Networks and the Identification of Economic Behaviors

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Introduction

- Why and how network information can be essential in understanding behavior, and then discuss some of the main challenges that network analyses face going forward, and important areas for future research.

Why Networks

- Why network is important?
- Sometime use network very beneficial.
- Network data were essential in disentangling behaviors.

example: about India microfiance diffusion

Why Networks?

In the example the model works in two parts

i) households who have heard about microfinance randomly tell their friends

ii) a household has heard about microfinance they make decision based on their friends

Why Networks?

- They want to test how well the information spread
- It requires the map of the network. The full network structure that allows us to identify the information passing probabilities.

Why Networks?

- Use the full network they found that more than half of participating household tells its neighbors in the network about microfinance.
- But a non-participating household tells its neighbors in the network only with 5% probability.

Network Insights

- From the previous example, we learn two main insights:
- 1) Look at macro characteristics of networks, such as:
  - density of connection
  - segregation pattern
- 2)Look at micro characteristics of networks, such as:
  - how local patterns of friendships affect behavior.

Network Insights In Detail:

- Macro side:
  - Density connection:
    - there are obvious results that denser networks can lead to faster and more extensive diffusion.
  - Segregation patterns
    - These patterns in a network that become quite clear once one paints the network with node attributes, such as “homophily”.

Network Insights In Details

- Micro side
  - How local patterns of friendships affect behavior:
    - 1) centrality of nodes
    - 2) individuals having friends in common

Continued:

- Centrality:
  - There is much that is known regarding centrality and outcomes.
    - Example: more central individuals can experience greater complementarities in behaviors, and exude greater influence.

Endogenous Networks

- Even after studying the network from macro and micro perspectives, there is still a big challenge:
- Individuals' behavior in the network are generally endogenous.
- Endogenous with homophily are related.

Endogenous Networks

- Even though experiments provide powerful ways of controlling for the endogeneity issues , but we cannot always control for everything.
- A promising technique for dealing with this is based on techniques of “latent space”.

Endogenous Networks

- Latent space is used to account for unobserved homophily and its potential bias on peer effects estimation:
  - It allows for network effects by accepting dependencies at more than the link level.
  - It captures endogenous decisions to form relationships .
  - It is tractable so that we can take it to data.

Conclusion

- The theory is producing robust insights into how networks affect behavior, including：
  - Influence of density
  - Homophily
  - Network position
  - Local clustering
- How networks are changing and its consequences for trade, and behaviors, etc. provides a continuing rich agenda

Thank you