The Analysis on Stock Price Synchronicity in China

YILIN YE

ABSTRACT

This paper focuses on the stock price synchronicity in China. By constructing the variables and measuring the regression, we find that the synchronous stock price movement is pretty high in China. The synchronicity of stock price movement between the firm-specific stock and the market is measured by R2 in the market model. We propose that the system risks coming from the specific political policies and surrounding in China, the unsound property right, the market opening level, the scale of the financial market and the corporation itself may be the main factors in China attributed to the stock price co-movements in China.

KEYWORDS

Stock price synchronicity; China stock market; factors.

INTRODUCTION

As the development of stock market, the contributions to the stock price has gained great popularity among the public. The stock price synchronicity means the relationship between the firm-specific stock price change and the average change of the market (Hao Xiao, Zhan Lei, 2016) [1]. According to the Morck, Yeung, and Yu (2000), they put forward that the stock price is more synchronous in emerging countries than in developed countries, and the property rights lead to the stock price co-movement [2]. Encouraged by the Morck, Yeung, and Yu (2000), Tung Lam Dang, Fariborz Moshirian, Bohui Zhang (2015) assert that the greater capitalization of firm-specific information leads to lower price synchronicity from the perspective of information-efficiency view by making further investigation[2,3]. But the literatures mentioned before are compared about the stock price synchronicity between emerging economies and the developed economies, as China is a socialist state, there are many aspects different from the capitalist states, so it’s significant to make specific investigation on China stock market as what the Li KunLei Yu, Xiaoxue Hu(2017) did[4].

Our paper investigates the stock price synchronicity in China. We collect almost all a shares’ weekly opening and closing price and the weekly SSE Composite Index from 2015 to 2016 from SSE (Shanghai Stock Exchange), to examine whether the firm-specific stock prices are highly synchronous with the market fluctuation.

This paper is motivated by the finding in Morck et al. (2000) which mentions that the stock price is more synchronous in poor economies than in rich economies because of the macroeconomic instability, country size, economic and managerial diversification, synchronous fundamentals and unstable monetary policies and so on.

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As the deeper researching of the synchronicity of stock price, an increasingly numerous researchers come up with different ideas for the reasons contributing to the stock price co-movement [2]. According to Hameed, A., Morck, R., Shen, J., & Yeung, B(2008), information market and the scale of analysts influence separately on the cost of getting firm-specific information and the arbitrageurs’ decision, and ultimately both factors impact on the stock return so as the stock price[5]. Moreover, the J Hu, JB Kim, and W Zhang (2016) find that institutional monitoring would lead to a lower R2 and stock price crash by limiting managers’ extraction of the firm’s cash flows and mitigating managerial bad-news hoarding [6]. Recently, L Kun, L Yu, X Hu(2017) apply OLS model to estimate the impact of institutional investors’ behaviors on stock price synchronicity and found that the institutional investors’ long-term investments could reduce stock price co-movement and make the stock market information more efficiency while the short-term trading of institutional investor didn’t make contribution to reduce stock price synchronicity[7]. There are several factors encouraging us to make great effort to investigate in the extent of the stock price synchronicity in China.

First and foremost, China is an emerging country and the stock price synchronicity was very high with approximately 0.450 of R2 in the result of Morck, Yeung, and Yu (2000)[2]. As the stock market is the reflection of a country’s economics and reflect both new market-level and firm-level information at the same time, high synchronous stock price means less firm-information incorporation into the stock price. So the investors and the arbitrageur need to pay more for getting efficiency information from insiders, which will lower the market efficiency (Morck, Yeung, and Yu, 2013)[8]. Therefore, finding out what attributes to the synchronous stock price in China is beneficial to improve the institutional surrounding and so as the whole information efficiency.

Furthermore, since the high stock price synchronicity makes the stock price highly move with the market fluctuation, the insiders have incentive to make use of the inside diplomatic information to make money or hide the bad news to make profit like the Enron Incident. The insider dealing will have bad influence on the capital market pricing efficiency (Nuno Fernandes, Miguel A. Ferreira, 2008)[9]. So the investigation in China stock price synchronicity benefits improving the capital market pricing efficiency and create a better trading surrounding for the investors.

Last but not least, since the firm-specific information is less incorporation to the stock price, it will result in the highly stock price synchronicity in China. By less firm-specific information is showed in its stock price, the arbitrageurs can’t make the right decisions and the priority have no way to supervise the companies and encourage companies to make responsibility for the public (Tung Lam Dang, Fariborz Moshirian, Bohui Zhang, 2015)[3]. Hence, investigation in China stock price synchronicity is beneficial to improve the corporation management efficiency because the firm-specific information and the corporation management become more transparent to the public.

As there are some specific characteristics of China stock market: it only goes through about twenty years and it’s influenced greatly by the priority policies, the specific own characteristics of China stock market worth us to investigate it.
EMPIRICAL RESEARCH

Given that both stock return synchronicity and industry in China may be influenced by several firm-specific and political policy factors, it is significant that we control for these factors. In this section, we discuss the variables used in our analyses and compare the change between our result and the result in previous research.

Data and method

We investigate the association between stock return synchronicity and the industry. Our measure of stock price synchronicity follows Morck et al. (2000) [2]. We estimate the linear regression

\[ R_{i,t} = \beta_{10} + \beta_{11} R_{m,t} + \varepsilon_{i,t} \]  

(1)

Where \( R_{i,t} \) is the return of stock \( i \) at week \( t \) and \( R_{m,t} \) is the market return at week \( t \).

To compute \( R_{i,t} \), we collect about 1,964 A shares’ weekly opening price and closing price, which are almost all A shares in the Shanghai Stock Exchange from 2015 to 2016, to calculate each market return.

We measure \( R_{m,t} \) by containing the weekly SSE (Shanghai Stock Exchange) Composite Index from 2015 to 2016, which include stock prices and closing stock prices.

Our regression is similar to this model, but we conclude almost all the A shares in one of the Chinese exchanges from all over the industries and apply this regression particularly in China to observe how the market affect the stock price synchronicity and what changes happen in China stock price synchronicity for near past twenty years compared with previous researches.

Results

Table 1 presents the results of Morck et al. (2000), which briefly including ten big countries around the world in 2000 about the \( R_{j}^2 \). According to the table 1, the \( R_{j}^2 \) of developed countries were pretty low [2]. For instance, United States only got 0.021 for \( R_{j}^2 \) which was the lowest score in the table, while the highest one of the developed country in the table is Japan for about 0.234, which is approximately half of the score of China.

Our regression results are showed in the table 2. According to table 2, R2 is approximately 0.350. Compared with Morck’s result showed in the table 1, the R2 in our result is a bit lower than the result in 2000, which means the stock price synchronicity in China is lower than before. But we should also pay attention to the fact that the score of R2 is still pretty high, compared with the results of those developed countries in ten years ago. Therefore, even though the stock price synchronicity in China is less co-moved than before, its stock price still highly co-moves with the market.
TABLE 1. MORCK ET AL. (2000)'S RESULTS.

<table>
<thead>
<tr>
<th>Country</th>
<th>$R_j^2$</th>
<th>Country</th>
<th>$R_j^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>0.021</td>
<td>Germany</td>
<td>0.114</td>
</tr>
<tr>
<td>Canada</td>
<td>0.062</td>
<td>Norway</td>
<td>0.119</td>
</tr>
<tr>
<td>U.K.</td>
<td>0.062</td>
<td>Singapore</td>
<td>0.191</td>
</tr>
<tr>
<td>France</td>
<td>0.075</td>
<td>Japan</td>
<td>0.234</td>
</tr>
<tr>
<td>Austria</td>
<td>0.093</td>
<td>China</td>
<td>0.453</td>
</tr>
</tbody>
</table>

TABLE 2. REGRESSION RESULTS.

<table>
<thead>
<tr>
<th>R2</th>
<th>$F$</th>
<th>p</th>
<th>error variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.350</td>
<td>53880.538</td>
<td>0</td>
<td>0.005</td>
</tr>
</tbody>
</table>

MAIN REASONS FOR STOCK PRICE SYNCHRONICITY

The stock prices co-move more in developing countries than those in developed countries (Kalok Chan, Allaudeen Hameed, 2006)[10]. To my best knowledge and the researches made by previous scholars, this phenomenon is rarely related to market size but associated with the following factors.

The system risks

For the developing countries, industry structure is pretty simple and is inevitably to be affected by the system risks like the financial crisis (Mahir Binici, Bülent Köksal and Cüneyt Orman, 2012)[11]. For example, recently in China, the percentage of import oil to the total number of oil is about 60% (the National Bureau of Statistics of China), which means China pretty rely on oil import. Once the oil export countries suffer from disaster and reduce the oil export, then China oil industry and all the oil-related industries will significantly be influenced, so as their stock prices (C Peng, H Zhu, X Jia, W You, 2017)[12].

The smaller scale of the country’s economies, the smaller number of industries and companies, which will lead to the concentration of the companies. This concentration results in the closer relation between companies with the same industries. Then the enhanced relation will make the stock price synchronicity more overt because the bigger interrelationship between the companies within the same industries. Especially in the low-income countries, on account of the highly similar impacts on every company by the macro-economy risk, and the low risk diversification level between different industries, one of the accidents of special industry will lead to big hit on the whole market and the high income correlation within companies.

Take the real estate industry in China for example. Given that the most of the real estate industry is located in the developed cities along the western of China and the real estate industry is the backbone of Chinese economics, once the real estate industry is impact by the economy crisis, it will not only trigger the broken of the real estate industry with decreasing price but also initiate the bank credit crisis which impacts on
all the process on people’s life, then consequently leading to the depression of the Chinese economics.

The unsound property right

In China, as other developing countries, the legal regime is less wholesome than the developed countries, especially in the protection system of private property and this problem is correlated to the stock price co-movement (Elias Albagli, Pengjie Gao, Yongxiang Wang, 2013; Randall Morck, Bernard Yeung, Wayne Yu, 2000)[13, 8]. Without sound protection mechanism, private property right is vulnerable to be violated (Mahir Binici, Bülent Köksal and Cüneyt Orman, 2012) and hence the arbitrageurs are less active [12].

The performances of violation are as following: to begin with, mistaking private property with cooperation property, which means that the private events will have great influence on the stock price; moreover, confusing private property with family property; furthermore, mixing up legal property and illegal property; last but not least, remaining unsolved the problems of manipulation programs, which are enforcement on arrangement and confiscation of private property.

In China, with less protection of the property right, politic events and scandals are more vulnerable to affect the stock price co-movement within the whole market (Raymond Fisman, 2001) [14]. In addition, the poor protection of the property right will decrease the attraction of the stock market for the risk arbitrageurs. Consequently, with less risk arbitrageurs participate in the stock market, the stock market becomes less efficiency and the stock price reflects less companies’ information (Dong Lou and Christopher Polk, 2013)[15].

More importantly, in those countries with weaken protection system of the property right, the company insiders are much easier to violate the benefit of the public investors by wealth transition and discourage informed trading, on account of which the private property is mixed with company property and the insiders could manipulate the informed information (J Hu, JB Kim, W Zhang, 2016; Andreas Storkenmaier, 2011) [6, 16]. These will makes the information based on the company perspective useless for the risk arbitrageurs and prevent firm-specific information from being incorporated into stock price, which will further enhance the co-movement of the stock income (J Grewal, C Hauptmann, G Serafeim, 2017)[17]. With limits on arbitrage, stock price which contains less firm-specific information, is related with high stock return synchronicity (Allaudeen Hameed, Randall Morck, Jianfeng Shen and Bernard Yeung, 2015)[18]. The stock price contains less information about the company but more information about the market shared with different companies stock prices (JD Piotroski, DT Roulstone, 2004)[19]. It’s hard for arbitrageurs to make right decisions by analyzing the stock price. Which will ultimately eliminate the efficiency of the stock market.

The market opening level

The market opening degree is associated with active degree of the information traders’ arbitrage activities. The improvement of the market opening level will promote the active arbitrage activities of the information traders. The more frequently the information traders participate in the arbitrage activities, the better the stock price incorporating with the firm-specific information. With containing more firm-special
information instead of the same market information shared with other companies, the stock prices are less co-moved with the market fluctuation (Morck, Yeung, and Yu, 2013)[8].

The performances of high market opening level are as following: on one hand, it is beneficial to increase the transparency of a company, decrease the tunneling behaviors of the insiders resulting from the opacity of a company, and protect the legal right of the information trader. With high degree of market opening, the companies are forced to public more firm-specific information and supervised by the public and the authorities so that the manipulation behaviors of the insiders are easier to be founded and punished. The arbitrageurs could make appropriate decisions with the valid information offered on the market. On the other hand, the improvement of the market opening level benefits decreasing the collection cost of the information trader. As a large number of firm-specific information is public at the market, there’s not necessary for arbitrageurs to collect various informed information through numerous means which will cost great money. Hence, high market opening degree encourages arbitrageurs to take part in the market and ultimately improve the market efficiency.

Coverage is one of the reflection of the market opening level (Joseph D. Piotroski and Darren T. Roulstone, 2004) [19]. As the increasing development of the technology, the information published by the coverage is full of people’s life. In high market opening degree, the press is easy to collect the firm-specific information then publish it while the arbitrageurs could collect this information through the press by numerous ways such as the Internet, newspaper or even the fiscal (Tung Lam Dang, Fariborz Moshirian, Bohui Zhang, 2015)[3]. The firm-specific information is widespread on the coverage at the high market opening level. On the contrary, in the low market opening degree, arbitrageurs pay great effort to collect firm-specific information through insiders other than the coverage.

The scale of the financial market

The scale of the financial market could affect the stock price co-movement by the analyst coverage written by the analysts because the analyst activities are associated with the degree of the firm-specific information incorporating into the stock price(K Chan, A Hameed, 2006)[20]. As the practitioners own professional knowledge about the security market, their opinion will have great influence on the public by analyst coverage, particularly on the arbitrageurs without reason and the typical investors (Xiao-Lin Li, Tsangyao Chang, Stephen M. Miller, Mehmet Balcilar, Rangan Gupta, 2015)[4].

Large companies are attracted for the analysts because these companies have substantial fixed costs, massive payoff and high trading volumes. Those companies may have stable return and bring about benefits meeting the needs of the investors for hedging risks.

It’s quite similar to the size of arbitrageurs. In the efficient market, as the fiscal and the informed information about the companies is easy to collect, as well as larger needs of the analyst coverage by more arbitrageurs, more practitioners publish significant analyst coverage by analyzing the fiscal and the shareholding of the companies (Michael Grahama, Jarno Kiviahob, Jussi Nikkenen, 2012)[20]. In this case, the size of the analysts is pretty big. On the contrary, in the low efficient market, the difficulty of collecting the valid information discourages arbitrageurs and investors
to participate in the market. As the decline of the need of analyst coverage, the size of the analysts decrease either. Consequently, the more analyst coverage the analysts publish, the less the stock price synchronicity (Joseph D. Piotroski and Darren T. Roulstone, 2004) [19].

In addition to the analyst coverage, the concentration of the analyst coverage also have an effect on the stock price synchronicity (Allaudeen Hameed, Randall Morck, Jianfeng Shen, Bernard Yeung, 2015)[18]. There are thousands of stock at the stock market so it’s hard for arbitrageurs and investors to distinguish which stocks have the potential to make profits. By reading the analyst coverage or consulting the analysts, arbitrageurs and investors could narrow their choices and save time to make decisions. When numerous analysts focus on one of the companies, the stock price synchronicity of this company will increase and vice versa (Steven S. Crawford, Darren T. Roulstone, Eric C. So, 2012) [21].

The corporation itself

The intrinsic of the corporation or the style of the market that the corporation is in, will have great impact on the stock price synchronicity. In the emerging countries like China, the private doesn’t have so much capability to run a big company in some industries which could great influence the country’s economics. So it’s the country to run the companies to charge the country economic lifeline. These so called state-owned enterprises (SOE) are supported by the country fiscal and seldom publish their fiscal or firm-specific information (S Dongwei, X Jiacai, 2013), such as the oil industry in China which are charged strictly by the SOE (Ming-Hua Liu, Dimitris Marganritis, Yang Zhang, 2013) [15, 22]. With less transparent information being published, these corporations’ stock prices are high synchronicity.

In addition to the state-owned enterprises (SOE), the style of the market that the corporation is in also influent on the stock price synchronicity, especially in the monopolistic market, such as in those oil-exporting countries (Yudong Wang, Chongfeng Wu, Li Yang, 2013)[23]. The corporations in the monopolistic market are powerful in finance and occupy the dominant role in the industries. With the complicated structure of these corporation, it’s difficult for analysts or the investors to distinguish their financial institution. Therefore, their stock prices are high synchronicity because of less firm-specific information incorporating into the stock price (Philip Reeves Knyght, Alexander Kouzmin, Andrew Kakabadse, 2011) [24].

CONCLUSION

Motivated by the stock price synchronicity model of Morck et al. (2000), we use the regression and the weekly database of A shares and Composite Index from 2015 to 2016 coming from SSE (Shanghai Stock Exchange) to examines the changes of the stock price synchronicity in China in past nearly twenty years and finds out what attribute to the synchronous stock price in China [2]. To begin with, we construct the variables, using the R2 of a market model as a measure of the synchronicity of stock price movements. We find that the firm-specific stock price is highly synchronous with the market price in China. Moreover, compared with the results in 2000, we find that the stock price synchronicity in China is still pretty high even though the regression result is little lower than before. Ultimately, by comparing with other
previous researches which investigated in the stock price synchronicity in emerging countries, we find that the factors that are the system risks coming from the specific political policies and surrounding in China, the unsound property right, the market opening level, the scale of the financial market and the corporation itself in China, may be importantly attributed to the stock price co-movements in China.

Even though we prove that the stock price synchronicity in China still pretty high and find out the main contributions to it, but we haven’t collected enough databases for each contribution. So we still can’t know precisely how each contribution influence the stock price synchronicity in China or which factors make the greatest influence on the stock price synchronicity in China. Especially how big influence does the decisions of the priority on the stock market for China whose stock market is managed by the government not adjust by the market at most of the time? We leave these questions for further research.

REFERENCES