

# Information flows within and across sectors in Chinese stock markets

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## Abstract

We examine the patterns of information flows within and across sectors of the two Chinese stock exchanges in Shanghai and Shenzhen during 1994–2001. Using the generalized forecast error variance decomposition, we find a high degree of interdependence, indicating that the sectors are highly integrated and sector prices reflect information from other sectors. Industry is the most influential sector in both exchanges, while Finance in Shenzhen is the least integrated with other sectors. Implications of the findings for investors and policymakers are also discussed.

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## 1. Introduction

Stock markets in China have expanded rapidly following the establishment of two stock exchanges in Shanghai and Shenzhen in the early 1990s. As of January 2001, there were 584 and 514 firms listed in the Shanghai Stock Exchange (SHSE) and the Shenzhen Stock Exchange (SZSE), respectively. The combined capitalization of the markets reached \$500 billion in 2000, making up 50% of China's GDP. This figure suggests that the stock market activity may have real economic effects. Recognizing the significance of stock markets in China, researchers have studied many different aspects of the markets. In this paper, we study the pattern of information flows at the sector level in Chinese stock market.

The study contributes to the literature in two aspects. First, filling a gap in the literature, we examine the pattern of information flows both *across* and *within* the sectors of two Chinese stock exchanges. As reviewed below, most of previous studies (e.g., Chui & Kwok, 1998; Fung, Lee, & Leung, 2000; Long, Payne, & Feng, 1999; Xu & Fung, 2002; Yang, 2003) on the information linkages in Chinese stock markets have focused on the A- and B-shares in Shanghai and Shenzhen, as well as the China-backed securities markets (i.e., H-shares and red chips). A missing link in the literature is how the information transmits across sectors. Such an investigation of the pattern of information flows at the sector level should be important, as individual and institutional investors often use sector indexes as a benchmark to track the performance of actively managed portfolios (Ewing, 2002; Ewing, Forbes, & Payne, 2003). Examining the relative importance of the sectors in Chinese stock markets also allows a better understanding of the dynamics of financial markets in an economy undergoing significant reforms and regulatory changes such as China.

Second, this study also employs a relatively new technique, the generalized forecast error variance decomposition of Pesaran and Shin (1998) to investigate the pattern of information flows. Different from the traditional orthogonalized forecast error variance decomposition (see Sims, 1980), this technique is able to circumvent the problem of sensitivity of forecast error variance decompositions to the ordering of variables in the system and result in a robust solution. This method has not been commonly applied in financial research, with the recent exceptions of Ewing (2002) and Yang, Min, and Li (2003).

In the next section, we provide a review of the related literature. In Section 3, we outline our empirical methodology. In Section 5, we describe the data used, while we report our empirical results in Section 4. We discuss the policy implications of our findings in the concluding section.

## 2. Literature review

Researchers have studied many aspects of the Chinese stock markets from different angles, including asset pricing in segmented Chinese markets (e.g., Fernald & Roger, 2002; Poon, Firth, & Fung, 1998; Sun & Tong, 2000), the return and volatility link (e.g., Su & Fleisher, 1999), market efficiency, and the price–volume relation (Long et al., 1999). In particular, a number of recent works have examined the information transmission patterns in Chinese stock markets. These studies have focused on the information flows between: (1) the A- and B-share markets in Shanghai and Shenzhen; (2) China-backed securities in

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