Networks and human capital
Part 1

Lecture notes for the course of Economics and Policy of Networks

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Introduction

- In economics, Gary Becker was probably the first to treat social networks as a form of capital.
- In Becker's work social networks are an **individual resource** that can be accumulated through **rational investment decisions**.
- Becker labels this resource in different ways along his intellectual path: from human capital (at the beginning) to social capital (in his late career).

Plan of the next two lectures

- This way of addressing the study of networks, however, leads to underestimate the complexity of the relationship between social networks and human capital. In this lecture, we will address two main issues:
  - **Networks as *a form* human capital, in the work of Gary Becker.**
  - **Networks as *a source* of human capital, in the work of James Coleman**.
- The work of the two authors is deeply interconnected.

Social interactions and utility maximization: history

- In economics, the study of the satisfaction and dissatisfaction driven by social interactions can be traced back to the very origins of the concept of utility.
- **Jeremy Bentham** (1871, pp. 37-40) explained how the pleasures and pains enjoyed and suffered by others are fundamental sources of human satisfaction and dissatisfaction.

Social interactions and utility maximization: history

- Bentham discussed about 15 basic kinds of pleasures and pains (all other pleasures and pains being presumed to be combinations of the basic set).
- Among them:
  - "The pleasures... of being on good terms with others".
  - "The pleasures of a good name".
  - "The pleasures of malevolence are the pleasures resulting from the view of any pain supposed to be suffered by the beings who may become the objects of malevolence".
  - "The pains of malevolence are the pains resulting from the view of any pleasures supposed to be enjoyed by any beings who happen to be the objects of a man's displeasure".

Social interactions and utility maximization: history

- **Karl Marx** explained the relative nature of utility in his early work on wage, labour, and capital.
- "Our wants and pleasures have their origin in society; we therefore measure them in relation to society; we do not measure them in relation to the objects which serve for their gratification. Since they are of a social nature, they are of a relative nature" (Marx, 1847, p. 45).

Social interactions and utility maximization: history

- A few years later, **Thorstein Veblen** (1899) introduced the concept of '**conspicuous consumption**', serving to impress others.
- **Alfred Marshall** also stressed the desire for distinction, and illustrated how it influences consumption and production activities.
- **Arthur Cecil Pigou**, **Irwing Fisher** and **Maffeo Pantaleoni** included attributes of others in utility functions (but did nothing with them).

- The following slides will summarize a famous paper Becker published in the *Journal of Political Economy*, cited **4,209** times (at the moment of preparing these slides):
  Becker, G. (1974).
  A theory of social interactions. *Journal of Political Economy* 82(6), 1063-1093.

Becker's theory of social interactions

- The utility function of the i_{th} individual is

$$U_i = U_i\left(Z_1,\ldots,Z_m\right)$$

- Where Z_1, …., Z_m are the **basic "wants"** (in the sense of Bentham) or **commodities**.
- Each individual also has a set of production functions that determine how much of these commodities can be produced with the market goods, time, and other resources available to him:

$$Z_j = f_j^i\left(x_j, t_j, E^i, R_j^i, \ldots R_j^r\right)$$

- where x_j are market goods and services, t_j is time, E^i is education and R_j^i, …, R_j^r are **characteristics of other persons that affect his output of commodities**.

Becker's theory of social interactions

- If the R_j^r were completely outside i's control - that is, unaffected by what he does with his resources - i would maximize U taking the R as exogenously given.
- This is basically how economic theory has considered social influences – or, more in general, society – in the analysis of economic action.

Becker's theory of social interactions

- **Becker instead assumes that individuals can change R_j by their own effort.**
- For example, an individual can:
  - achieve distinction by working diligently at his occupation, giving to charities, or having a beautiful house;
  - or relieve his envy and jealousy by talking meanly about (or even physically harming) his neighbors.
- The production function of $R_j^1, \ldots, R_j^r$ then depends on the efforts of *i* and on other variables.

Examples of how *i* can influence R_j^r

- Conspicuous consumption
- Volunteering
- Blood donation
- Political participation
- Religious participation

These behaviours need social interactions, at least to make *i* able to exert some influence on R^r. Some of these interactions can even take place online.

Online social interaction often serves the very purpose to influence the others' opinion of us.

Becker's theory of social interactions

- Let us assume only a single commodity (for example distinction) that is produced with a single good and a single characteristic of others (time etc. are ignored).
- Then maximizing utility is equivalent to maximizing the output of this commodity:

$$U_i = z(x, R)$$

- Let us also assume that the effect of other variables on this characteristics is dependent on *i*'s own efforts.
- R can thus be written as the addictive function:

$$R = D_i + h$$

- Where *h* measures the effect of *i*'s own effort and D_i is the level of *R* when *i* makes no effort.

Becker's theory of social interactions

- Social influences then are a resource for the production of commodities: they are **the social capital of an individual**.
- This social capital is complementary to market goods and services: an increase in social capital determines an increase in the marginal utility of x_j.
- For example, a trip to Thailand could have a higher marginal utility if you can share the photos on Instagram.

Becker's social capital

- It is not a public good.
- It can be accumulated through rational investment decisions.
- It exists even when it is not shared.
- Its accumulation does not require coordination among agents.

Becker’s social capital

- From the analytical point of view, Becker’s work built the bases for the economics of networks that started being elaborated from the 1990s.
- In these frameworks, the structures of power are considered as a long-term result of strategic interactions among agents.
- In Bourdieu’s work, there is no formal analysis of the determinants of social networks. Rather, the author applies correspondence analysis to identify clusters of agents based on their characteristics, and shows that the belonging to a specific cluster is significantly correlated with the attitude of undertaking certain actions.

Open issues and research questions

- Are there similarities between Becker's and Bourdieu's notion of networks? (History of economic thought).
- Which are the social policy implications of Becker's theory of social interactions?
- How can we measure Bourdieu's and Becker's networks?

Networks and human capital
Part 2

Coleman's theory of social capital

- James Coleman aimed to import the economic principle of rational action in the sociological analysis of social systems.
- The concept of social capital was seen by Coleman as a tool for the realization of this task.
- As Bourdieu and Becker, Coleman viewed social capital as a resource that can be used to the pursuit of individual welfare.
- Differently from Becker's, Coleman admits that social capital can be used to the pursuit of collective goals.
- SC is not only an argument in individual utility functions (a private good).

- The following slides will summarize a famous paper published by Coleman in the *American Journal of Sociology*, cited **34,776** times (at the moment of preparing these slides):
  Coleman, J. S. (1988).
  Social Capital in the Creation of Human Capital. *The American Journal of Sociology* 94, S95-S120.

Coleman's theory of social capital

- **Social capital is defined by its function**.
- It is not a single entity but a **variety of different entities**, with two elements in common:
  - They all consist of some aspect of social structures,
  - **They facilitate certain actions of actors-whether persons or corporate actors-within the structure**.

Coleman's theory of social capital

- Like other forms of capital, social capital is productive, making possible the achievement of certain ends that in its absence would not be possible.
- Like physical capital and human capital, **social capital is not completely fungible** but may be specific to certain activities. A given form of social capital that is valuable in facilitating certain actions may be useless or even harmful for others.

Coleman's theory of social capital

- Unlike other forms of capital, **social capital is inherent in the structure of relations between actors and among actors**. It is not lodged either in the actors themselves or in physical implements of production.
- Because purposive organizations can be actors ("corporate actors") just as persons can, **relations among corporate actors can constitute social capital for them as well**
- Example: the **sharing of information** that allows price-fixing in an industry.

Coleman's theory of social capital

- If physical capital is wholly tangible, being embodied in observable material form, and human capital is less tangible, being embodied in the skills and knowledge acquired by an individual, **social capital is less tangible yet, for it exists in the relations among persons**.
- Just as physical capital and human capital, social capital facilitates productive activity. "For example, a group within which there is extensive trustworthiness and extensive trust is able to accomplish much more than a comparable group without that **trustworthiness** and **trust**".

Coleman’s theory of social capital

- This last statement introduces a (further!) element of smokiness in the definition of social capital.
- “Social capital is defined by its function”, Coleman says. But is it networks, or the trust possibly involved in networks? Or both?

Coleman's theory of social capital

- Coleman defines **5 forms of social capital**:

1) **Obligations, expectations, and trustworthiness of structures.**
2) **Information channels.**
3) **Norms and effective sanctions.**
4) **Appropriable social organizations.**
5) **Intentional social organizations.**

Obligations and expectations

- If **A** does something for **B** and trusts **B** to reciprocate in the future, this establishes an expectation in **A** and an obligation on the part of **B**.
- This obligation can be conceived as a credit slip held by **A** for performance by **B**.
- If A holds a large number of these **credit slips**, for a number of persons with whom **A** has relations, then the analogy to financial capital is direct.
- This form of social capital depends on two elements:

1) **The trustworthiness of the social environment**, which means that obligations will be repaid;
2) The actual extent of obligations held.

Obligations and expectations

- Example: a legislator in a position with extra resources can, by effective use of resources, build up a set of obligations from other legislators that makes it possible to get legislation passed that would otherwise be blocked.
- This concentration of obligations constitutes **social capital** that is useful not only for this powerful legislator but also in getting an increased level of action on the part of a legislature.
- The legislator, on the other hand, also possesses an amount of credits towards specific lobbies, which are expected to reciprocate. For example, if legislator **A** favors lobby **B** through his legislative activity and if lobby **B** owns a newspaper, than the newspaper is expected to support **A** within the next electoral campaign.

Open issues

- Do you see any dark side in this form of capital?
- On the other hand, are there dark sides as well in the other forms of capital (human capital, physical capital)?
- What makes capital "dark"?

Networks as information channels

- Information is costly. “One means by which information can be acquired is by use of social relations that are maintained for other purposes.”
- This suggests that **social capital <u>is not necessarily the result of a rational investment decision</u>. Rather, it could be acquired and accumulated <u>in an incidental manner</u>**.
- In this case networks of relations constitute a form of social capital that provides information that facilitates action (social capital is the network, i.e. the information channel, not the information). The value of this form of social capital depends on the extent of the information possessed by members of the network.

Norms and Effective Sanctions

- **Social norms that promote prosocial behavior and discourage antisocial behavior are social capital**.
- "A prescriptive norm within a collectivity that constitutes an especially important form of social capital is the norm that one should forgo self- interest and act in the interests of the collectivity."
- This social capital, however, not only facilitates certain actions; **it constrains others**. A community with strong norms about young persons' behavior can keep them from fully developing their personality and creativity.
- **Effective norms can also reduce innovativeness**.

Social organizations

- Coleman distinguishes between
  - **Appropriable organizations**, basically voluntary organizations. They arise for a certain purpose (e.g. advocacy), but they can be used by members as means to pursue their particular interests.
  - **Intentional organizations**. They are created to serve a specific, particular, interest. For example, firms can create an intra- or inter-firm network to improve the industrial organization and maximize profits.

Social capital in the creation of human capital

The creation of human capital

- After describing what social capital is, Coleman explains why it is important by claiming it has a role in the creation of the human capital of the next generations.
- Coleman focuses on the social capital within the family that gives the child access to the adult's human capital.
- The extent of this social capital depends both on the physical presence of adults in the family and on the attention given by the adults to the child.
- The physical absence of adults may be described as a structural deficiency in family social capital.

The creation of human capital

- Coleman then reports results from a simple logistic regression analysis conducted on a random sample of 4,000 U.S. students.
- He found that:
  - School drop-out is 6% points higher for children from single-parent families.
  - The drop-out rate is 4% points higher for families with more than 1 sibling (which means a dilution of parents' attention).

The creation of human capital

- The social capital outside of the family is important as well for the accumulation of human capital.
- It consists of the social relationships among parents, in the closure of this structure of relations, and in the parents’ relations with the institutions of the community.
- Coleman found that **students from families who moved (forcing them to change school) have a significantly higher probability to drop-out from school**.
- For families that have moved often, in fact, the social relations that constitute social capital are broken at each move.

The public good aspects of social capital

- The kinds of social structures that make possible social norms and the sanctions that enforce them do not benefit primarily the persons whose efforts would be necessary to establish the norms, but **benefit all those who are part of such a structure**.
- For example, in some schools where there exists a dense set of associations among some parents, these are the result of a small number of persons, ordinarily parents who do not hold full-time jobs outside the home.
- Yet these parents themselves experience only a subset of the benefits of this social capital surrounding the school.
- As for any **public good** – for which the positive externalities are not internalized – the characteristics **of non-rivalry** an **non-excludability** hold. Therefore, there is a problem of **sub-optimal production**.

Trust as a public good

- "An actor choosing to keep trust or not (or choosing whether to devote resources to an attempt to keep trust) is doing so on the basis of costs and benefits he himself will experience."
- "His trustworthiness will facilitate others' actions" and "His lack of trustworthiness will inhibit others' actions".
- As a result, he will not account for the externalities he will produce – thus a problem of sub-optimal production will take place.
- Even if the trustworthiness of a single agent can be considered as rival and excludable, the more general trustworthiness of the overall social environment hardly is rival and excludable – thus having the characteristics of a public good.

The public good aspects of social capital

- The result is that there will be in society an imbalance in the relative investment in organizations that produce private goods for a market and those associations and relationships in which the benefits are not captured.
- Because the benefits of actions that bring social capital into being are largely experienced by persons other than the actor, it is often not in his interest to bring it into being.
- The result is that **most forms of social capital are created or destroyed as by-products of other activities** (i.e. **not** through rational investment decisions).

The public good aspects of social capital

- To overcome the problem of this public goods supply, Coleman suggests "the substitution of some kind of formal organization for the voluntary and spontaneous social organizations" that are the major source of social capital.

Open issues

- Which are the differences between Becker's and Coleman's views of networks and social capital?
- Which are the policy implications of Coleman's view of social capital as a public good?
- How do governments solve the market failure related to public goods?
- Can the public provision of public goods crowd-out the public provision of private goods? (e.g. Washington consensus).

References

- Becker, G. (1974). A theory of social interactions. *Journal of Political Economy* 82(6), 1063-1093. Free download here: https://goo.gl/3EesDg
- Christoforou, A. (2003). On the identity of social capital and the social capital of identity. *Cambridge Journal of Economics* 37, 719–736. Free download here: https://goo.gl/V8ZriW
- Coleman, J. S. (1988). Social Capital in the Creation of Human Capital. *The American Journal of Sociology* 94, S95-S120. Free download here: https://goo.gl/Fecje6

Examples of possible exam questions

- Illustrate Becker's theory of social interactions by explaining how social influences shape agents' utility functions.
- Highlight at least one difference and one similarity between Bourdieu's and Becker's conception of social capital.
- Describe Coleman's definition of social capital and list the 5 forms of social capital identified by the author.

Highlights

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Thank you!