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The impact of headquater location on stock performance of chinese A-share companies

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Abstract

This paper is to study the impact of dividend policy and location on the stock price of A-share market. It is found that the headquarters is located in areas and cities with convenient transportation, which is easy to obtain higher dividends. There is evidence that this relationship is related to higher exposure. Under more transparent financial constraints, companies tend to pay higher share prices. We find that the stock prices of these highly exposed companies are very sensitive to the changes of dividends and cash flow. We conclude that although headquater location has an impact on stock performance, it plays a relatively small role in the sense of re economics and can only be used as an auxiliary factor in the analysis of stock prices. This will prompt investors to pay attention to the impact of geometric economy on the company's stock performance.

JEL Classification: G23, G11, G12

Keywords: A-Share market, dividend policy, stock price, headquater location

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1. Introduction

Under the influence of the global epidemic, population mobility is limited. At the same time, import and export trade is also restricted. To stimulate economic recovery, governments around the world began to print more money. In this case, the purchasing power of almost all currencies has decreased. This includes name coins. Some Chinese people, to preserve their currency, decide to buy assets to weaken the impact of currency depreciation. Many of them protect their property by buying stocks. Lee and Jiang (2002) believe that investors' optimism will reduce earnings volatility, while investors' pessimism will increase earnings volatility. In the case of crazy money printing in countries around the world, China's A-share market is now in a state of optimism for investors. This state reduces the return of the stock. At the same time, because the stock price is at a relatively high price, it is caused by the low bank interest rate.

In this study, we take China's A-share market as the research object. We want to find out whether headquater location has an impact on dividend policy. We find some literature on the impact of geographical location on the stock performance of enterprises. Knyazeva (2011) found that enterprises in remote areas tend to pay higher dividends to reduce agency costs than those in developed areas, especially those with cash flow problems. Giroud (2013) found that better transportation will directly reduce the monitoring cost of shareholders to the enterprise, so the new railway or airport can also change the dividend policy of the enterprise. The dividend policy will affect stock performance to a certain extent.

The literature also proves the importance of headquarter location. The study found that investors and fund managers are more likely to invest in nearby companies because they can obtain information about these companies at a lower cost. (bodnaruk 2009). Other studies have

shown that due to the lower cost of obtaining information, these analysts can update their data and information in time. This can help analysts provide more accurate earnings forecasts and cash flow forecasts (Brevoorb, Holmes, and wolken, 2011). Such accurate prediction can also enhance investors' confidence in these companies, so as to make the company's stock price perform better.

Dividend policy is one of the final strategic and financial decisions made by financial companies interested in shareholders. As a corporate strategy, it shows how a company decides to distribute its profits when it has a surplus at the end of the year. Companies usually have two options. The first is to distribute profits to shareholders so that shareholders can receive dividends. The second is to invest these profits in and treat them as retained earnings.

In the practice of stock trading, dividend policy directly affects the stock price. Generally speaking, the more dividends a company distributes each year, the higher the stock price, but a company's profit is limited. And some investors believe that if the company leaves the dividends that should have been distributed to shareholders, investment can make the company develop faster to obtain more dividends in the future. In other words, when the profit is fixed, the more dividends distributed to shareholders does not mean the higher the stock price. At the same time, the study found that whenever the company began to distribute dividends, the stock price would rise sharply. We suspect that this increase is due to the change in dividend policy. Because no matter whether the company distributes dividends or not, the PE or cash flow of the company will not change significantly. Second, this article will explore, in general, what is the range of this irrational increase. This article will be calculated by analyzing PetroChina stocks and the stocks of 50 enterprises randomly from China's A-share market. This can also help stockholders make the best judgment.

To test our hypothesis, we found that we used the data from 2015 to 2020 in CSMAR. Firstly, we find that when matching the stock performance and the changes caused by its geographical factors, the stock performance of tier one cities is lower than that of tier two or tier three cities. In addition, we found that the effect of this effect is very obvious. In addition, in order to reduce the possibility of problems in our selection of samples. We find that when we talk about the impact of geo economic factors on stock performance, this impact is lagging. By calculating the changes within 3 and 12 months, we found that 3 months is more suitable for our model. Thus, we reduce the sample selection bias.

Second, by linking the impact of geo economy with the impact of corporate exposure, we find that more airports can encourage investors to conduct investor surveys. After we establish this connection. It is found that compared with those companies with less exposure, the cities where headquater companies are located generally have fewer airports. So by matching the exposure, headquater companies location and the number of airports. Finally, it is concluded that the number of airports will increase the company's exposure and reduce the stock performance.

This paper makes contributions in two places. The first is that this article can help investors realize that geo economy will also have a certain impact on stock performance. The second is to make investors realize that in the investigation and Research on companies and stocks, this research itself will also affect the changes of stock prices to a certain extent.

The rest of our paper is organized as follows. Section 2 introduces some references we refer to. Section 3 describes the data and makes a method analysis. Section 4 introduces the robustness test of our data. Section 5 gives our conclusions

2. Literature Review and Hypotheses Development

2.1. Home Bias

2.1.1 Exposure and stock price

Higher exposure can help or force companies to pay higher dividends (Yao, et al., 2019). John et al. (2011) proved that the geographical location of the company can affect the distribution of dividends by analyzing charts. Higher dividends are more likely to come from listed companies closer to the national central city. Generally, national central cities have better transportation. More convenient transportation can help analysts expose the company's operating conditions and financial fraud. Giroud (2013) believes that exposure determines the dividend distribution mode of the company. Higher exposure will directly increase investors' sensitivity to changes in the company (Yao et al., 2019). In this case, shareholders tend to increase dividends to increase stock value to protect their property.

2.1.2 Location and equity concentration

Because of the influence of home bias, some investors like to invest in companies where they can obtain company information more easily. This situation has led some investors to believe that they have some information advantage over these companies. These investors and analysts tend to make more optimistic economic growth assumptions for their local companies. This will also make some companies more prone to high equity concentration. High equity concentration will affect the dividend policy and thus the performance of the stock price. High equity concentration will enable enterprises to adopt a low dividend policy (Harada and Nguyen, 2011). Enterprises with high equity concentration have major shareholders. These major

shareholders have a greater influence on dividend policies. Gugler and Yutoglu (2003) put forward the hypothesis that large shareholders prefer to extract private benefits of control rather than receive dividers that equally benefit all shareholders. However, this relationship is still controversial. Arora and Srivastava (2019) experiments in India have proved a positive relationship between ownership concentration and divide payout. An article from the Journal of Asia business studies seems to explain this situation (Setiawan et al., 2016). This article points out that in the past, researchers were keen to distinguish the impact of large shareholders and small shareholders on dividends. The essential difference between large shareholders and small shareholders is ignored. When formulating a dividend policy, the rights and interests of minority shareholders are difficult to be protected (Aluchna et al., 2019). When the major shareholder is foreign capital, enterprises prefer to adopt the policy of high dividends. However, when the major shareholders are family assets, enterprises prefer to adopt the policy of low dividends (Setiawan et al., 2016). whether major shareholders intend to hold shares for a long time determines the dividend distribution policy.

2.2. Determinants of stock performce

2.2.1 Stock performance

Demirakos (2010) suggest two models most commonly used by analysts in deriving stock prices are price to discoveries (PE) and discounted cash flow (DCF). In early research, analysts prefer the PE model, which is simpler and less time-consuming than the DCF model. (Barker, 1999; Bradshaw, 2002; Asquith, 2005) at the same time, the PE model performs better than the DCF model (Liu, 2002). However, recently, Gleason (2013) pointed out that more complex models can better help estimate the stock value in mature markets. However, Gleason (2013)

also pointed out that due to the short development time of the Asian market, the current regulatory authorities are not perfect. In this case, the DCF model does not perform better than the PE model. Sayed (2016) found that in short terms, the accuracy of the PE model (65.1%) is much higher than that of the DCF model (34.9%) It is more accurate in a short period, which also shows that the PE model is good at dealing with the emotion-driven stock market（Kerl, 2011). Therefore, in the A-share market, the PE model of stock price analysis in the short term is more appropriate.

2.2.2 Intangible asset

Word of mouth (WOM) is an intangible asset based on the experience of communication between users (Griffin and Hauser, 1993; Liu, 2006; Van den Bulte and Lilien, 2001). Positive word of mouth can help companies gain the trust of consumers and investors, while negative word of mouth will lose the trust of consumers and investors. The decline of trust will lead to the decline of consumers' purchase intention (Babic et al., 2016). The loss of consumer trust will make investors doubt the profitability of the company. According to Keller (2003), the negative reputation of brand equity theory will make investors question the company's brand assets and make the cash flow inelastic. When his conditions remain unchanged, the loss of reputation will make the company's cash flow and stock price fragile and sensitive (Huete-Alcocer, 2017).

Market share is also an intangible asset. The increase in market share will enhance the influence of the brand, which can help the company increase profits (Fischer and Himme, 2017). However, the increase of market share will lead to an increase in cost, and the increase of cost is nonlinear. Therefore, when the market share increases to a certain extent, increasing the market share will reduce the company's profits (Edeling and Fischer, 2016). Therefore, in some

industries, companies with excessive market share generally perform poorly (Schwalbach, 1991; Uslay, Alting, and Winsor, 2010). Compared with small enterprises of the same type, the PE value will be lower.

The above discussion on stock price and divide still stays at the influence of other factors on these two variables. This is to better analyze the reasons after establishing the relationship between stock price and divide. There are few articles on the direct relationship between stock price and divide. Research remains inclusive. Our research will fill this gap.

3. Data and Methodology

We selected all non ST stocks from the A-share market by random sampling. The daily closing prices of these all stocks from December 31, 2010 to December 31, 2020. are recorded in the data. These data will play an important role in the study. When the data also includes daily increase or decrease, trading volume, and turnover, these variables with certain reference signific We got a lot of data from CSMAR. This includes the divide, pay out ratio, retain earning rate, net cash flow from operating activity and the city of the parent company of non-ST A-share market stocks from December 31, 2010 to December 31, 2020. In addition, we also find the GDP of various provinces in China from CSMAR and match it with the location of the parent company of these listed companies. The per capita GDP of the provinces where the parent companies of these companies are located is obtained. In addition, we also learned whether the company is a national enterprise or a private enterprise by querying the company's official website. Finally, we use Gaode map to count the number of airports in the cities where these companies are located. We think this data can affect the exposure to some extent.

We use two variables to define the location of the parent company. The first is the per capita GDP of local provinces (*GDP*), which can reflect the local development level. Our initial guess is that economically developed areas can greatly affect the development of the whole company. This may affect investors' enthusiasm for the company's investment. The second is the number of airports (*AIRPORT*). We think this variable can represent the traffic situation of the city where the parent company is located. More convenient transportation will inevitably reduce the cost of investors and analysts coming to the company.

$$SP_t = \alpha_0 + \alpha_1 AIRPORT_{t-i} + \alpha_2 SOE_{t-i} + \alpha_3 PE_{t-i} + \alpha_4 CFFO_{t-i} + \alpha_5 GDP_{t-i} + \alpha_6 POR_{t-i} \quad (1)$$

In this equation, SP represents stock price. *SOE* represents whether the enterprise belongs to a state-owned enterprise. If the enterprise belongs to a state-owned enterprise, the value of *SOE* is 1. If it is not a state-owned enterprise, this value is 0. *CFFO* represents number of new cash flows per share from the operation. GDP represents the average GDP of the primary company ` s city. *POR* stands for payout rate. *PE* represents price earenings ratio of this company.

Next, let's start talking about controlled variables. The first is the profitability of the company. This includes two variables. The first is the number of dividends per share (*PO*), and the second is the number of new cash flows per share (*CFFO*). Higher dividends per share and new cash flow per share will enable investors to pay higher stock prices. Second, when we analyze the data, we find that the return on investment requirements of some enterprises are significantly lower than those of other enterprises. Through comparison, we find that most of these enterprises are state-owned enterprises (*SOE*). In order to distinguish these companies, we mark *SOE* companies as 1 and other companies as 0. Third, we believe that dividend policy is also a variable that must be controlled. Dividend policy can reflect a company's financing

situation, which can reflect the company's risk. This greatly affects the change of stock price. So we support payout rate as *POR*. And record its stock code to match this database with other databases.

Table 1 gives the summary statistics of the variables used in the analysis. It can be seen from table 1 that the average payut rate is 34% of the company's profit. At the same time, we calculated the standard deviation of all variables. We found that the value of the standard deviation of almost all the data we collected was relatively high. This shows that if we only take a small part of the samples as the data reflecting the whole population, it is unreliable. Therefore, we decided to increase the original 30 samples to 50 samples. In our sample. At the same time, 45% of the enterprises in the sample are state-owned enterprises. In the sample, the average number of airports in the city where the company is located is 2.12. At the same time, we found that in our sample, the average GDP of the provinces where these enterprises are located is 92300, which is higher than China's per capita GDP in 2020, indicating that enterprises prefer to locate their companies in relatively developed provinces.

Table 2 reports the correlation matrix of the variables used in this study. We find that there is an extremely significant positive correlation between stock price and *CFFO*. Besides, we find that the two variables we define location are positively correlated with stock price. Among them, the correlation coefficient between *SP* and *GPD* is 0.14. The correlation coefficient between SP and SP and airport is 0.08, which are significant at the level of 1%.

4. Results and Discussions

Our first linear regression is:

$$SP_t = \alpha_0 + \alpha_1 AIRPORT_t + \alpha_2 SOE_t + \alpha_3 PE_{t-1} + \alpha_4 CFFO_{t-1} + \alpha_5 GDP_{t-1} + \alpha_6 POR_{t-1} \quad (2)$$

Table 3. Use I = 3 (3 months in advance) and I equal to 12 (one year in advance). In I equal to 3, when we include a known control variable, that is, the variable *CFFO*. For both samples, t was statistically significant at the 1% level. When I equal to 12, when we include control variables, that is, *CFFO*. For both samples, t was statistically significant at the level of 1%.

In Table 3, when I equal to 3, *PE*, *SOE*, *GDP*, *POR* and *AIRPORT* have statistical significance for both samples. However, when I equal to 12, the significance of these variables is greatly reduced.

We find that our results are not only statistically significant, but also economically significant. For example, when I equal to 3 and considering the control variable, the coefficient of *GDP* is -1.11. Therefore, the 100% embedded option return less than one standard deviation predicts that the stock price will decline by - 1.11 in the next three months. If we compare this result with other variables in the same regression, we find that the provincial GDP has a greater impact on the stock price. As the provincial *GDP* increases by 10000, we can predict that the stock price will decrease by 1.11 yuan in the next three months.

4.2 Additional Results

Although we have derived the function of multiple linear regression. But our research believes that this is not enough. We use *GDP* and *AIRPORT* to define a company's location. But we still don't know whether this definition is really correct. Therefore, we intend to prove that the two functions of GDP and airport jointly determine the location of a company by using the coefficients in principal component analysis. We found that the significance was 0.00 through

kmo and Bartlett test, so it is suitable for principal component analysis. And we extracted three main components, which we set as y_1、y_2 and y_3 respectively. We get the first table 4 component matrix. The functions of three main components are obtained.

It can be seen from tabel 5 that among the variables related to GDP and AIRPORT, the impact of these two variables on y_2 is significantly higher than that of other variables. It can be concluded that GDP and airport do jointly affect a common factor. Although we cannot prove that *GDP* and *AIRPORT* can directly define a company location. However, these two variables can indeed indicate the difference in location between a company and other companies to a certain extent.

4.3 Exporsure

Among them, I found that there is a very close relationship between exposure and *AIRPORT*. So we guess that *AIRPORT* can increase the performance of stock price by affecting exposure. So we found the relationship between the two variables. Table 6 shows the relationship between *AIRPORT* and exposure. We choose the number of investor visits from 2015 to 2020 to measure the exposure. So we found that there is a very close relationship between the company's exposure and *AIRPORT*. With the growth of *AIRPORT*, the exposure of local companies has also increased. *AIRPORT* and *SP* were negatively correlated. So when a company is visited by more investors, the impact is to reduce the company's stock price performance.

5. Conclusions

Our paper reveals the impact of headquarter location on stock price performance. We find that although the headquarter location can affect the performance of stock prices to a certain extent, this impact is relatively small in the economic sense. However, it can still have a certain positive impact in stock analysis, which can help investors and analysts estimate the performance of stock price more reasonably. Our paper includes several findings. First, we look for the relationship between headquarter location and stock price in time. The study found that this connection is relevant within 12 months, but with the passage of data and time, the impact and relationship of urban GDP and the number of airports will continue to change, and the relationship will continue to weaken with the passage of time. Therefore, we suspect that there may be a problem in defining the headquarters location with the per capita GDP of provinces and the number of urban airports. So we try to find out whether the two will affect the same attribute to affect the stock price at the same time. Therefore, through the principal component analysis, we found that there is indeed a principal component that is more affected by the per capita GDP and the number of airports in the province. In this way, we have confirmed the rationality of our choice. We find that the number of airports in a city will affect the number of investor visits, and this relationship is very close. Therefore, we believe that more airports in a city will increase the number of investor visits, thus increasing the exposure of the company. Then higher exposure leads to lower stock price performance.

Although this article explains the impact of headquarters location on stock prices to a certain extent. But the reason for this negative impact may also be the result of COVID-19's influence in the past 2015-2020 years in 5 years. Because this greatly increases the difficulty of

investor flow. This makes it easier for investors to invest in companies with worse information exposure through information gap, so the conclusions we may draw after COVID-19 may no longer apply.

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Table 1: Sample Statistics of A-share market

The describes the records of relevant data from December 31, 2010 to December 31, 2020. The sample includes all non-ST stocks A-share market. We sppourt stock price as *SP*, payout rate as *POR*, retain earning rate as *RER*, average *GDP* of the province in China as *GDP*, the number of airport in the primary company`s city as *AIRPORT*, net cash flow from operating activities per share as *CFFO*.

Variables	Mean	MID	StdDev	Min	Max	Skewness	Kurtosis
POR	0.34	0.28	0.36	0	1.69	2.53	7.30
SOE	0.45	0	0.50	0	1.00	0.21	-2.04
GDP	9.23	9.42	4.09	3.30	16.42	0.41	-1.04
AIRPORT	2.12	1.00	2.20	0	7.00	1.24	0.14
CFFO	3.75	0.37	6.44	0.11	10.98	0.61	0.61
PE	40.08	39.28	106.25	-1.16	41.13	5.81	35.59

Table 2: Correlations

The table shows the correlation between variables in our sample. The describes the records of relevant data from December 31, 2010 to December 31, 2020. The sample includes all non-ST stocks A-share market. We sppourt stock price as *SP*, payout rate as *POR*, retain earning rate as *RER*, average *GDP* of the province in China as *GDP*, the number of airport in the primary company`s city as AIRPORT, net cash flow from operating activities per share as *CFFO*.

Variables	*PE*	*AIRPORT*	*SOE*	*CFFO*	*GDP*	*POR*	*SP*
PE	1.00						
AIRPORT	0.11 (0.33)	1.00					
SOE	0.07 (0.15)	0.05* (0.09)	1.00				
CFFO	0.01 (0.77)	0.13** (0.03)	0.10* (0.07)	1.00			
GDP(10000)	0.09* (0.08)	0.35*** (<0.01)	0.01 (0.54)	0.14** (0.03)	1.00		
POR	0.07 (0.48)	0.19** (0.02)	0.17* (0.06)	0.03 (0.22)	0.00*** (<0.01)	1.00	
SP	0.02 (0.18)	0.08 (0.13)	0.13* (0.09)	0.93 (<0.01)	0.14 (0.17)	0.04 (0.38)	1.00

Table 3 Main Regression Results

The table shows results for the in-sample regression:

$$SP_t = \alpha_0 + \alpha_1 AIRPORT_{t-i} + \alpha_2 SOE_{t-i} + \alpha_3 PE_{t-i} + \alpha_4 CFFO_{t-i} + \alpha_5 GDP_{t-i} + \alpha_6 POR_{t-i}$$

Here, the data are divided into four groups,. The describes the records of relevant data from December 31, 2010 to December 31, 2020. The sample includes all non-ST stocks A-share market. We sppourt stock price as *SP*, payout rate as *POR*, retain earning rate as *RER*, average *GDP* of the province in China as *GDP*, the number of airport in the primary company`s city as AIRPORT, net cash flow from operating activities per share as *CFFO*.

Variables	SP_{t+3}	SP_{t+6}	SP_{t+9}	SP_{t+12}
PE_t	-0.04 (-0.20)	-0.03 (-0.19)	-0.01 (-0.11)	-0.05 (-0.35)
SOE_t	35.49* (1.50)	34.42* (1.45)	37.55* (1.61)	36.38* (1.55)
$CFFO_t$	43.70*** (20.44)	43.55*** (20.33)	42.81*** (20.20)	43.90*** (20.40)
GDP_t	-1.11* (-1.65)	-1.08 (-1.10)	-1.21* (-1.23)	-1.05 (-1.25)
POR_t	23.16* (1.70)	24.31* (1.83)	26.33* (2.13)	24.73* (1.95)
$AIRPORT_t$	-14.56* (-1.79)	-13.98* (-1.66)	-17.34* (-1.33)	-15.76* (-1.53)
Obs.	46	52	48	52
Adj-R^2	0.35	0.33	0.28	0.30

Table 4 Component matrix

This table represents the main influencing factors of the three principal components y_1、y_2 and y_3. *SOE* represents whether the enterprise belongs to a state-owned enterprise. If the enterprise belongs to a state-owned enterprise, the value of *SOE* is 1. If it is not a state-owned enterprise, this value is 0. *CFFO* represents number of new cash flows per share from the operation. *GDP* represents the average *GDP* of the primary company ` s city. *POR* stands for payout rate. *PE* represents price earenings ratio of this company.

Variables	*Profitability*	*Exposure*	Dividend policy
PE	0.01	0.20	-0.58
SOE	0.26	0.28	-0.39
CFFO	0.97	0.06	0.14
GDP	-0.26	0.60	0.58
POR	0.01	-0.44	0.56
AIRPORT	0.06	0.85	0.14

Table 5 Investor survey as alternative dependent variable

The table shows the inverstor survey regression result. The describes the records of relevant data from December 31, 2015 to December 31, 2020. The sample includes all non-ST stocks A-share market. We sppourt the number of the inverstor survey as *IS*, payout rate as *POR*, retain earning rate as *RER*, average *GDP* of the province in China as *GDP*, the number of airport in the primary company`s city as AIRPORT, net cash flow from operating activities per share as *CFFO*.

Variables	*IS*
PE	0.13* (1.60)
SOE	-21.01* (-1.70)
CFFO	1.73* (1.79)
GDP	0.75 (-0.46)
POR	-13.69 (-0.79)
AIRPORT	8.35*** (2.70)
Obs.	46
Adj-R^2	0.23