

Confucianism And Stock Price Synchronization

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Abstract: This paper empirically examines the effect of Confucian culture on stock price synchronization by selecting data from listed companies from 2008-2021. The results show that Confucian culture can significantly reduce the level of stock price synchronization and does so mainly by suppressing managers' self-interested motives and improving the quality of corporate information. Heterogeneity analysis reveals that the inhibitory effect of Confucian culture on stock price synchronization is more pronounced in firms that have not been exposed to foreign cultural shocks and have less analyst attention. The findings provide empirical evidence to support the governance function of Confucian culture and have important practical implications for improving capital market pricing efficiency.

Keywords: Confucianism, Stock price synchronization, Capital market pricing efficiency.

1. Introduction

The report of the 20th CPC National Congress points out that it is necessary to “give full play to the decisive role of the market in the allocation of resources”; moreover, China's policies have always emphasized that “we must accelerate the improvement of the socialist market economic system, and the reform of the economic system must focus on the improvement of the property rights system and the market-oriented allocation of factors to realize the effective incentives for property rights. Effective incentives for property rights. Free flow of factors, flexible price response, fair and orderly competition, and superiority and inferiority of enterprises. It is also necessary to deepen the reform of the financial system and enhance the ability of financial services to the real economy.” As a measure of the correlation between the movement of individual stock prices and the average movement of the entire stock market, stock price synchronization is often used to measure the pricing efficiency and information transmission efficiency of the capital market. China's capital market construction is in its infancy, and stock price synchronization is at a high level in the world ranking, which not only reduces the operational efficiency of the capital market, but also negatively affects the business behaviors of enterprises, such as investment and executive appointments and removals. Based on this, the study of issues related to stock price synchronization in the Chinese market will help China to establish a more perfect capital market, so that finance can effectively serve the real economy of China. How to reduce stock price synchronization so that the stock price contains more information about the characteristics of the company is an urgent problem to be solved in the process of establishing a sound capital market in China.

As for the causes of stock price synchronization, there are two main views in the domestic and international research field: the “information efficiency view” and the “irrational behavior view”. The “information efficiency school”, represented by Roll, argues that more firm-specific information will be integrated into the stock price in a better disclosure environment and quality, resulting in lower stock price synchronization, and Kim and Shi (2009) find that stock price synchronization is higher in emerging markets than in mature capital markets. 2022) found that environmental

information disclosure, as a new corporate management tool, has become an important way for companies to disclose their environmental performance and fulfill their environmental responsibilities, which is conducive to reducing stock price synchronization. In addition, new audit reports (Wang and Li, 2019), managerial competence (Gan and Hu, 2023), and inquiry letter regulation (Luo et al., 2023) integrate more firm-specific information into the stock price and reduce stock price synchronization. The Irrational Behavior School, represented by West, argues that more noise is incorporated into the stock price in a poorer disclosure environment and quality, which reduces stock price synchronization. Xu (2011) suggests that in a market where investors have irrational behaviors such as panic and frenzy and follow the herd or chase the bulls, and where returns are full of bubbles and noise, stock price synchronization will be reduced. Xu (2011) suggests that in a market where investors have irrational behaviors such as panic and frenzy and follow the herd or rush to the market, and where returns are full of bubbles and noise, stock price synchronization is low, revealing the core of the “irrational behavior view”. In recent years, some scholars have found that the greener innovation (Xin et al., 2022) and ESG performance (Hu et al., 2023), the less noise in the stock price information, and the higher the stock price synchronization.

However, with the gradual improvement of China's institutional environment in recent years (Tang et al., 2020) and more frequent investor research activities (Jiang and Yuan, 2018), the “irrational behavior” of investors in China's securities market has gradually decreased, and investors have been able to effectively identify different types of information in the securities market. Investors are able to effectively recognize different types of stock market information, and the “noise” in stock price information is significantly reduced and the content of stock price information is gradually improved. Therefore, the study of “irrational behavior” on the synchronization of stock prices in the Chinese stock market at this stage is worth discussing. Despite some controversies, the “information efficiency view” is more accepted in the current research in the field of stock price synchronization (Chen and Yao, 2018). Therefore, this project is based on the “Information Efficiency View” to study stock price synchronization.

In recent years, the rise of cultural studies in the field of

finance and economy has been quite rapid, and this trend has prompted people to gradually turn their attention to the perspective of informal institutions, and explore in depth the far-reaching impact of Confucian culture in the economic field, especially how it subtly plays a role in the behavioral decision-making level of micro-enterprises. Unlike the previous approach that was limited to the purely theoretical level of exploration, in recent years, the focus of the academic community has clearly shifted, and more and more scholars tend to adopt the method of empirical analysis in an attempt to more scientifically and accurately reveal the possible intrinsic links between Confucian culture and the behavioral decision-making of modern firms. xu et al (2020) found that Confucian culture, as a kind of informal system, helps to make up for the deficiencies of the formal system in emerging capital markets and performs an alternative governance function to achieve the role of curbing the risk of stock price crashes. Confucian culture can also enhance the quality of its environmental disclosure by promoting the fulfillment of corporate responsibility, inhibiting agency problems, and enhancing dynamic capabilities (Yang and Liu, 2024). Confucian culture can reduce executive on-the-job consumption (Pan et al, 2020), as well as reduce corporate non-compliance (LI and Zhu, 2021), corporate green innovation (Pan et al, 2023), promote corporate digital transformation (Lin and Chen, 2024), and the level of corporate environmental management (Du et al, 2024). In addition, Confucianism also helps to enhance corporate responsibility awareness, promote CSR information disclosure (Zou, 2020), promote enterprises to make green mergers and acquisitions (Pan et al, 2021), and enhance accounting robustness (Du et al, 2023). The above studies fully illustrate that Confucian culture as an informal system does have an impact on the behavioral decisions of modern enterprises. The core idea of Confucian culture is conducive to regulating management behavior and improving the quality and efficiency of disclosure information.

Compared with established studies, the marginal contributions of this paper may be reflected in the following aspects: first, it broadens the research boundaries of the economic consequences of Confucian culture. The influence of the Confucian tradition on Chinese society is extensive and far-reaching, but current research on Confucian ethical values has been conducted mainly based on the philosophical and sociological levels, and most of them have adopted the normative analysis paradigm. This paper uses empirical methods to reveal the relationship between Confucian culture and stock price synchronization, and also deepens the theoretical knowledge of the economic consequences of Confucian culture from the market economy level. Second, it provides a new perspective to study the influencing factors of stock price synchronization. An important development trend of stock price synchronicity is cross-field cross-study. This paper combines cultural influence and capital market pricing efficiency to analyze the relationship between Confucianism and stock price synchronicity, which broadens the scope of application of culture in the field of capital market counting and finance, and provides new empirical evidences for a comprehensive understanding of the influence mechanism of stock price synchronicity. The literature has examined stock price synchronization from the perspectives of media reports, microblogs, analysts, social responsibility report disclosure, annual report tone, and Shanghai-Hong Kong Stock Connect, but little attention has been paid to the impact of implicit value

norms, such as culture, on stock price synchronization. Third, this paper further clarifies the internal mechanism of Confucian culture on stock price synchronization, which can help firms better grasp stock price synchronization activities and improve capital market pricing efficiency.

2. Theoretical Analysis and Research Hypothesis

On the one hand, Confucian culture can help curb managerial self-interested behavior. Xiong et al (2023) found that Confucian culture can curb managerial self-interested behavior and create a good ethical environment. Gan (2021) showed that the ethical values embedded in Confucian culture can produce a restraining mechanism for agents' self-interested behavior and embedded within the enterprise to shape managers' professional ethics of cultivation and self-discipline. Confucian culture can also promote green innovation in enterprises by restraining managers' self-interested behavior (Pan et al, 2023). Confucian culture promotes values centered on morality, kindness, and selflessness. The saying "A gentleman seeks others after he has sought himself, and seeks not others after he has not sought himself" profoundly reveals the self-requirements and high standards of a gentleman in interpersonal interactions. Before a gentleman asks others to do the same, he must first examine himself to make sure that he has achieved the same standard; before criticizing or blaming others, he will even reflect on himself to make sure that he has not done anything wrong. This attitude of being strict with oneself and lenient with others is not only a relentless pursuit of self-improvement, but also a powerful overcoming of selfishness. It teaches us that when faced with problems and conflicts, we should first look at ourselves and search for shortcomings, rather than just blaming others. The credo of "not blaming God above, not blaming others below" further strengthens the spirit of introspection and self-discipline in Confucian culture. It teaches us that in the face of life's disappointments and setbacks, we should not blame others, but have the courage to take responsibility, look for the causes in ourselves and seek solutions. This spirit of facing challenges positively and self-reflection has far-reaching significance in overcoming selfishness and cultivating selfless qualities. This means that when the influence of Confucian culture penetrates deep into the enterprise, managers can also curb self-interested behaviors through self-supervision, which is conducive to the development of the enterprise.

On the other hand, Confucian culture is conducive to improving the quality of corporate information. The stronger the influence of Confucian culture, the higher the proportion of firms willing to disclose social responsibility information, and the higher the quality of disclosed social responsibility information (Zou, 2020). Meanwhile, from the perspective of information quality, when listed companies disclose information of higher quality, the market will trade more company-level information, which makes share price synchronization decline (Chen et al, 2024). The moral principle and behavioral norm of "honesty" has been vigorously promoted and practiced by Confucianism since ancient times. Confucius left behind a powerful sentence in the Analects of Confucius: "If a man does not have faith, he does not know what he can do." This sentence profoundly reveals the importance of honesty as the cornerstone of living in the world. Confucius again mentioned in the Analects of

Confucius - Yan Yuan, “The people cannot stand without faith.” This sentence bluntly points out that integrity is the key to maintaining national stability and promoting social development. Integrity in Confucianism is not only an external manifestation of behavior, but also an internal moral quality. It requires people to be consistent in appearance and deeds, internalizing integrity in their hearts and externalizing it in their actions. This kind of thinking not only shapes the integrity-based values in Confucian culture, but also facilitates modern business management. As a result, Confucian culture helps corporate managers to disclose less false information and more true and effective information, which improves the quality of corporate information and further reduces stock price synchronization. In summary, the following hypotheses are proposed:

H1: Confucianism can dampen stock price synchronization.

3. Research Design

3.1. Sample Selection and Data Sources

This paper selects Chinese listed companies from 2008 to 2021 as the initial research sample and adopts the following methods to process the data: firstly, the data of ST and *ST companies are excluded; secondly, financial companies and insolvent companies are excluded; on this basis, the missing parts of the variables are further excluded and the main continuous variables are subjected to a 1% to 99% shrinking treatment for the main continuous variables. Finally, 30,727 sample observations are obtained. The data on the number of incomes used in this paper come from the China Biographical Database, and the rest are obtained from the CSMAR and WIND databases.

3.2. Variable Definition

3.2.1. Dependent Variable: Stock price synchronization (SYNCH)

Drawing on existing literature (Gul et al., 2010; Xu et al., 2013), this paper calculates the stock price synchronization process as follows. Regression on weekly return data for stock i :

$$R_{i,w,t} = \alpha_0 + \alpha_1 R_{M,w,t} + \alpha_2 R_{M,w-1,t} + \alpha_3 R_{I,w,t} + \alpha_4 R_{I,w-1,t} + \varepsilon_{i,w,t} \quad (1)$$

Where $R_{i,w,t}$ is the return of stock i in week w of year t considering reinvestment of cash dividends; $R_{M,w,t}$ is the weighted average return on the outstanding market capitalization of all A-share companies in week w of year t ; and $R_{I,w,t}$ is the weighted average return on the outstanding market capitalization of other stocks in the industry in which stock i operates in week w of year t excluding stock i , which is calculated.

The pairs are logarithmized to obtain as an indicator of stock price synchronicity for stock i in year t :

$$SYNCH_{i,t} = \ln(R_{i,t}^2 / 1 - R_{i,t}^2) \quad (2)$$

3.2.2. Independent Variable: Confucianism (JS200)

In this paper, we refer to the practice of existing studies and use the jinshi of the Ming and Qing Dynasties as a measure of Confucian culture. The specific method of calculating the indicator of Confucian culture in this paper is the number of jinshi centered on the address of a listed company with a radius of two hundred miles (JS200, divided by 1000). The imperial examination system is a Confucianism-derived system for selecting officials. Most of the examinations for the imperial examinations were based on Confucian classics, such as The Analects of Confucius, Mencius, The Classic of Poetry, The Book of Changes, The Book of Rites, and The Book of Zhou Yi. This practice not only strengthened the influence of Confucianism among the scholarly class, but also enabled the spread of Confucian culture at a broader social level.

3.2.3. Control variables

Drawing on existing studies, this paper controls for the following firm-level variables, specifically: whether or not there are four major (Big4), capital utilization by major shareholders (Occupy), growth rate of operating income (Growth), management expense ratio (Mfee), price-to-book ratio (PB), chairman's ownership ratio (ChairHoldR), basic earnings per share (EPS), and annual individual stock return (ASR). Industry and year effects are also controlled for. The main variables are defined in Table 1.

Table 1. Definition of main variables

Variable type	variable name	Variable symbol	Variable Definition
Dependent Variable	Stock price synchronization	SYNCH	Reflects the correlation between the volatility of individual stocks and the volatility of the market as a whole
Independent Variable	Confucianism	JS200	The number of scholars in a two-hundred-mile radius (JS200, divided by 1,000)
control variables	Are the Big Four?	Big4	1 if the company is audited by a Big 4 accounting firm and 0 otherwise.
	Utilization of funds by major shareholders	Occupy	Other receivables divided by total assets
	Revenue growth rate	Growth	Net profit divided by total assets
	management cost ratio	Mfee	Administrative expenses divided by operating income
	market capitalization ratio	PB	Price per share / Net assets per share
	Chairman's shareholding	ChairHoldR	Capital contribution/registered capital
	basic earnings per share	EPS	Net profit/total equity
	Yearly individual stock returns	ASR	[(Income from investments)-investment days]*365 × 100%
	Year	Year	Year dummy variable
	Industry	Ind	Industry dummy variables

3.3. Model Setup

To test the effect of Confucian culture on stock price synchronization, this paper constructs the following

regression model:

$$SYNCH_{i,t} = \alpha_0 + \alpha_1 JS200_{i,t} + \alpha_2 \sum controls + \sum Year + \sum Industry + \varepsilon_{i,t} \quad (3)$$

Where is stock price synchronization, is Confucian culture, denotes a series of control variables, and is the error term. If the regression coefficient of Confucian culture is significantly negative, it means that Confucian culture can inhibit stock price synchronization and H1 holds.

4. Empirical Results and Analysis

4.1. Descriptive Statistics

Table 2 presents the descriptive statistics of the main variables in this paper, and it can be seen that the mean value

of SYNCH is -0.3759, the standard deviation is 0.9491, the minimum value is -3.0735, and the maximum value is 1.4875. This indicates that there is a large variability in the stock prices among different companies. the mean value of JS200 is 3.5611, the standard deviation is 3.3938, the minimum value is 0, and the maximum value is 10.4920, indicating that there are significant differences in the geographical distribution of Confucianism. Other variables are generally evenly distributed with no extreme outliers, indicating a more reasonable choice of control variables and a high degree of consistency with the existing literature.

Table 2. Descriptive statistics

Variable	N	Mean	SD	p50	Min	Max
SYNCH	30727	-0.3759	0.9491	-0.2852	-3.0735	1.4875
JS200	30727	3.5611	3.3938	2.0380	0.0000	10.4920
Big4	30727	0.0592	0.2360	0.0000	0.0000	1.0000
Occupy	30727	0.0154	0.0223	0.0076	0.0002	0.1262
Growth	30727	0.1704	0.3582	0.1154	-0.5114	1.8656
Mfee	30727	0.0864	0.0653	0.0700	0.0096	0.3748
PB	30727	3.4678	2.7506	2.6423	0.5791	16.1750
ChairHoldR	30727	7.9781	13.5452	0.0100	0.0000	54.2900
EPS	30727	0.3660	0.5515	0.2700	-1.2600	2.8500
ASR	30727	0.1419	0.5568	0.0139	-0.6728	2.2387

4.2. Regression to Basics

Table 3. Regression results

	(1) SYNCH	(2) SYNCH
JS200	-0.0111*** (-6.99)	-0.0036*** (-2.9228)
Big4		0.0795*** (4.5107)
Occupy		-0.6665*** (-3.4663)
Growth		-0.1105*** (-9.0454)
Mfee		-0.4259*** (-5.8323)
PB		-0.0430*** (-23.8029)
ChairHoldR		-0.0035*** (-10.8010)
EPS		0.1433*** (17.6067)
ASR		-0.3191*** (-28.7694)
_cons	-0.336*** (-42.87)	0.5724*** (13.5669)
Year&Ind	No	Yes
N	30727	30727
r2	0.0016	0.4452

The first and second columns of Table 3 present the results of the effect of Confucian culture on stock price synchronization. The first column presents the results of a univariate regression with significantly negative coefficients on Confucian culture and stock price synchronization, initially verifying Hypothesis 1. The second column, on the other hand, presents the results of the regression after controlling for a range of control variables as well as year and industry effects. As can be seen in column 2, the estimated coefficient on Confucian culture is significant at the 1% level of significance. In addition, each 1% increase in the number

of Confucian cultures reduces the level of firms' stock price synchronization by 0.0036 percentage points. This suggests that an increase in Confucian culture has a significant inhibitory effect on firms' stock price synchronization, further validating Hypothesis 1, all other things being held constant.

4.3. Robustness Check

4.3.1. Replacement of independent variables

Table 4. Replacement of independent variables

	(1) SYNCH	(2) SYNCH
JS100	-0.0084*** (-2.7982)	
JS300		-0.0021** (-2.2072)
Big4	0.0782*** (4.4382)	0.0785*** (4.4554)
Occupy	-0.6631*** (-3.4489)	-0.6647*** (-3.4566)
Growth	-0.1104*** (-9.0377)	-0.1104*** (-9.0407)
Mfee	-0.4262*** (-5.8353)	-0.4260*** (-5.8301)
PB	-0.0430*** (-23.7903)	-0.0431*** (-23.8379)
ChairHoldR	-0.0034*** (-10.7442)	-0.0035*** (-10.8790)
EPS	0.1431*** (17.5915)	0.1432*** (17.5860)
ASR	-0.3190*** (-28.7675)	-0.3189*** (-28.7533)
_cons	0.5704*** (13.5272)	0.5737*** (13.5770)
Year&Ind	Yes	Yes
N	30727	30727
r2	0.4452	0.4451

Considering the possible sample self-selection problem between Confucian culture and stock price synchronization,

drawing on Gu (2015), this paper changes the radius for the calculation of the Confucian culture indicator, and selects the number of Ming and Qing scholars (divided by 1,000) within 100 kilometers and 300 kilometers of the location of the listed company (JS100 and JS300) as the proxy variable for Confucian culture, and performs a model (1) with a regression. It can be seen that in the first column of Table 4, the proxy for Confucian culture (JS100) is negative and significantly correlated at the 1% level. In the second column of Table 4, the proxy for Confucian culture (JS300) is negative and significantly correlated at the 5% level. This indicates that the effect of Confucian culture on stock price synchronization remains significant after replacing the independent variables.

4.3.2. Replacement of the dependent variable

In order to further verify its robustness, this paper replaces the measure of stock price synchronization by borrowing from Durnev et al. (2003), applying model (1) to estimate the R^2 of an individual stock, and applying equation (2) to logarithmize the R^2 so that it is normally distributed, and finally obtaining the indicator SYN which is the measure of stock price synchronization.

$$R_{i,t} = \alpha_0 + \alpha_1 R_{m,t} + \alpha_2 R_{i,t} + \varepsilon_{i,w,t} \quad (4)$$

$$SYNCH_{i,t} = \ln(R_i^2/1 - R_i^2) \quad (5)$$

Where $R_{i,t}$ is the individual stock return in week t , $R_{m,t}$ is the market return in week t , and $R_{i,t}$ is the industry return in week t ; α_0 is an indicator calculated by weighting the weighted average of the company's outstanding market capitalization according to the CSRC's industry classification standards; and α_1 is the goodness-of-fit of model (1). After replacing the dependent variable, the results are still significantly negatively correlated at the 1% level.

Table 5. Replacement of the dependent variable

	SYNCH_1
JS200	-0.0046*** (-3.1683)
Controls	Yes
_cons	0.4893*** (9.8459)
Year&Ind	Yes
N	30727
r2	0.4346

4.3.3. Excluding large ethnic minority provinces

It is an indisputable fact that ethnic minorities have unique national cultures. Each ethnic minority has formed its own unique way of life, customs, religious beliefs, language and writing, arts and traditions, etc., which together constitute their rich ethnic cultures in the course of long-term historical development. In this paper, we refer to Pan et al (2020) and eliminate the eight provinces with the largest number of ethnic minorities in the country, which are Yunnan Province, Guizhou Province, Guangxi Zhuang Autonomous Region, Inner Mongolia Autonomous Region, Tibet Autonomous Region, Xinjiang Uygur Autonomous Region, Ningxia Hui Autonomous Region, and Qinghai Province. The results are still significantly negatively correlated at the 1% level as shown in column 1 of Table 6.

4.3.4. Excluding the four first-tier cities

The four first-tier cities of Beijing, Shanghai, Guangzhou and Shenzhen have not only attracted a large number of

domestic enterprises, but also succeeded in attracting the attention and capital injection of many foreign enterprises with their open attitude and superior investment environment. The entry of these enterprises not only brings advanced technology and management experience to these cities, but also promotes the diversification and internationalization of the local economy. At the same time, these first-tier cities have also spawned many innovative and competitive local enterprises, which have made breakthroughs in their respective fields and contributed to the continued prosperity of the cities' economies. As a result, the development level of the four first-tier cities is much higher than that of other cities, and the number of enterprises ranks steadily among the top in the country. Considering the clustering of enterprises, this paper this paper refers to Pan et al (2020) and excludes the sample of the four first-tier cities and re-runs the regression. The results, as shown in column 2 of Table 6, remain significantly negatively correlated at the 1% level.

Table 6. Excluding some cities

	(1) SYNCH	(2) SYNCH
JS200	-0.0035*** (-2.7786)	-0.0043*** (-2.9056)
Big4	0.0764*** (4.2353)	0.0558** (2.2231)
Occupy	-0.5412*** (-2.6699)	-0.7870*** (-3.5155)
Growth	-0.1179*** (-9.4464)	-0.1199*** (-8.6109)
Mfee	-0.4231*** (-5.5224)	-0.4905*** (-5.4024)
PB	-0.0421*** (-22.3931)	-0.0418*** (-19.5574)
ChairHoldR	-0.0033*** (-10.0514)	-0.0038*** (-9.9763)
EPS	0.1437*** (16.7425)	0.1563*** (15.9983)
ASR	-0.3151*** (-27.6413)	-0.3182*** (-24.6524)
_cons	0.5803*** (12.8502)	0.6180*** (13.4744)
N	28757	22517
r2	0.4450	0.4492

4.3.5. PSM propensity score matching

To further eliminate the impact of sample selection bias on the findings, PSM was used. Referring to Yang and Liu (2024), all variables were grouped according to the median Confucian culture, and all variables were matched as covariates in a 1:1 nearest neighbor matching with a radius of 0.05. The t-value of ATT (average treatment effect) after matching was -3.99, significant at the 1% level. Re-running the regression again with the matched samples, the regression result of Confucian culture and stock price synchronization is -0.0043, which is significantly negatively correlated at the 1% level, supporting the established conclusions of this paper.

Table 7. PSM test

	SYNCH_1
JS200	-0.0043*** (-2.7655)
Controls	Yes
_cons	0.6723*** (9.5791)
Year&Ind	Yes
N	16171
r2	0.4495

5. Further Analysis

5.1. Mechanism Analysis

Based on the theoretical derivations in the previous section, this paper argues that Confucian culture will affect stock price synchronization in the following two ways. (1) suppressing managers' self-interested motives; and (2) improving the quality of corporate information.

5.1.1. Managerial self-interest motives

First, this paper uses overinvestment to measure the agency

costs triggered by managers' self-interested motives, where overinvestment is obtained by referring to the calculation method of Biddle (2009). The results in columns 1 and 2 of Table 8 show that JS200 is significantly negatively correlated with overinvestment at the 1% level, indicating that Confucianism can significantly reduce managers' opportunistic behavior, which is consistent with the previous inference that Confucianism can reduce firms' stock price synchronization by suppressing managers' self-interested motives.

5.1.2. Quality of the company's information

Second, this paper measures the firm's information quality with surplus management, which is calculated using the basic Jones model. The results are shown in columns 3 and 4 of Table 8, and it can be found that Confucian culture can significantly reduce the level of surplus management, and the results suggest that Confucian culture helps to improve the quality of firm information, which in turn inhibits the

Synchronization of firm stock prices.

Table 8. Mechanism test regression results

	(1)	(2)	(3)	(4)
	overinvestment		surplus management	
JS200	-0.0022 (-1.143)	-0.0045*** (-2.761)	-0.0014 (-0.764)	-0.0056*** (-3.259)
Big4	0.0758*** -3.001	0.0702*** -2.852	0.0444* -1.871	0.1052*** -3.957
Occupy	-0.3312 (-1.047)	-0.8032*** (-3.316)	0.0867 -0.287	-1.1467*** (-4.578)
Growth	-0.1286*** (-5.914)	-0.0964*** (-6.531)	-0.0885*** (-4.287)	-0.1145*** (-7.511)
Mfee	-0.3747*** (-3.151)	-0.4321*** (-4.670)	-0.5221*** (-4.654)	-0.3399*** (-3.523)
PB	-0.0399*** (-13.133)	-0.0426*** (-18.887)	-0.0480*** (-16.681)	-0.0394*** (-16.786)
ChairHoldR	-0.0033*** (-6.375)	-0.0035*** (-8.519)	-0.0035*** (-7.518)	-0.0032*** (-7.368)
EPS	0.1563*** -12.38	0.1330*** -12.463	0.1637*** -12.197	0.1296*** -12.571
ASR	-0.3279*** (-18.906)	-0.3207*** (-22.191)	-0.3222*** (-19.438)	-0.3176*** (-21.241)
_cons	0.5308*** -8.326	0.5858*** -10.378	0.5438*** -8.847	0.5874*** -10.116
N	12914	17813	14702	16025
r2	0.4496	0.4428	0.4493	0.4397

5.2. Heterogeneity Analysis

5.2.1. Overseas Culture Shock

China's Confucian culture has been influenced through long periods of subtle influence, but with the advent of the globalization era, Chinese firms are facing an increasingly international environment. The influence of Confucian culture on stock price synchronization may change due to the impact of foreign culture. Therefore, this paper draws on Zhang et al's (2023) study, which measures foreign cultural shocks by whether the directors and supervisors have overseas backgrounds, and divides the sample into a shocked sample group and an unshocked sample group to test the relationship between Confucian culture and stock price synchronization in each of the two groups. The results, as shown in columns 1 and 2 of Table 9, show that the coefficient of Confucian culture is insignificant when subjected to an

external cultural shock, and the coefficient is significantly negatively correlated at the 5% level when not subjected to an external cultural shock. This suggests that Confucian culture has an insignificant effect on stock price synchronization when subjected to foreign cultural shocks, while Confucian culture exerts a dampening effect on stock price synchronization when not subjected to foreign cultural shocks.

5.2.2. Analyst Focus

There are also differences in the external oversight of the capital market that listed companies face in the course of their operations. For firms that are subject to more external monitoring, both managerial self-interested behavior and the quality of corporate information are affected. This paper expects that for firms subject to more external monitoring, stock price synchronization may be effectively limited without the need for Confucian culture to play a role, while in contrast, stock price synchronization with less external

monitoring requires more soft disincentives from culture. Drawing on Pang et al (2020), this paper takes the logarithmic measure of being followed by analysts based on the number of analysts' followers plus one, and divides its sample into a high and a low attention group by its median value. The results are shown in Columns 3 and 4 of Table 9, which show

that the significance of the low attention group is stronger compared to the high analyst attention group, and that Confucianism culture can be used as an alternative to an external monitoring mechanism for managerial self-interested behavior and firm information quality to form informal constraints.

Table 9. Heterogeneity analysis regression results

	(1)	(2)	(3)	(4)
	Overseas Culture Shock		Analyst Focus	
JS200	-0.0048** (-2.543)	-0.0031* (-1.876)	-0.0040** (-2.284)	-0.0031* (-1.841)
Big4	0.1530*** -4.054	0.0636*** -3.092	0.1192*** -3.361	0.0307 -1.509
Occupy	-0.9043*** (-3.180)	-0.3847 (-1.467)	-0.6920*** (-2.660)	-0.4935* (-1.748)
Growth	-0.1252*** (-6.945)	-0.0985*** (-5.940)	-0.1121*** (-6.614)	-0.1072*** (-6.184)
Mfee	-0.4655*** (-4.291)	-0.4189*** (-4.214)	-0.2963*** (-3.095)	-0.4940*** (-4.430)
PB	-0.0466*** (-17.056)	-0.0407*** (-16.735)	-0.0548*** (-20.978)	-0.0362*** (-14.125)
ChairHoldR	-0.0043*** (-8.694)	-0.0028*** (-6.700)	-0.0026*** (-5.700)	-0.0043*** (-9.865)
EPS	0.1586*** -12.217	0.1341*** -12.689	0.1078*** -7.054	0.0927*** -9.041
ASR	-0.3127*** (-18.180)	-0.3242*** (-22.261)	-0.4145*** (-23.818)	-0.2736*** (-19.032)
_cons	0.6121*** -11.05	0.5395*** -8.261	0.5131*** -8.44	0.6268*** -10.897
N	13323	17404	14847	15880
r2	0.4586	0.4345	0.4816	0.4318

6. Conclusions and Recommendations

This paper analyzes the role of Confucian culture on stock price synchronicity and its path of influence from a micro perspective based on data from listed companies from 2008-2021. It is found that Confucian culture can inhibit the level of stock price synchronization. The mechanism of Confucian culture's effect on stock price synchronization is analyzed in terms of managers' self-interested motives and firms' information quality, and the results show that Confucian culture reduces stock price synchronization by reducing managers' self-interested behaviors and improving information quality. Further analysis shows that this influence effect is stronger in firms that are not exposed to external shocks and have less analyst attention.

The research recommendations of this paper are as follows: first, firm cultural confidence is an important driving force to promote enterprise development. From the results of the study, it can be seen that Confucian culture has an obvious inhibitory effect on stock price synchronization, which is conducive to improving the pricing efficiency of China's capital market. There is a close and far-reaching connection between cultural self-confidence and enterprise development. Firm cultural self-confidence is an important spiritual source to promote the sustained prosperity and development of enterprises, which is not only the cornerstone for shaping the unique brand image of an enterprise, but also the key to inheriting the deep corporate cultural heritage and enhancing the sense of corporate social responsibility. In today's increasingly competitive globalized business environment, enterprises should be deeply aware of the positive excavation and inheritance of their own cultural traditions and core values,

and firm cultural self-confidence can inject inexhaustible creativity and vitality into the development of enterprises, enhance the cohesion and centripetal force of the enterprise, so that the enterprise in the fierce competition in the market is unique, and to win a broader space for development and respect of the community. Second, continuously improve the construction of capital market. The findings of this paper are conducive to reducing stock price synchronization and strengthening capital market pricing efficiency. Continuously improving the construction of the capital market is an intrinsic requirement for promoting high-quality economic development and a key initiative to enhance the efficiency of corporate financing and resource allocation capacity. It is necessary to ensure that capital can flow more precisely and efficiently to high-quality enterprises with development potential. By optimizing the information disclosure, regulatory mechanism and trading rules of the capital market, the transparency and fairness of the market can be further enhanced to provide more solid financial support for the long-term development of enterprises, and at the same time create a safer and more robust investment environment for investors and promote the healthy and stable development of the capital market. Third, it is important to establish correct values. The management maintains morality and integrity, which is the soul and cornerstone of the sustainable development of the enterprise. As the navigator of the enterprise, their words, deeds and decision-making behaviors influence the atmosphere and culture of the enterprise all the time. Only when the management leads by example, adheres to the ethical bottom line and upholds the principle of integrity, can it win the respect and trust of the staff, stimulate the cohesion and creativity of the team, and thus promote the enterprise to

move forward steadily in the fierce competition in the market. At the same time, this will also establish a good social image for the enterprise, win wider social recognition and support, and lay a solid foundation for the long-term development of the enterprise.

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References

- [1] Biddle G C, Hilary G, Verdi R S. How does financial reporting quality relate to investment efficiency? [J]. *Journal of accounting and economics*, 2009, 48(2-3): 112-131.
- [2] Cai R. Can Environmental Information Disclosure Reduce Stock Price Synchronization Of Listed Companies? — Empirical Analysis Based On China’S Heavy Pollution Industry [J]. *Advanced Management Science*, 2022, 11(2):
- [3] Chen, Yao. Will government action necessarily improve stock price synchronicity?—An empirical study based on China's industrial policy [J]. *Economic Research Journal*, 2018, 53 (12): 112-128.
- [4] Chen, Yin, Zhang, Huang .Does ESG Rating Divergence Affect the Pricing Efficiency of Capital Markets? - Research based on the synchronicity of stock prices of listed companies [J]. *Journal of Finance and Economics*, 1-17[2024-10-02].
- [5] Du, Xie, Lai, Zeng. Confucian culture and accounting soundness [J]. *Accounting Research*, 2023, (01): 57-72.
- [6] Du M A, Lu M, Zhang Y, et al. Confucian culture and corporate environmental management: The role of innovation, financing constraints and managerial myopia [J]. *Research in International Business and Finance*, 2024, 73 (PA): 102585-102585.
- [7] Durnev A, Morck R, Yeung B, et al. Does greater firm-specific return variation mean more or less informed stock pricing? [J]. *Journal of Accounting research*, 2003, 41(5): 797-836.
- [8] Gan. The Influence of Confucian Culture on Corporate Social Responsibility: An Empirical Test Based on the Tenth National Sample Survey of Private Enterprises [J]. *Jinan Journal (Philosophy & Social Sciences)*, 2021, 43(01): 115-132.
- [9] Gu. Confucian Ethics and Agency Costs in the Context of Globalization [J]. *Journal of Management World*, 2015, (03): 113-123.
- [10] Gul F A, Kim J B, Qiu A A. Ownership concentration, foreign shareholding, audit quality, and stock price synchronicity: Evidence from China [J]. *Journal of financial economics*, 2010, 95(3): 425-442.
- [11] Jiang X, Yuan Q. Institutional investors' corporate site visits and corporate innovation [J]. *Journal of Corporate Finance*, 2018, 48: 148-168.
- [12] Hu J, Zou Q, Yin Q. Research on the effect of ESG performance on stock price synchronicity: Empirical evidence from China's capital markets [J]. *Finance Research Letters*, 2023, 55: 103847.
- [13] Kim J B, Shi H. International financial reporting standards, analyst following, institutional infrastructure, and stock price synchronicity around the world [J]. Unpublished working paper, 2009.
- [14] Li, Zhu. Research on the influence of Confucian culture on corporate non-compliance [J]. *Business and Management Journal*, 2021, 43(9): 137-153.
- [15] Lin, Chen. Research on the impact of Confucian culture on the digital transformation of enterprises [J]. *Modern Economic Science*, 1-13[2024-10-04].
- [16] Luo, Wang, Wang, Su .Research on the impact of inquiry letter regulation on the information content of stock prices [J]. *Chinese Journal of Management*, 2023, 20(09): 1389-1397.
- [17] Pan, Tang, Ning. Thrift to Cultivate Virtue: Confucian Culture and Executive On-the-Job Consumption [J]. *Journal of Xiamen University (Arts & Social Sciences)*, 2020(1): 107-120.
- [18] Pan, Wang, Qiu. Confucian culture and green mergers and acquisitions of heavily polluting enterprises [J]. *Accounting Research*, 2021.
- [19] Pan, Yi, Pan, Cheng. Does Confucian culture have an impact on corporate green innovation? [J]. *Management Review*, 2023, 35(12): 122-136.
- [20] Tang P, Yang S, Yang S. How to design corporate governance structures to enhance corporate social responsibility in China's mining state-owned enterprises? [J]. *Resources Policy*, 2020, 66: 101619.
- [21] Wang, Li. New audit report and share price synchronization [J]. *Accounting Research*, 2019, (01): 86-92.
- [22] Gan X, Hu P. Managerial ability and stock price synchronicity [J]. *Finance Research Letters*, 2023, 56: 104124.
- [23] Xin, Hao, Cheng. Corporate green innovation and stock price synchronization: Based on the perspective of business risk and environmental information disclosure [J]. *Finance and Accounting Monthly*, 2022, (18): 152-160.
- [24] Xiong, Fang, Yang. The Effect of Supervisory Governance on Multiple Major Shareholders: Empirical Evidence from Corporate Non-compliance. [J]. *Collected Essays on Finance and Economics*, 2023, (11): 69-80.
- [25] Xu, Hong, Wu, Xu. Information transmission mode, investor psychological bias and stock price "rise and fall" phenomenon [J]. *Economic Research Journal*, 2011, 46, (04): 135-146.
- [26] Xu, Li, Chen. Confucian culture and stock price crash risk [J]. *China Journal of Accounting Studies*, 2019, 7 (1): 25-61.
- [27] Xu N, Chan C K, Jiang X, et al. Do star analysts know more firm-specific information? Evidence from China [J]. *Journal of Banking and Finance*, 2013, 37 (1): 89-102.
- [28] Yang, Liu. Confucian culture and the quality of corporate environmental information disclosure [J]. *Journal of Nanjing Audit University*, 2024, 21 (05): 37-49.
- [29] Zhang, Xu, Cao. A Study on the Impact of Confucian Culture on Corporate Merger and Acquisition Performance [J]. *Communication of Finance and Accounting*, 2023, (02): 67-72.
- [30] Zou. Can Confucian Culture Promote CSR Information Disclosure? [J] .*Business and Management Journal*, 2020, 42(12): 76-93.