

Research on the Interaction and Linkage between Chinese and American Stock Markets

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Abstract

With the continuous development of economic globalization, China's stock market is affected by other countries' stock markets from time to time. The interaction between Chinese and American stock markets is particularly obvious and typical. [Starting from the history and background of Chinese and American stock markets, this paper combs the internal causes of stock market linkage between the two countries, analyses the different types of influencing factors of stock market linkage between China and the United States, and summarizes the measurement links of various scholars. Variables and models used in dynamics are pointed out, and the shortcomings and development directions of various studies in application are pointed out.

Keywords

American Stock Market; Chinese Stock Market; Interaction; Linkage.

1. Introduction

Because of the development of information technology, more and more information is shared in the field of investment in various countries, which makes investors in different countries more and more consider the influencing factors of fluctuations in other countries' economic conditions when making decisions. Therefore, in the field of stock investment, the linkage study of stock markets in different countries highlights its research value. [China's stock market is an important part of the country's market economy. The national economy has an extremely important position. With the continuous opening of China's economy, the economic changes of other countries will inevitably have a variety of impacts and shocks on China's stock market. In order to maintain the stock market and economic stability, Chinese scholars have devoted themselves to a more systematic and detailed study of the proposition of linkage. The study of linkage will be of positive significance in improving China's stock market and eliminating the negative impact of the world's stock market. Therefore, this paper focuses on combing the research and achievements made by experts and scholars in this field so far.

2. History and background

2.1 Development history of American stock market

The New York Stock Exchange in the United States began in the late 18th century. At first, brokers traded in the cafes on Wall Street. In 1811, brokers established the New York Stock Exchange according to the imperfect "Wutong Agreement" and began to operate. Compared with other European countries, such as the Netherlands and Britain, the stock market in the United States was established relatively late, but it is the most typical stock investment in the modern sense. After World War I, the New York Stock Exchange gradually became the largest and most important stock exchange market in the world. Most modern investment theories and economic theories originated from the United States. Taking the American stock market as the research object, we can get a general view of the development of modern stock investment and investment theory. We generally divide the development of American stock market into four periods: 1. From the 18th century to 1886, the United States. China's stock market has developed initially. During this period, American stock market was almost purely a speculative market. There was a serious phenomenon of manipulation in Wall Street transactions. [2. 1886-1929]. During this period, American stock market developed rapidly. Although there were still many market manipulations and insider trading, the idea of investment developed

initially. [3. 1929-1954, American stock market entered a period of standardized development and market manipulation. Although prohibited by legislation, information transparency and investor protection of listed companies have become the subject of financial supervision, pension has become the main body of the market. During this period, the United States began to enter a real era of stock market investment, and value investment has become the mainstream investment idea. 4. Since 1954, institutional investors in the United States stock market have developed rapidly, and value investment ideas and growth investment ideas have gradually merged with each other. With the maturity and stability of the American stock market, the number of listed companies, the ratio of stock market to GDP and other aspects have not reached a high growth rate.

2.2 The Development History of Chinese Stock Market

Since the establishment of Shanghai Stock Exchange in January 1990, China has been exploring and developing financial industry conforming to its national conditions and coordinating with economic and social development. As of December 2010, China's stock market has a market value of 26 trillion yuan, and 2094 domestic listed companies have become the second largest stock market in the world. The development of China's stock market can be summarized as 5. In the initial stage of 1990-1991, China's stock market initially possessed the function of resource allocation. 2. In the experimental stage of 1992-1997, the state conducted a pilot project of national debt options, but the form of subscribing stock still needs to be improved. 3. In the normative stage of 1998-2001, a unified national securities regulatory system was established. CSRC is directly under the State Council. 4. In the period of transition from 2002 to 2004, as the construction of China's stock market system entered the stage of legalization and deepening of the understanding of the functions of the stock market, the status of the stock market has been promoted to the overall level of reform and development. 5. Since 2005, the stage of remodeling has been started. In addition, the reform of non-tradable shares has also been carried out to improve the quality of listed companies. In the whole process, the function of China's stock market has undergone a gradual evolution from a basic function such as a financing channel to a high-level complex function to promote the strategic adjustment of economic structure. However, there are still some problems in China's capital market, such as large but not strong, systematic risk control, and the irrational distribution of wealth. Series of problems, in a relatively tender growth period, are a growing and open market that keeps going to the world, while the US stock market has become a mature, stable and internationalized market. One is in the process of continuous evolution and improvement, and the other is considered as a benchmark of economic activity and change. We have reason to believe that there will be linkage between the two.

3. Stock market linkage theory

3.1 Relevant Theory of Linkage Motivation

3.1.1 Spillover Effect

Due to the time difference between countries, the opening time of stock markets varies from country to country, which results in a time difference order-dominated transmission phenomenon. Under this effect, the information generated by macro-economy and enterprises will be transmitted to the stock markets of different countries at any time, resulting in the linkage between stock returns of different countries' stock markets, such as the energy sector at the opening of the British stock market. Growth has good expectations, and it will also drive the growth of relevant sectors of the U.S. stock market. Lin, Engle & Ito (1994) and other mathematicians believe that this linkage is not unilateral, but the result of interaction

3.1.2 Economic Basis Theory

According to the theory of economic basis, if there are basic variables affecting the economy among different countries, then when external shocks occur, the stock market performance of these countries will converge. [Solnik (1974) Through the analysis and verification of stock markets in several developed countries, it is found that there are some same macroeconomic basic variables which can

affect the stock markets of different countries at the same time. Later confirmed by Adler & Dumas (1983), [Errunza & Losq (1985)]

3.1.3 Market Contagion Effect

King & SWadhvani (1986) put forward the market contagion hypothesis because of the lack of convincing explanation for the large fluctuation of global stock market based on economic theory. The hypothesis holds that investors in the market will observe and use other market prices for reference because of the incomplete information. That is to say, under the condition of information asymmetry, it is easier to produce convergence effect and herding effect. Price fluctuations in one country's stock market can spread to other countries' stock markets King & Wadhvani (1990)[1] Using the Dow Jones Index, the Nikkei Index and the Financial Times Index, a reasonable model is set up. The analysis results show that when the economic situation of each country, market structure and economic situation expectations are very different, the stock trend of each country tends to converge

3.2 Relevant Theory of Measuring Stock Market Linkage

3.2.1 Linkage of Stock Market Return Rate

For investors, the final investment decision is determined by the return on investment. The return rate can be compared and analyzed between different stock markets. This study is divided into two main streams: one is to use Xasa (1992), Lin, Engle & Ito (1994) as the representative, the other is to use the exchange data of different periods to analyze the relationship between the return rate of the day and the next day, and the other is to use the exchange data of different countries as the model. Represented by Rurstenberg & Jeon (1989), taking the US stock market as the center, based on the stock market returns available in other countries of the world, this paper studies the prediction ability of future stock prices.

3.2.2 Linkage of Stock Market Volatility

The volatility of stock market returns shows linkage not only among the returns of different countries, but also among the volatility of stock market returns. However, there are few theoretical studies on the causes of volatility changes. Most researchers consider the linkage of returns as the cause of volatility linkage, and some scholars consider it as the spillover effect of investment risk. The support is insufficient, but the volatility of stock market will reflect the investment risk and make the price forecast more realistic.

3.2.3 Linkage of Opening Price and Closing Price

Before conducting the linkage test of returns, some scholars used daily closing price as the research object to study the linkage of Chinese and American stock markets. But if the opening price is added, the stock market returns of the day can be calculated. This is similar to the theoretical principle of stock market returns to measure the linkage of the two countries' stock markets. Zhao Hua and Xu Jiao (2010) [2] believe that there is a problem of asynchronous trading between Chinese and American stock markets. Using the closing price model, we can get the wrong result.

4. Linkage Influencing Factors

4.1 Event-like factors

Emergency economic events often affect the relationship between stock markets in different countries. The linkage of world investment markets tends to reduce the benefits of global portfolio transfer risk. [Hilliard (1979) [3] Tests the linkage of stock price changes in major stock markets before and after the economic crisis. He uses the stock index of the ten most important countries in the world to analyze stock price changes among different markets. Linkage analysis is carried out and the results of Spectral Analysis are used to prove that there is a close relationship between stock indices in different countries. [Wang Zhifen, Zhang Xueling (2009)] [4] The changes and reasons of linkage between Chinese stock market and American stock market before and after the subprime crisis are studied.

4.2 Periodic Factors

Because of the different macroeconomic conditions of China and the United States in different periods, the response of the stock market as a barometer of the economy in their respective countries is also different. Therefore, the linkage of the stock market between China and the United States may change according to the different periods. [In the first ten years of the establishment of the Chinese stock market, the index changes have nothing to do with the international market. With the reform and opening up, the Chinese stock market is also beginning to be affected by the peripheral stock market. Yueying (2015) [5] Chooses the Shanghai Composite Index from June 2012 to September 2014 and the Dow Jones Industrial Average Index to establish the VAR model, and carries out Granger causality test, impulse response and other empirical analysis on the linkage between the Chinese and American stock markets in the post-financial crisis era.

5. A Model for Measuring Linkage

Most scholars have processed the data before establishing the model Whether they use the stock market return rate as a measure of linkage or other variables, if the data of the research object is not stable, the follow-up empirical analysis is likely to produce pseudo-regression, and the research results lack accuracy and persuasion, so we should first test the stationarity of the data, such as using ADF unit root. Testing correlation coefficient is the most intuitive reflection of data correlation, so it is also used to confirm the correlation of return or volatility between stock markets. But this method can only measure the linear relationship between variables, and can not measure the causality between variables. Therefore, most scholars use Granger causality test to give the guidance relationship between two variables or two variables in the case of multiple variables interaction. In addition, in order to test the correlation of variable lag in one period, most scholars have established the Vector Autoregression (VAR) model, and then, after the change of perturbation term in a certain period because of the change of dependent variable, the change of current value and later value of other variables, i.e. impulse response analysis, or variance after VAR model, is tested by the dynamic change of the system. Decomposition, further evaluating the importance of each change to the selected variables by the contribution of different variables.

6. Other related researchs

Because the study of stock market linkage is of great significance to macro-economy, domestic and foreign research changes with the change of economic environment and national policies, and its research methods and directions are also improving constantly. In the impact of event factors on the linkage between Chinese and American stock markets, Pan Jung (2013) [6] believes that the subprime crisis affects the linkage between Chinese and American stock markets through trade, international hot money and common expectations. Momentum, through the ARCH model and GARCH model, we find that the change of stock market returns in the United States will affect the change of China's stock market returns, but it is not true. Furthermore, through Granger causality test, the impact and volatility of the U.S. stock market will be reflected in China's B-share market, but not in A-share market. On this basis, we can judge that the linkage between China's A-share market and the U.S. stock market belongs to. Spillover effect, while the linkage between the B-share market and the U.S. stock market is contagious effect. In the study of the linkage between the Chinese and American stock markets during the subprime crisis, Wu Jilin, Zhang Erhua (2010) [7] used the dynamic Copula equation of mechanism transformation to study the non-infection of the Chinese and American stock markets during the subprime crisis. Before that, Han Fei, Xiao Hui (2005) [8] studied the U.S. stock market from 2000 to 2004. The relationship between the opening and closing prices of Chinese and American stock markets shows that the correlation between Chinese and American stock markets is weak.

In the study of the influence of period factors on the linkage between Chinese and American stock markets, Zhang Fu et al. (2004) found that before the opening of Chinese B-share market to domestic investors, there was no significant common characteristic between Chinese and American stock

markets. After the opening of B-share market, there was a balanced relationship between Chinese and American stock markets. [Liu Yueying (2015) drew Dow Jones from VAR model. The change of one unit of logarithmic return rate on the previous day will cause the same change of 0.165013 units of logarithmic return rate on the same day of the Shanghai Composite Index, which indicates that the Shanghai Composite Index and the Dow Jones Industrial Average Index are related in the short term. In the short term, the US stock market has unilateral influence on the Chinese stock market, otherwise, the US stock market is confirmed by Zhao Hua and Xu Jiao (2010). The effect of China's opening is stronger than that of China's stock market on the opening of American stock market, but the interaction between the two stock markets is not significant during the opening trading period. There is no information transmission relationship between return and volatility. [Zhu Xiaoyong] [Ren Xiaojie (2013)] [9] Through Granger causality test, it is concluded that during the four times of quantitative easing monetary policy in the United States, the closing price of the previous day can be improved. In the empirical analysis of Han Jiangxia (2011), although there is a long-term equilibrium relationship between the Chinese and American stock markets, there is no significant relationship between the Standard & Poor's Index and the Shanghai Stock Exchange Index between 1999 and 2008. [Xie Baisan] Through the macro-economy of China and the United States. Trend, money liquidity adequacy and market openness prove that there is no substantial positive correlation between Chinese and American stock markets in the long run. In addition, Gong Jinguo et al. (2015) [10] Through empirical analysis, it is proved that the strengthening of stock market linkage between China and the United States is mainly due to the close trade exchanges between the two countries, but the macroeconomic differences between the two countries and China's financial liberalization reform have not been significantly affected. Sino-US Stock Market Linkage

7. Conclusion

Current research focuses on the motivation and influencing factors of stock market linkage between China and the United States, but there are few studies on how to deal with the negative effects of linkage. [Although scholars have proposed measures to reduce linkage on the basis of their own research conclusions, there are few theories to verify it.] In addition, in data processing, due to the different closure systems between China and the United States, it is necessary to avoid it. In order to avoid data mismatch, scholars have eliminated inconsistent data, which to some extent concealed the real situation of the stock market at that time. With the economic globalization and China's reform and development, China's influence on the world economy is deepening. Under the background of supply-side reform, China's stock market is facing new challenges, which urgently awaits new research and analysis by experts and scholars.

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