

Seminar on Social and Economic Networks, HWS 2014

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Time: **Weekly, 5 Sep - 19 Sep 2014, Friday 15:30 – 17:00**

Location: **L 7, 3-5, P 043 Seminar Room (near exit to ZEW)**

1 Introduction

The course provides an introduction to the study of social and economic networks, a relatively new and very active field of economic research with a distinct interdisciplinary outlook. We discuss various social and economic networks and techniques to analyse them. The course further covers basic models of network formation and the implications of network structure on economic activity, such as the spread of information in networks and the functioning of networked markets.

2 Format

The seminar will meet weekly in September for a “mini-course” on network tools and concepts. Our usual slot is Friday, 15:30 – 17:00 in L7, 3-5 P 043 Seminar Room. Following the introduction to network analysis we will assign papers for student presentations. These will take place on a day towards the end of the semester (to be determined) and discuss different aspects of research on networks, with a particular focus on applications in economics. There will be an electronic resource on ILIAS which I will use for group emails and to make course materials available. I expect participants to:

- a. present one paper to the group and guide a discussion;
- b. prepare a seminar paper on their paper; and
- c. participate in the seminar discussions.

Language for the seminar is English. Assessment will be based on the two main deliverables – the presentation and the paper – as well as your preparation for and contribution to discussions of other papers in the seminar.

Presentation Each student prepares a seminar presentation dealing with one specific topic from the list in Section 4. Each topic is built around a main paper in the field of networks. The objective of the presentation is to present to the group the key analytical tools and insights of the topic at hand. This should be based on a careful reading of the

paper, distilled into a clear and accessible presentation, ideally using simple examples to illustrate the often complex models and results in the papers.

Seminar Paper The seminar paper is **due by 30 Nov 2014 and should have a length of not more than 10 pages**. For details on content see Section 5.

3 General Reading

We will mainly be discussing specific journal articles on the various topics we prepare. However, there are a few textbooks on network analysis including [Jackson \(2008\)](#), [Goyal \(2009\)](#), [Vega-Redondo \(2007\)](#) and [Easley and Kleinberg \(2010\)](#). We will not be following any of these specifically but we will be touching upon topics covered in particular in [Jackson \(2008\)](#). These texts are geared towards graduate students and therefore somewhat technical for the purpose of this seminar, but they provide a comprehensive treatment and useful references to help you prepare your presentations and papers. Additionally, there are popular science treatments which provide useful wider reading on network analysis, including for example [Barabási \(2003\)](#) and [Watts \(2004\)](#).

4 Topics for Seminar Presentations

This is a list of possible topics for seminar presentations. Each topic is based around a specific tool of analysis or a field of application. The list includes key papers which can form the basis for a presentation and seminar paper.¹

Introduction to Networks Analysis - JPS Examples of network phenomena. Network analysis as a multidisciplinary approach. Introduction to the main conceptual tools for network analysis. How do we represent, measure and analyse networks? Common properties of real-world networks.

Network Formation - JPS Tools for modelling the formation of networks. How can we explain the prevalence of certain features in real world networks? Cover different approaches including (i) random networks, (ii) growing networks and preferential attachment and (iii) strategic network formation.

Networked Labour Markets Finding a job through social contacts. What is the role of social networks in labour markets? ([Calvo-Armengol and Jackson, 2004](#); [Montgomery, 1991](#))

Local Interaction / Peer Effects General public good games. Who contributes? Who free-rides? ([Bramoullé and Kranton, 2007](#))

Trading networks How do trading networks function? What does the pattern of trade look like? Who captures the surplus? ([Blume et al., 2009](#)), ([Kranton and Minehart, 2000](#))

¹Topics marked * are somewhat more technical. I intend to cover these only if there is specific interest.

Bargaining on networks How does structure determine payoffs to individuals in exchange networks? ([Corominas-Bosch, 2004](#))

Firm alliances and joint ventures Models of cooperation networks between firms, in particular referring to R & D collaborations. ([Goyal and Joshi, 2003](#); [Bloch, 1995](#))

Peer Effects How does influence network structure determine actions? Peer effects and crime networks ([Ballester et al., 2006](#)).

Financial Networks The trade-off between risk sharing & contagion through networks ([Allen and Gale, 2000](#)). The formation of financial networks ([Babus, 2006](#)).

Culture, Norms and Social Networks Homophily ([Currarini et al., 2009](#)) Cultural transmission ([Calvó-Armengol and Jackson, 2009](#))

Informal Insurance in Networks The role of social relationships in risk sharing ([Bloch et al., 2008](#)) and as social collateral ([Karlan et al., 2009](#)).

Learning in Networks The DeGroot model of communication in networks ([DeMarzo et al., 2003](#)). Bayesian learning in networks. ([Bala and Goyal, 1998](#)).

Influencing over Networks Markets with word-of-mouth communication ([Galeotti and Goyal, 2009](#)), ([Goyal and Kearns, 2012](#))

Designing Networks for Resilience Designing networks for attack and defense ([Dziubiński and Goyal, 2013](#)), ([Goyal and Vigier, 2014](#))

Search on Networks* Small worlds. Navigating random and structured networks.

Diffusion in Networks Tools for modelling diffusion processes on networks with applications to diseases, information flows, advertising, etc. SIR and SIS models.; e.g. [López-Pintado \(2008\)](#)

5 Seminar Paper

The seminar paper is intended for students to show their thorough understanding of a paper they presented in the seminar as well as an appreciation for the research issues and methodology involved in the field of networks.

Writing the paper well is an important aspect of a good performance. You should consider the courses and service offerings of the library as well as contacting the Academic Writing Consultancy² if you are at all unsure about how to write an academic paper.

The paper should be a summary of a research paper in the field of social and economic networks, together with a critical assessment and a very brief outline for new research. The paper can (and is intended to) be on the same topic as the seminar presentation. The paper should have a length of not more than **10 pages and is due by 30 Nov 2014**. The key elements that are expected are as follows:

Summary This section can basically be a write up of the presentation slides. It should cover the following:

- What is the paper about? Which question does it address?
- How does that relate to other work in the field? What is its contribution?
- What method does the paper employ? A specific modelling strategy? A specific empirical strategy?
- What are the key results within the model / data set?
- What are the key insights you can take away regarding the research question more generally?

Critique This section should develop one or two of your own ideas regarding the question whether this paper is interesting and a good piece of research. You could consider the following (but do not feel restricted to it!):

- Is the paper and its question interesting?
- Does the paper achieve its objective? Does it miss an important angle on the question?
- Is the modelling appropriate? Does the model miss something that is important in the real world?
- Is the data relevant to the question? Is the data well used or could you do more?
- Is the paper clear or unnecessarily confusing?

Try to clearly explain *why* you consider certain elements of the paper to be more or less useful.

Feel free to add any details such as minor mistakes, typos or faults you might have come across in your reading of the paper, but please do not limit yourself to just details.

²<http://prex1.vwl.uni-mannheim.de/index.php?id=3508&L=1>

Research idea This section should develop one suggestion for further research on the topic that the paper deals with. This could be theoretical or empirical and can be informed by the content of your critique. If the paper misses something, what would be a good way to address it? Again, try and develop one or two ideas fully rather than adding many shallow points. Try and add how the research could be done, what data to use, what modelling approach to employ and what it would add over and above the paper you discuss. This need not to be anything complex; a simple idea, clearly motivated and articulated, will work nicely.

In terms of balance, I would suggest you aim to fill around two pages on each of these sections and then use the remaining space to add emphasis wherever you think it would help the most.

A good seminar paper will provide a concise summary and thoughtful content in the two additional sections. All three sections should be clearly written and demonstrate your own thought and engagement with the paper and the topic concerned.

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