

Social Networks in Economics

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1. Introduction

Social networks are endemic to economic interaction

Examples:

Role of social networks on decisions of

obtaining jobs

which products to buy

how much education to pursue

whether or not to undertake criminal activity

2. Incorporation of Networks into Economics

2.1 Early Roots and Examples

Social networks as means of obtaining jobs by Myers and Shultz (1951) and Rees and Shultz (1971)

Social networks in the context of labor markets by Boorman (1975) and Montgomery (1991)

Network externalities is quite evident in product adoption decision:

Groups of consumers lock in on an inferior technology simply because it is pervasive, even when it is clear that some other technology is superior; Katz and Shapiro (1994)

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2.2 Cooperative Game Theory

In cooperative game settings, cooperation leads to higher production or utility than separate effort

Myerson (1977) produced a new prediction of how the value should be split among members of a society

Aumann and Myerson (1988) examined a three player example: Players with communication links anticipate the effect that communication has on cooperative opportunities, and on the value that they will obtain

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2.3 Modeling the costs and Benefits of Network Formation

The networks of relationships are represented by a graph

- a number of individuals

- a link between two individuals

- individual utility of the relationships

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An Example

Connection Model (Jackson and Wolinsky, 1996)

Model of the value of relationships

direct benefits based on the interaction between two individuals

indirect benefits come from the access to friends of friends

δ : benefit from direct relationship

$\delta^2, \delta^3, \dots$: benefits from indirect relationship

c : cost of maintaining direct relationship

For pairwise stable network, $\delta > c$

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Utility payoffs in a network of relationships among five individuals

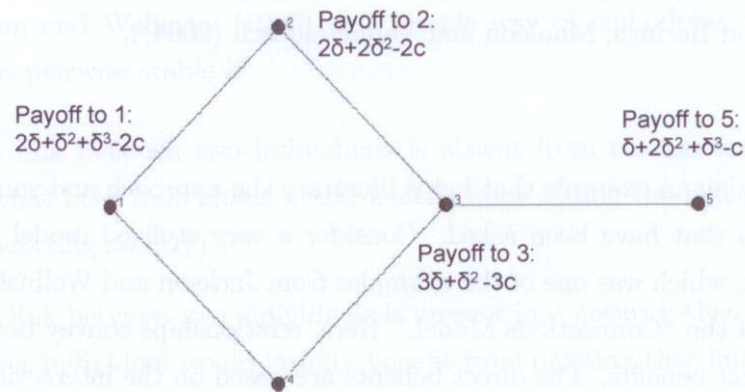
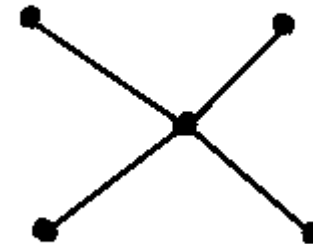
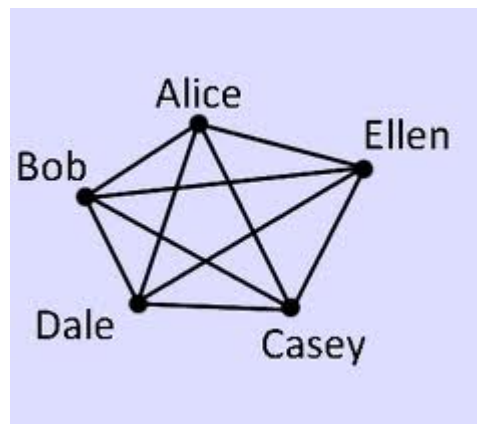


Figure 1: Payoffs in the Connections Model

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Three simple architecture that can be efficient:

1. If $c \ll \delta$, then the unique efficient network is a complete network
2. If $c \gg \delta$, then empty network is the only efficient network
3. middle range of costs relative to benefits: a “star” network is a unique efficient architecture that maximizes the total society utility



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2.4 A Tension between individual incentives and societal welfare

Disparity between efficient networks and individual incentives

The center of the “star” bears a large cost of maintaining many relationships

The center can be properly compensated by the benefits from other individuals

Use government taxes or subsidies to promote efficient network

3. Behavior influenced by Networks

How social network structures influence decisions

to buy products

to become educated

to select professions

to adopt certain political ideologies

to engage in criminal activities

A variety of recent studies includes

Models of information gathering and public goods provision

Network structure in labor markets

Exchange and markets

Communication of information