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## Network features of sector indexes spillover effects in China:

### A multi-scale view

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**Abstract:** The spillover effects among sectors are of concern for distinct market participants, who are in distinct investment horizons and concerned with the information in different time scales. In order to uncover the hidden spillover information in multi-time scales in the rapidly changing stock market and thereby offer guidance to different investors concerning distinct time scales from a system perspective, this paper constructed directional spillover effect networks for the economic sectors in distinct time scales. The results are as follows: (1) The “2-4 days” scale is the most risky scale, and the “8-16 days” scale is the least risky one. (2). The most influential and sensitive sectors are distinct in different time scales. (3) Although two sectors in the same community may not have direct spillover relations, the volatility of one sector will have a relatively strong influence on the other through indirect relations.

**Keywords:** Time scale; Volatility spillover; Complex network; Economic sector

## 1 Introduction

The stock market is a complex and rapidly changing system, which is reflected by time series. The system is formed by various economic sectors. These sectors in the stock market interact with one another by information transmission and risk transfer, which are known as volatility spillover effects [1, 2]. Through the process of economic

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