

Author's Accepted Manuscript

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www.elsevier.com/locate/jedc

PII: S0165-1889(13)00147-4
DOI: <http://dx.doi.org/10.1016/j.jedc.2013.06.015>
Reference: DYNCON2866

To appear in: *Journal of Economic Dynamics & Control*

Received date: 19 March 2009
Revised date: 20 June 2013
Accepted date: 25 June 2013

Cite this article as: Valentyn Panchenko, Sergiy Gerasymchuk, Oleg V. Pavlov, Asset price dynamics with heterogeneous beliefs and local network interactions, *Journal of Economic Dynamics & Control*, <http://dx.doi.org/10.1016/j.jedc.2013.06.015>

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Asset Price Dynamics with Heterogeneous Beliefs and Local Network Interactions

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Abstract

In this paper we investigate the effects of network topologies on asset price dynamics. We introduce network communications into a simple asset pricing model with heterogeneous beliefs. The agents may switch between several belief types according to their performance. The performance information is available to the agents only locally through their own experience and the experience of other agents directly connected to them. We model the communications with four commonly considered network topologies: a fully connected network, a regular lattice, a small world, and a random graph. The results show that the network topologies influences asset price dynamics in terms of the regions of stability, amplitudes of fluctuations and statistical properties.

Keywords: asset pricing, local interactions, networks, random graph, small world, heterogeneous beliefs, price dynamics

1. Introduction

Interpersonal communication plays an important role in the diffusion of information across social and business communities (Shiller, 1995). In a survey of institutional investors in the USA, Shiller and Pound (1989) found that money managers who invested in stocks with extremely high growth of the price/earnings ratio were often discussing their trades with colleagues.

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