identification

- Social interactions imply within group correlation in behavior
- Separating correlation from causality
- Challenges
  - Reference group determination
  - Endogenous group formation
  - Correlated unobservables
  - Simultaneity
  - Multiple Equilibria

# Overcoming Challenges

- Reduced Form Approaches

- Use great data to infer causality

- 8 Nair, Manchanda, Bhatia (2006); Nam, Manchanda, Chintagunta (2006); Tucker (2005)

- Structural Approaches

- Hartmann and Yildiz (2007); Ryan and Tucker (2006)

- Experimental Approaches

- Dodds et.al. (2005); Godes and Mayzlin (2004)

# Structural Approaches: Equilibria

- Supplement data with a model to:
  - 8 Facilitate identification
  - 8 Carry out counterfactual analyses
- Peer effects is an equilibrium phenomenon
- Complete vs. Incomplete Information
- Static vs. Dynamic
- Multiple Equilibria
  - Selection rules
  - Condition on a chosen equilibrium

# Experiments

- We focused on field experiments
  - Online experiments are:
    - 8 Scalable (small world of 30k: Dodds et.al.)
    - 8 Easy to track flow
    - 8 Easy to measure outcomes
  - Caveats
    - 8 High attrition rates
    - 8 Tough to distinguish from spam
  - Assessing broader questions:
    - 8 Informative vs. Persuasive effects of WOM
      - Non-loyals more effective communicators than loyals
      - Godes and Mayzlin (2005)

# Sociology

- Network Structure
  - Characterize nodes and flows
    - 8 Role of primary versus complementary “status” (Bothner 2005)
- Cohesion vs. Structural Equivalence
- Outcome Measures
  - Function of network structure
- Research opportunities
  - Bring data to theory
  - Provide prescriptive guidelines

# Macro Levels

- Network models
  - Draws from epidemiology/physics/applied math
  - Pre-defined network
  - Assumed degree of infectiousness
- Focus
  - Take micro primitives to macro patterns
    - 8 Use simulation/analytical techniques to capture non-linear phenomena such as "tipping"
    - 8 Adoption & dis-adoption (Hosanagar et.al. 2007)
- Findings
  - Network structure "matters"
    - 8 Clusters of vulnerables needed for tipping
  - Empirically testable?

# Summary

- Study of interdependent choices and social networks important
  - Business, public policy, development
  - Increasing availability of high-quality data
- Academic opportunities
  - Existence, impact and policy implications of social multiplier
  - Big unresolved questions: network formation, network structure
- Many common links across disciplines
  - Hierarchies in Ryan and Tucker vs. Bothner
  - Network cascades (math) = Takeoff (marketing) = Multiple equilibria (economics)
- Complementary theories, tools, and techniques may enable “breakthroughs”
  - Embedding sociological insights into an equilibrium framework