

Andrei Karavaev

The Pennsylvania State University

## Information Trading in Social Networks

It has been shown that social network structure plays an important role in technology sharing and diffusion. For example, Foster A. and M. Rosenzweig ("Learning by Doing and Learning from Others: Human Capital and Technical Change in Agriculture") demonstrate that for farmers in India, imperfect knowledge about the management of new high-yielding seed varieties is a significant barrier to adoption, and the farmers rely not only on official directions provided by the producer, but rather on their own experience and the experience of the people they know.

The issue we address in the paper is how the information diffuses in a social environment, how people trade and the strategies they employ. The basic example we consider is an infinite linear network of agents without cycles.

The main assumptions are that any agent is always aware if his neighbor has the information and that the transfer of knowledge takes some time (or involves some cost), and therefore the information will be traded. The key property of the information is the possibility to resell it to other agents without any loss of utility.

We show that in a linear network there exists a non-trivial equilibrium with the following properties:

1. The strategies do not depend on time;
2. This equilibrium is a limit of equilibria with finite horizon;
3. If the information is not rare then we may observe some dispersion of prices.

We also show that there is a possibility of "informed neighbors trap": some agents may never get the information because their neighbors simultaneously make them offers which require reselling for a non-negative payoff (although there are no uninformed neighbors left).

We compare equilibria in this social environment with those when the agents are matched randomly and show that the fixed network structure leads to higher prices.