



Relationship Between Voluntary Disclosure, Stock Price Synchronicity and Financial Status: Evidence from Chinese Listed Companies

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To cite this article:

Zhang Benzao, Xie Xuan. Relationship Between Voluntary Disclosure, Stock Price Synchronicity and Financial Status: Evidence from Chinese Listed Companies. *American Journal of Operations Management and Information Systems*. Vol. 3, No. 4, 2018, pp. 74-84.

doi: 10.11648/j.ajomis.20180304.11

Received: November 1, 2018; **Accepted:** November 27, 2018; **Published:** January 2, 2018

Abstract: The purpose of this paper is to explore how a company's voluntary information disclosure influences its stock price synchronicity and how the company's financial status influences the relationship between voluntary information disclosure and stock price synchronicity. This study utilizes the panel regression model with the data of Shanghai and Shenzhen 300 Index constituent stocks from 2010 to 2017 in Chinese stock market to analyze the relationship between voluntary information disclosure and stock price synchronicity and how financial status influences the relationship. The results show that voluntary information disclosure is negatively related to stock price synchronicity. The financial status in general is likely to decrease stock price synchronicity. However the three different indicators, profitability, solvency and development ability, of financial status have different impacts on the relationship between voluntary information disclosure and stock price synchronicity. The company's profitability strengthens the relationship of voluntary information disclosure and stock price synchronicity. While the solvency and the development ability have little impact on the relationship. It can be seen that investors are paying more attention to the intrinsic value of the companies and the quality of the Chinese stock market is obviously improving. Based on the results the paper proposes some useful suggestion in the end.

Keywords: Voluntary Information Disclosure, Stock Price Synchronicity, Financial Status

1. Introduction

The reason why information quality is vital to stock market is that information is one of the main factors leading to stock pricing and then leads to the allocation of resources through stock price. Through information disclosure, the listed company presents the specific situation to investors and the public, which effectively realizes the internal and external information exchange and communication. Based on the information disclosed by the companies, investors can make the more appropriate investment decisions and improve the pricing efficiency of stock market. The problem of information asymmetry, adverse selection and moral hazard can be alleviated by information transparency. The capital is put into the most effective projects, and then the whole stock

market operates in a healthier and more efficient way. Therefore, the less information disclosure, the less firm-specific information would be included in stock price, the higher stock price synchronicity would be.

There is a great deal of literature focused on the relationship of stock price synchronicity and information disclosure. The relationship between stock price synchronicity and information transparency is negative [1-3]. Chen [4] showed the positive correlation between information asymmetry and stock price synchronicity and the institutional investors can improve the pricing efficiency of information and weaken the correlation. Hong et al. [5] obtained that margin financing reduces the synchronization of stock price and improves the efficiency of individual heterogeneous information transmission. Yet some scholars put forward different results.

Dai et al. [6] found that the higher and lower stock price synchronism are both accompanied by poor information disclosure efficiency, and the relationship curve is like an “inverted U” shape. Shi [7] argued the quality of information disclosure is positively correlated with stock price synchronicity, because the higher the quality of information disclosure, the less private information is traded onto the stock market, and the higher the synchronicity of stock price is. So far there are still disputes about the research of the relationship between voluntary information disclosure and stock price synchronicity. This paper explains the relationship by analyzing Chinese stock market.

In analyzing the relationship of voluntary information disclosure and stock price synchronicity, many scholars have sought to research how other determinants affect the relationship between information disclosure and stock price synchronicity. Jin [8] and Zhang et al. [9] discussed how the accounting rule reform in 2007 affects the relationship. The improvement of accounting standards increases the negative relationship between voluntary information disclosure and stock price synchronicity. Wang et al. [10] found that the stock price synchronicity is positively correlated with the firm’s information transparency, and the institutional shareholdings can reduce the correlation. And some research has focused on the correlation between information disclosure and financial status, while few papers have analyzed whether a company’s financial status will influence stock price synchronicity in response to voluntary information disclosure. In fact, financial status has a significant impact on stock price volatility. And financial status is different from the temporary factors such as policy factors, stock market conditions and manmade operational factors. Over time, stock prices will eventually return to their intrinsic value. With the continuous development of China’s stock market, the quality of accounting fundamental information will be gradually improved, and the profitability of using value accounting indicators for value investment will gradually increase. This paper contributes to the literature on information disclosure and stock price synchronicity in further exploring financial status’ influence on the relationship.

2. Theoretical Principle and Hypotheses

In this section, this paper provides the hypotheses to be empirically tested later in the paper. The first hypothesis is about the relationship between stock price synchronicity and information disclosure. The second, the main issue the paper is to discuss, is about the impact of financial status on the relationship between stock price synchronicity and information disclosure.

2.1. Voluntary Information Disclosure and Stock Price Synchronicity

On the basis of previous studies, this paper argues that stock price synchronicity refers to the degree of convergence between corporate stock price volatility and market price volatility. It reflects the common occurrence that most of the

stock prices in stock market have been rising and falling together during a period of time. Fama [11] put forward the efficient market hypothesis after summing up the previous research results of relevant scholars. The hypothesis argues that if a market is effective, all available information can be reflected in the price. The efficient market hypothesis shows that the principle of stock price formation, and provides a theoretical basis for the view that information determines stock price. In the efficient market, participants could acquire the precise and comprehensive information and then make investment decisions reasonably. Therefore, the more firm-specific information is disclosed, the more precise information can be used by participants, the more real company value is contained in stock price, the lower the stock price synchronicity would be. However, the premise of the hypothesis is so strict that stock market in reality has a large gap with the hypothetical one [12]. Therefore, some scholars have further developed the effective market theory by relaxing the premise. For example, relaxing the precise of investors’ access to information without cost, Grossman and Hart [13] concluded that stock prices do not reflect all the information in the market and the stock price can only reflect the firm-specific information acquired by investors after paying the relevant costs.

In order to solve the information asymmetry, Spence [14] proposed and developed signaling theory. The Signaling theory indicates that the company’s capital structure can send a signal to external investors, and more profitable companies are willing to disclose more information to external investors, thereby contributing to external investors distinguish quality companies and inferior companies. In summary, the signaling theory is mainly to avoid the common occurrence of “adverse-selection”. According the theory the companies should actively disclose more information about the company to external investors, so that external investors can make correct investment decisions and reduce the cost of collecting firm-specific information. The signaling theory is the theoretical basis and motivation of voluntary information disclosure. Listed companies pass on firm-special information to external investors by disclosing financial statements, periodic announcements, and temporary announcements. To some extent, the disclosure diminishes the information asymmetry between the management of listed companies and the information demanders. Voluntary information disclosure will play a more important role in Chinese stock market.

The inherent logical relationship between voluntary information disclosure and stock price synchronicity is as follows: First, listed companies can significantly reduce the information asymmetry between listed companies and investors through active voluntary information disclosure. Investors can make a correct judgment on the stock price of the listed company after sufficiently and effectively obtaining the firm-special information represented by the accounting information. Directly voluntary disclosures reduce the stock price synchronization; second, the listed company that disclose information actively can greatly reduce the cost of investors’ search for information, and at the same time reduce

the financing costs of listed companies. Voluntary disclosure has improved the ability of investors to monitor [15]. Stock price may be influenced by the disclosed firm-special information. In the market, if a considerable number of companies' information can be obtained by investors, the companies' stock price may fluctuate with the disclosed information, thus the stock price synchronization can be reduced.

H1: There is a negative relationship between stock price synchronicity and voluntary information disclosure.

2.2. Stock Price Synchronicity, Voluntary Information Disclosure and Financial Status

In order to deeply study the relationship between the level of information disclosure and stock price synchronicity, this paper regards the companies' financial status as the relevant variable. The influence of financial status on the correlation between the voluntary information disclosure and stock price synchronicity is investigated within the consideration.

The link between voluntary information and financial status can be established, considering that financially strong firms (those with stronger profitability and business operation capability) generally can apply to more activities about information disclosure. Financially weaker firms, on the other hand, may relatively be more inclined to invest more funding and resources to the company's operations and growth rather than information disclosure. As discussed previously, due to the information asymmetries between the companies and investors, companies need to provide more information to trim the adverse-selection. Information disclosure is benefit to trim the adverse-selection component of the cost of capital [16]. The well-run companies are more willing to disclose firm-specific information to the market, in order to attract more investors. Which means the relationship of stock price synchronicity and voluntary information disclosure would be stronger. If the companies with worse financial status, they

may reduce voluntary information disclosure. However, sometimes, in order to enhance self-monitor and motivate the company's management to improve performance, the companies will actively disclose information.

H2: The negative relationship between voluntary information disclosure and stock price synchronicity is strengthened in companies with better financial status.

3. Variables and Methods

3.1. Sample Selection and Data Sources

This paper selects the Shanghai and Shenzhen 300 Index constituent stocks from 2010 to 2017 as the preliminary sample. The reasons choosing Shanghai and Shenzhen 300 Index constituents as sample are for the following characteristics: (1) the constituent selection is based on the company scale and liquidity, which can reflect the comprehensive changes in the stock prices of representative stocks with strong liquidity and large scale; (2) two adjustments of the constituents with buffer technology per year improve the stability of constituent stocks; (3) the constituent has a good representativeness because they relatively have no clear industry selection criteria, and their industry distribution is similar to the market distribution. By following Jin and Myers [2], this paper excludes the financial listed companies and samples with incomplete data. There are 138 companies and a total number of 1104 observations screened out. The data in this paper is from the CSMAR database and RESSET database.

3.2. Measurement Issues

This paper is to research how voluntary disclosure impact on stock price synchronicity with different financial status. The model is defined as following:

$$Synchronicity_{k,t} = \beta_1 Disclosure_{k,t} + \beta_2 Finance_{k,t} + \beta_3 Disclosure_{k,t} \times Finance_{k,t} + \beta_4 Controls_{k,t} + v_{k,t} \quad (1)$$

Where $Synchronicity_{k,t}$ represents company k 's stock price synchronicity in year t , the interaction term denotes the influence of the financial status on the relationship of stock price synchronicity and information disclosure.

3.3. Variables

3.3.1. Explained Variable

Roll [1] first proposed to measure stock price synchronicity with CAPM model. The measurement then was developed by Morck et al. [3] and Durnev et al. [17]. Consistent with Durnev et al. [17], the stock yield is separated into market level yield, industry level yield and company level yield, as equation

$$r_{k,t} = \beta_0 + \beta_1 r_{m,t} + \beta_2 r_{I,t} + e_{k,t} \quad (2)$$

Where $r_{k,t}$ represents company k 's stock yield in week t ; $r_{m,t}$ represents market yield in week t ; $r_{I,t}$ represents industry yield in week t ; e is residual, means yield explained by firm-specific information. R^2 of equation (2) regression reflects the degree of individual stock price volatility can be explained by market level information and industry level information. And stock price synchronicity can be defined as

$$Synchronicity_{k,t} = \ln \left(\frac{R_{k,t}^2}{1 - R_{k,t}^2} \right) \quad (3)$$

The larger the R^2 , the larger $Synchronicity_{k,t}$ is, and the higher the degree of stock price synchronicity is.

3.3.2. Explanatory Variables

Consistent with much of the past literature (e.g. [10, 18-19]), earnings opacity is taken as the proxy variable of voluntary information disclosure level. According to Hutton et al. [19], this paper measures the opacity of the company's information

$$DIS_{k,t} = \frac{Abs(deciles(EA_{k,t})) + Abs(deciles(EA_{k,t-1})) + Abs(deciles(EA_{k,t-2}))}{3} \quad (4)$$

DIS represents information opacity; $deciles(EA_{k,t})$ refers to the deciles of earnings aggressiveness. Earnings aggressiveness is defined as:

$$EA_{k,t} = (\Delta CA_{k,t} - \Delta CL_{k,t} - \Delta CASH_{k,t} + \Delta STD_{k,t} - DEP_{k,t} + \Delta TP_{k,t}) / TA_{k,t-1} \quad (5)$$

EA is operability accruals adjusted by total assets last period, $\Delta CA_{k,t}$ is change in total current assets for firm k in year t , $\Delta CL_{k,t}$ is change total current liabilities for firm k in year t , $\Delta CASH_{k,t}$ is change in cash for firm k in year t , $\Delta STD_{k,t}$ is change in current portion of long-term debt included in total current liabilities for firm k in year t , $DEP_{k,t}$ is depreciation and amortization expense for firm k in year t , $\Delta TP_{k,t}$ is change in income taxes payable for firm k in year t , $\Delta TA_{k,t}$ is total assets last period.

Financial status is mainly expressed by four aspects of ability: solvency, operating ability, profitability and development ability. This paper accordingly chooses net sales interest rate (npm), increase rate of business revenue ($irbr$) and cash coverage ratio (ccr) to reflect profitability, development ability and solvency.

The profitability of a company is the focus that investors pay attention to when making investment decisions. A company's net sales interest rate (npm) is used to measure the ability of the company to earn revenue from sales over a certain period of time.

The analysis of development ability is about the ability of a company to expand its business capacity. The ability of company growth refers to a company's development trend in the future. The proxy increase rate of business revenue ($irbr$) is the ratio of annual net cash flow from operating activities to current liabilities.

A company's operation and development is determined by whether the company has the ability to pay cash and repay its debts. The ability to repay debt is an important symbol to reflect the financial status and management ability of a company. This paper chooses cash coverage ratio (ccr) to measure solvency, which equals to the ratio of net operating cash flows to current liabilities.

3.3.3. Control Variables

Luo et al. [20] and Chen and Zhang [21] concluded that there is a significant correlation between stock price and corporate fundamental indicators. Therefore, this paper selects some main indicators as the control variables. The control variables are as follows.

$size$, a common proxy for financing constraints, is defined

disclosure by using the sum of the absolute values of the company's operable accruals in the past three years (DIS). The greater the DIS , the lower the transparency of information is, the lower the quality of information disclosure is. The disclosure level can be defined as:

as the log of total assets. The larger the company, the more susceptible its business behavior is to industry factors and macro factors. In addition, the larger the company, the greater the impact on the stock market is. The relationship is expected to be positive.

ins equals to the institutional investors' shareholding ratio. Institutional investors are more professional than private investors, and their investment direction will have an impact on stock market. The higher the ins , the lower the synchronism of stock price is. Therefore, the sign on ins is expected to be negative.

This paper uses two methods to measure the company's liquidity. The first is the logarithm of average annual turnover ($\ln vol$). Because the average annual turnover of stocks reflects the company's attractiveness to investors, when investors are generally optimistic about a company's stock, the volume will increase, and then the stock price synchronization will be higher. The Second is the average annual exchange rate of the company ($turn$). This proxy not only directly reflects the degree of liquidity of the stock, but also indirectly reflects the degree of concern that investors have on the stock. With the higher exchange rate, investors are more likely to arbitrage with the private information they get, which makes the stock price reflect more of the information at the corporate level. Since the annual volume of stocks reflects the company's attractiveness to investors, when volume increases, the stock price synchronization will be higher. $\ln vol$'s symbol is expected to be positive, however, $turn$'s symbol is expected to be negative.

4. Results

Table 1 below provides the mean, standard deviation, median, minimum and maximum of the variables used in this paper. The maximum value of voluntary disclosure is 0.1870, the median is 0.0627, and the standard deviation is only 0.0362, which indicates that the quality difference of voluntary information disclosure among different companies is comparatively small. The minimum value of the explained variable Synchronicity is -5.5849, the maximum value is 3.1728, and the standard deviation is 1.0243, which indicates that there is a great difference in the stock price synchronicity in China. It is because of the uneven distribution of stock price synchronicity that the research of this paper is meaningful.

Table 1. Statistical Description.

Variable	Mean	Std. Dev.	Min	Max	P25	P50	P75	Observations
Synchronicity	-0.2247	1.0243	-5.5849	3.1728	-0.8129	-0.1638	0.3924	N = 1104
DIS	0.0676	0.0362	0.0001	0.1870	0.04000	0.0627	0.0905	N = 1104
npm	12.6636	27.0597	-333.8795	412.6527	4.0487	8.2580	15.9250	N = 1104
irbr	0.1785	0.3405	-0.8764	6.4592	0.0261	0.1361	0.2662	N = 1104
ccr	0.2562	0.4694	-4.3454	5.4929	0.0472	0.1556	0.3349	N = 1104
size	24.0997	1.4512	19.7401	28.0982	23.1800	24.0932	25.1859	N = 1104
ins	0.3393	0.2614	0.0000	0.9623	0.11830	0.2612	0.5562	N = 1104
Invol	21.9544	1.1814	17.3306	26.1346	21.1543	21.9570	22.7086	N = 1104
turn	1.1843	0.9529	0.0252	6.5268	0.5416	0.8997	1.5362	N = 1104

With the stata 14.0 this paper explores the correlation between voluntary disclosure level, financial status and stock price synchronicity. Since the model setting part of this paper does not take into account the effect of the delay of the explained variables, the static panel regression model is used in the estimation. Based on the test results in Table 2, the fixed effect panel model is selected.

Table 2. Test Results of the Model Set.

Test	Model 1	Model 2	Model 3	Model 4
F test	3.59 (0.0000)	3.65 (0.0000)	3.59 (0.0000)	3.59 (0.0000)
LM test	192.63 (0.0000)	198.81 (0.0000)	193.63 (0.0000)	192.42 (0.0000)
Hausman test	29.73 (0.0005)	38.04 (0.0000)	29.59 (0.0010)	30.64 (0.0070)

Note: P-test values are in parentheses

As shown in Table 3, the column 1 displays the result in Model 1. The regression coefficient of *DIS* is significantly positive, which confirms to H1. The negative relationship between information disclosure and stock price synchronicity shows that through voluntary disclosure of information, the listed companies make more firm-specific information be reflected in the stock price, which leads to the decline of stock price synchronicity. The signs on the three variables of financial status are negative. It can be seen that a good financial situation can help to reduce stock price synchronicity. But the coefficients are not significant. Due to the developing Chinese stock market is not ripe enough to avoid noise disturbance. Financial information is not used by investors owing to the quality of accounting information disclosure and the comprehensibility of accounting information.

Consistent with H2, the empirical approach is to multiply *DIS* with different measures of financial status for investigating if these variables condition the relationship between information disclosure and stock price synchronicity. In Model 2, the interaction term with *npm* is positive and significant at 1%, which is consistent with H2. The result reflects the profitability will strengthen the negative relationship between voluntary disclosure and stock price synchronicity. In Model 3, the interaction term *DIS*×*irbr* reflects how the company's development ability influences on the relationship of information disclosure and stock price synchronicity. The coefficient is positive, which

goes against H2. However, the result is not significant. The coefficient of *DIS*×*ccr* in Model 4 is similar with *DIS*×*irbr*. The results show that company's development ability and solvency have nothing to do with the relationship between information disclosure and stock price synchronicity. The reason may be that the analysis of the company's solvency and development ability is not as intuitive as the analysis of the company's profitability. So, investors, especially private investors, tend to focus on the profitability of the company rather than paying attention on solvency and development ability. The insignificant results show a significant puzzle of China's stock market which could be called serious deviation between stock price and company's actual value. In order to improve the influence of financial information on the efficiency of resource allocation, the quality of accounting information and the comprehensibility of accounting information should be continuously improved. Accounting standard-setting should further enhance the comprehensibility of accounting standards by minimizing or interpreting ambiguities in standards. In addition, for control variables, the coefficients signs of *size*, *ins*, *Invol* and *turn* are consistent with our expectations.

Table 3. Results of Panel Regression.

Variables	Model 1	Model 2	Model 3	Model 4
DIS	1.594*	2.427**	1.082	1.382
DIS× <i>npm</i>	-0.955	-0.966	-1.051	-1.025
DIS× <i>irbr</i>		0.074***		
DIS× <i>ccr</i>		-0.012	2.585	
<i>npm</i>			-1.887	0.987
<i>irbr</i>				-1.199
<i>ccr</i>				
<i>size</i>				
<i>ins</i>				
<i>Invol</i>				
<i>turn</i>				
	-0.000	0.004***	-0.000	-0.000
	-0.002	-0.001	-0.002	-0.002
	-0.018	0.003	-0.235	-0.019
	-0.086	-0.083	-0.211	-0.085
	-0.005	0.007	-0.007	-0.088
	-0.098	-0.101	-0.099	-0.156
	-0.120**	-0.142***	-0.119**	-0.120**
	-0.055	-0.052	-0.055	-0.055
	-0.477***	-0.430**	-0.475***	-0.482***
	-0.173	-0.171	-0.172	-0.173
	0.329***	0.335***	0.328***	0.330***
	-0.044	-0.044	-0.044	-0.044

Variables	Model 1	Model 2	Model 3	Model 4
turn	-0.265***	-0.269***	-0.267***	-0.265***
	-0.049	-0.049	-0.049	-0.048
Constant	-4.174***	-3.846***	-4.130***	-4.173***
	-1.171	-1.120	-1.180	-1.168
Observations	1.104	1.104	1.104	1.104
R-squared	0.100	0.108	0.102	0.101

Note: *, ** and *** are significant at the 1, 5 and 10 percent level: P-test values are in parentheses

5. Conclusion

In this paper, the relationship of voluntary information disclosure and stock price synchronicity is investigated with the Shanghai and Shenzhen 300 Index constituent stocks as samples. And this paper extends the previous literature by investigating if the relationship is influenced by the company's financial status. The empirical results show that the greater quantity of voluntary information disclosure, the lower stock price synchronicity will be. Furthermore, the strong profitability strengthens the negative relationship of information disclosure and stock price synchronicity. The influence of solvency and development ability is not significant.

The high stock price synchronicity will damage capital allocation efficiency, and bring negative influence to a series of economic behaviors. The reason why the firm-specific information of most listed companies in Chinese market does not be reflected in stock price is that the comprehensiveness and effectiveness of information disclosure of listed companies need to be improved on the one hand, on the other hand, is that the individual investors, lack the rational analytical ability, are generally vulnerable to institutional investors and market quotation. So the securities supervision department should strengthen the supervision on the listed companies to ameliorate the the information disclosure system of listed companies and eradicate false information disclosure. And listed companies should improve their internal governance structure, the ability of accounting information processing and the level of voluntary information disclosure. The listed companies actively disclose information to external investors, which helps to improve the transparency of the company and alleviate information asymmetry between the management and investors. At the same time, voluntary information disclosure can help the listed companies to establish an open and positive corporate image, promote the overall competitiveness of the companies, reduce the financing costs of listed companies and enhance the financing efficiency of listed companies. More investment knowledge should be taught to the investors to help them to concern about the potential cause of stock price and long-term investing focused on value investment. It is necessary to strengthen the professional knowledge education for investors to interpret financial reports, so that investors can fully realize the importance of financial information. Thus correct investment and planing idea and general knowledge of risk management will be formed in the minds of investors. The low ratio of the total value of China's capital market to the total amount of the

national economy indicates that China's capital market has huge development space. Then, stimulating market vitality and promoting long-term capital entering the market will be further implemented. China's stock market will usher in a new stage of healthy and stable.

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