

2014

# BioTechnology

*An Indian Journal*

FULL PAPER

BTAIJ, 10(7), 2014 [1741-1749]

## The analysis of the shareholders' wealth by private placement based on the perspectives of information asymmetric and private benefits of control

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### ABSTRACT

Private placement in China is a special way of equity financing in the capital markets. Due to special equity structure "powerful shareholder" in China listed companies, the private placement is dominated by the major shareholders and has become a covert means of wealth transfer from the listed companies by the major shareholders. This paper Based on the theories of information asymmetry and benefits of control, constructed wealth models for the shareholders' under different information conditions, that are the condition of complete information, the condition of information asymmetry, and the condition of benefit-control. After the comparative analysis we found that: Firstly, major shareholders have strong wealth transfer motivation in the process of private placement, and this motivation can be well explained by information asymmetry and control benefit. Secondly, the difference of  $\alpha$  and  $\beta$  and the difference  $P_0$  and  $P_1$  are the key factors affecting wealth transfer of major shareholders. Thirdly, information asymmetry cuts down the wealth space between minor shareholders and institutional investors, and the existence of the benefits of control make their wealth space smaller. Our contribution is that we prove the major shareholders' wealth transfer motivation and the necessary condition for the shareholders transfer wealth in theory, and we make up a good defect to the existing of "heavy empirical and light theory" about wealth transfer by major shareholder.

### KEYWORDS

Private placement; Information asymmetry; Benefits of control.



## INTRODUCTION

In recent years, private placement is persistently overheating in the capital market. Its financing case numbers and financed amount is far more than the right offerings and public offerings with the equity financing. Except for the reason of issuing preferential policies, for example, loose profit demands, simple issuing formalities, short examination and approval time and low cost of issuing, and the reason that major shareholders of listed companies quickly activate assets and achieve the group's overall listing through private placement, the deeper reason is that the private placement has become the new means of hollowing the wealth of the listed companies and also this means is more hidden and undetectable<sup>[1-3]</sup>. Therefore, the private placement is particularly valued by so many listed companies. From the year of 2006, the educational circles began to make a lot of studies towards the behavior that the private placement which is dominated by the major shareholders transfers the listed company's wealth. And the descriptions are mostly the pure definite descriptions<sup>[4]</sup>, Zhang Weidong (2012)<sup>[5]</sup> or empirical test<sup>[3]</sup> towards the being and influence factors of wealth transfer in the process of private placement. However, the existing definite descriptions are most the summary and induction towards the phenomenon of wealth transferring. For example, Huang Jianzhong considers that in the process of private placement, the major shareholders make wealth transfer through various forms: Malicious suspension, deliberately suppressed share price before pricing benchmark, asset securitization malicious cash and control rent-seeking, etc. Zhang Weidong makes detailed analysis of the possible existing benefits control behaviors and analyzes that the major shareholders may transfer the wealth by means of inferior assets injection, inflated assets increment rate, price manipulation, surplus before and after the management issue, etc; the empirical test is often to carry out black box experiment towards private placement wealth transfer and take the wealth transfer as the dependent variable and take discount rate and investors' identity<sup>[6]</sup> as the independent variables and add the control variable to judge whether the independent variable and dependent variable are related and what kind of relationship, and principles of the relationship between independent variable and dependent variable is not to be investigated. Thus, both definite description and empirical test are all lack of in-depth analysis of the logic towards private placement. In the process of private placement, whether there really is a wealth transfer motivation of major shareholders? If there is, what are the influence factors of wealth transfer? This article will answer the above questions by building mathematical models to make logical deduction.

## THE ORETICAL BASIS

### **The theory of information asymmetry**

In the 1970s, information asymmetry theory is put forward by American economist George akerlof and Joseph stiglitz, Michael spence in information economics. According to the theory, in the market economy activities, participants' understanding of the relevant information for the transaction is different. There are information dominants and information underdogs, and information dominants can often benefit from transaction. The presentation of the information asymmetric theory broke through the assumption of the rational man of traditional economy under the condition of the complete information and made more social and economic phenomenon the reasonable explanation. Then the information asymmetry theory is widely applied in various research fields, one of which is the capital market. There is larger information asymmetry between major shareholders and small shareholders, new shareholders. The major shareholders have more information advantages than the minor shareholders and new shareholders and the major shareholders master the relevant information of management and development of the company. The major shareholders always make more profits by the information advantage. For instance, in the process of private placement, the major shareholders know the project prospect and future cash flow and therefore, if the item has bright future and the cash flows well in future, the major shareholders will not hesitate to subscribe for shares to send a good signal and trigger a share rise and thereby the major shareholders will make profit. Baek et al.(2006)<sup>[7]</sup> also found that in the process of private placement, the major shareholders take advantage of information advantages to lead

private placement and price unreasonably. They make profits by their own high discount price issue and take advantage of the unreasonable pricing of inject capital to inflate the capital value, etc.

### Benefits of control theory

The concept of Benefits of Control Theory is first put forward by Grossman and Hart (1988)<sup>[8]</sup>. In general, the private benefit of control theory is divided into two parts: shared benefits of control and private benefits of control. The shared benefits refer to the cases that with the other factors unchanged, the more shareholding ratio, the more motivation the major shareholders will have to monitor the company and promote the company value. If the minor shareholders can share the increased value, the shared benefits of control will come into being.

In addition, the major shareholders will also have the motivation to use voting right to consume the company resources or monopoly the benefits the minor shareholders can not share. This part of benefits is called private benefits and this part of benefits is at the cost of minor shareholders' interests. We can see from such examples: the major shareholders will occupy the capitals of the listed companies to use for their own companies; the major shareholders will force the listed companies to provide guarantee for their own companies; the major shareholders transfer the benefits of the listed companies to their own companies by related transaction; The major shareholders grasp benefits from the listed companies by all kinds of hidden means; the major shareholders take advantage of their major shareholders benefits to change the committed money investment arbitrarily, etc.<sup>[9]</sup>. However, it is difficult to measure the benefits control, especially the private benefits control. Just as Dyck and Zingales (2004)<sup>[10]</sup> said, "It is difficult to measure the private benefits of control directly. Only when we verify or find out that the major shareholders' behavior to grasp the benefits of the listed companies is difficult or impossible, the shareholders will then do that. If the private benefit of control is easy to be measured, these benefits will not belong to the private because the outside shareholder can be required to compensate these losses by law.

## MODEL DEDUCTION

Due to the imperfect legal system of the capital market in China and our special equity of listed companies in our country-the dominated share is very outstanding; we therefore select information asymmetry and benefit of control as the perspectives to make deeper analysis to private placement. This way is more appropriate. The highly information asymmetry between shareholders, the powerful control of major shareholders and the loose management and monitor in the company make the benefits of control become the important motivation in major shareholders' decision. By building the mathematical model, the benefit condition of every shareholder can be analyzed in the process of private placement to find out influence factors in shareholders' benefits and therefore to provide theoretical support for the empirical study.

Firstly, the private placement can be classified into three types: the private placement all for holding shareholders and associated shareholders (major shareholders for short in the later thesis); the new share private placement all for unassociated shareholders (institutional investor for short); the private placement for holding shareholders, associated shareholders and unassociated investors. When the model is built, the following thinking is adopted and makes analysis by adding restraint conditions gradually.

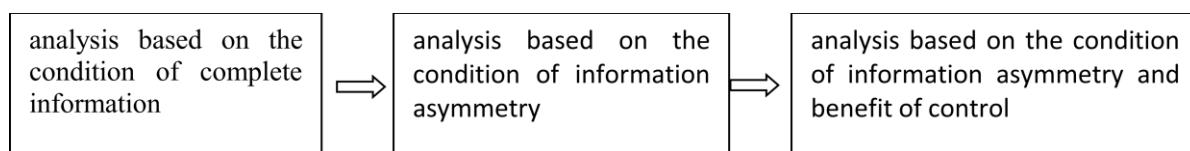


Figure 1 : Model construction line

### Symbol definition

The symbol definition is as shown in TABLE 1.

TABLE 1 : Symbols and definitions

Symbols	Definition
$N_0$	The share amount before issuing
$A$	The share ratio of the major shareholders
$N_1$	The issuing share numbers
$B$	New shares the major shareholders subscribe
$N_2$	The company's sum of shares after issuing
$P_0$	Stock intrinsic value before issuing
$P_1$	Offering price of the shares
$V_0$	Corporate value before issuing
$V_2$	Corporate value after issuing
$\Delta V$	Valuation deviation of company real value
$V_{L0}$	Company wealth the major shareholders own before issuing
$V_{L2}$	Company wealth the major shareholders own after issuing
$\Delta V_L$	The wealth variables of the major shareholders before and after issuing
$V_{S0}$	Company wealth the medium and minor shareholders own before issuing
$V_{S2}$	Company wealth the medium and minor shareholders own after issuing
$\Delta V_S$	The wealth variables of the medium and minor shareholders before and after issuing
$V_{I0}$	The company wealth the institution invertors own before issuing
$V_{I2}$	The company wealth the institution invertors own after issuing
$\Delta V_I$	The wealth variables of the institution invertors before and after issuing
$W$	The benefits of control of the major shareholders in the process of issuing
$\theta$	Information set the shareholders own

The result from the Symbol Definition:

$$N_2 = N_0 + N_1$$

$$V_0 = N_0 P_0$$

$$V_2 = N_0 P_0 + N_1 P_1$$

### The shareholders' wealth analysis of private placement

The complete information condition refers to that all participants of private placement grasp the equal information and there is no asymmetric information. Of course this is a kind of idealism. The reason to bring the complete information into the analytical framework is to contrast and analyze the benefit conditions of the following conditions of information asymmetry. The benefits situations of every shareholders is as shown on TABLE 2.

The condition of information asymmetry refers to that all the information the participants grasp are asymmetric. The information of the major shareholder is the best. Institution investors' information is in intermediate and the minor shareholders' information is the worst. Under the condition of asymmetric information,  $\Delta V$  is supposed to be the Valuation deviation of company real value. As the different degree grasp of information of all participants,  $\Delta V$  is different correspondingly. Suppose that  $\Delta V$  is bigger than zero and is the function of information quantity  $\theta$ . Then  $\Delta V$  can be represented:  $\Delta V = \varphi(\theta)$ . In this paper, information asymmetry is especial present the condition among the major shareholders, institution investors and the minor shareholders. But for the major shareholders, they hold the whole business information of company, so they faced condition of complete information, the  $\Delta V$  of major shareholders is zero, and the evaluation of major shareholder for the company is  $V_2 - \Delta V = V_2$ ; for the institution investors, the evaluation for the company is  $V_2 - \Delta V = V_2 - \varphi_I(\theta_I)$ ; for the minor

shareholders, the evaluation for the company is  $V_2 - \Delta V = V_2 - \varphi_s(\mathcal{G}_s)$ , Apparently  $V_2 \geq V_2 - \varphi_l(\mathcal{G}_l) \geq V_2 - \varphi_s(\mathcal{G}_s)$ . The benefits situations of every shareholders under the condition of information asymmetry is as shown in TABLE 2.

The benefit of control is the exclusive benefits gained by the major shareholders by use of control. It is exclusive, namely the control of private benefits. The thesis does not take the sharing benefit of control into account. As the measurement is too hard, the thesis suppose that the benefits because of the private placement is  $W$  and  $W > 0$ . Under the condition of information asymmetry and benefit of control, the benefits of all shareholders is as shown in TABLE 2

TABLE 2 : Private shareholders' benefit analysis table

	The analysis of shareholders' benefits based on the perspective of complete information	The analysis of shareholders' benefits based on the perspective of information asymmetry	The analysis of shareholders' benefits based on the perspective of information asymmetry and benefits of control
The wealth of the major shareholders	$\Delta V_L = V_{L2} - V_{L0} - \beta N_1 P_1$ $= \frac{\alpha N_0 + \beta N_1}{N_2} V_2 - \alpha V_0 - \beta N_1 P_1$	$\Delta V_L = V_{L2} - V_{L0} - \beta N_1 P_1$ $= \frac{\alpha N_0 + \beta N_1}{N_2} V_2 - \alpha V_0 - \beta N_1 P_1$	$\Delta V_L = V_{L2} - V_{L0} - \beta N_1 P_1$ $= \frac{\alpha N_0 + \beta N_1}{N_2} (V_2 - W) + W - \alpha V_0 - \beta N_1 P_1$
The wealth of the minor shareholders	$\Delta V_S = V_{S2} - V_{S0}$ $= \frac{(1-\alpha)N_0}{N_2} V_2 - (1-\alpha)V_0$	$\Delta V_S = V_{S2} - V_{S0}$ $= \frac{(1-\alpha)N_0}{N_2} (V_2 - \Delta V) - (1-\alpha)V_0$	$\Delta V_S = V_{S2} - V_{S0}$ $= \frac{(1-\alpha)N_0}{N_2} (V_2 - \Delta V - W) - (1-\alpha)V_0$
The wealth of the institution investors	$\Delta V_I = V_{I2} - V_{I0} - (1-\beta)N_1 P_1$ $= \frac{(1-\beta)N_1}{N_2} V_2 - 0 - (1-\beta)N_1 P_1$	$\Delta V_I = V_{I2} - V_{I0} - (1-\beta)N_1 P_1$ $= \frac{(1-\beta)N_1}{N_2} (V_2 - \Delta V) - 0 - (1-\beta)N_1 P_1$	$\Delta V_I = V_{I2} - V_{I0} - (1-\beta)N_1 P_1$ $= \frac{(1-\beta)N_1}{N_2} (V_2 - \Delta V - W) - 0 - (1-\beta)N_1 P_1$

Notes: Only the third type of private placement is analyzed under every condition in the table. The third type, that is, the mixed private placement to the major shareholders and the institution investor. The percentage of major shareholders' subscription of new shares is  $\beta$  and the percentage of institution investors' subscription of new share is  $1-\beta$ . Specially, when  $\beta=1$ , it means that it is all placed to major shareholders; when  $\beta=0$ , it means it is all placed to the institution investors. Therefore, the first type and the second type of private placement can be regarded as the particular situation of the third type. It is simple. We do not take special analysis in view of the length of the article.

**The wealth analysis of the major shareholders**

The wealth variation of the major shareholders before and after the private placement under the condition of complete information:

$$\Delta V_L = V_{L2} - V_{L0} - \beta N_1 P_1$$

$$= \frac{\alpha N_0 + \beta N_1}{N_0 + N_1} (N_0 P_0 + N_1 P_1) - \alpha N_0 P_0 - \beta N_1 P_1$$

The result after detailed calculation:

$$\Delta V_L = \frac{N_0 N_1 (\alpha - \beta) (P_1 - P_0)}{N_0 + N_1} \tag{1}$$

As mentioned above, although under the condition of information asymmetry, the major shareholders mastered the whole business information of the company, it's same to the condition of complete information, that is

$$\Delta V_L = \frac{N_0 N_1 (\alpha - \beta) (P_1 - P_0)}{N_0 + N_1} \tag{2}$$

The wealth variation of the major shareholders before and after the private placement under the condition of information asymmetry and benefit of control,

$$\begin{aligned}\Delta V_L &= V_{L2} - V_{L0} - \beta N_1 P_1 \\ &= \frac{\alpha N_0 + \beta N_1}{N_0 + N_1} (N_0 P_0 + N_1 P_1 - W) + W - \alpha N_0 P_0 - \beta N_1 P_1\end{aligned}$$

The result after detailed calculation:

$$\Delta V_L = \frac{N_0 N_1 (\alpha - \beta) (P_1 - P_0) + W [N_0 (1 - \alpha) + N_1 (1 - \beta)]}{N_0 + N_1} \quad (3)$$

First of all, the following calculation is required to explain the motivation of the major shareholders.

$$(2) - (1) = 0$$

$$(3) - (2) = \frac{W [N_0 (1 - \alpha) + N_1 (1 - \beta)]}{N_0 + N_1} > 0$$

$$(3) - (1) = \frac{W [N_0 (1 - \alpha) + N_1 (1 - \beta)]}{N_0 + N_1} > 0$$

It has been assumed that the major shareholders grasp the whole information of the company. Compared (1) and (2), we found that the major shareholders' wealth change is zero under complete information and asymmetry information, it was concluded from the absolute change analysis. But as defined, each shareholder grasps different information, so different  $\Delta V$  and different evaluation of the company appears. Of course  $V_2 \geq V_2 - \varphi_I(\mathcal{G}_I) \geq V_2 - \varphi_S(\mathcal{G}_S)$ . So, correspond to minor shareholders and institution investors, information asymmetry expands the major shareholders' relative wealth space. Equally, it continues to be expanded by control benefit. Information asymmetry and control benefit is objectively existed in the process of private placement; Therefore, we consider that these objectively existence can explain wealth transfer motivation of major shareholders in a better way.

Secondly, we need to probe into the influence factors of wealth transfer. From (1), under the condition of complete information, the wealth increment by private placement is mainly related to the difference value of  $\alpha$  and  $\beta$ , also difference value of  $P_0$  and  $P_1$ . Only when the wealth increment of major shareholders is bigger than zero, the major shareholders will have motivation to participate private placement. By detailed calculation, the lateral condition that major shareholders participate the private placement is that  $P_1 < P_0$  and  $\alpha < \beta$ ; or  $P_1 > P_0$  and  $\alpha > \beta$ .

The economic implications lie in that: (1) Assume that private placement produces 1 Yuan of wealth transfer due to excessive discount, (that is the object of private placement transfer 1 Yuan from the original shareholders of the listed company). Then as the subscription ratio of the major shareholder is  $\beta$ , the wealth transfer income of  $\beta$  ( $1 * \beta$ ) can be gained directly. However, as the major shareholder's original share ratio in the listed company is  $\alpha$ , the major shareholder will also suffer the loss of  $\alpha$  ( $1 * \alpha$ ) Yuan. Accordingly, the benefit gained by private placement is  $\beta - \alpha$  Yuan per month. In other words, under the condition of private placement' discount issuing, the benefits gained by subscribing the new shares is larger than the loss as the original shareholder in the listed company by private placement. Also, it can be seen that, under the same subscribe ratio difference ( $\beta - \alpha$ ), the larger the excessive discount, the more wealth can be transferred.

Assume that private placement produces 1 Yuan of wealth transfer due to excessive premium,(that is the object of private placement transfer 1 Yuan to the original shareholders of the listed company). Then as the subscription ratio of the major shareholder is  $\beta$ , the wealth  $\beta(1*\beta)$ can loss directly. However, as the major shareholder’s original share ratio in the listed company is  $\alpha$ , the major shareholder will also gain the wealth of  $\alpha (1*\alpha)$  Yuan. Accordingly, the benefit gained by private placement is  $\alpha-\beta$  Yuan per month. In other words, under the condition of private placement’ premium issuing, the benefits gained by subscribing the new shares is larger than the loss as the original shareholder in the listed company by private placement. Also, it can be seen that, under the same subscribe ratio difference  $\alpha-\beta$ , the larger the excessive premium; the more wealth can be transferred. From the above, it can be seen that under the constant  $\alpha$  and  $P_0$ , the premium and discount level and the subscribe ratio  $\beta$  co-determine whether the major shareholder will transfer the wealth and how much to transfer from the listed company.

**Wealth analysis of minor shareholders**

The wealth variation of the minor shareholders before and after the private placement is  $\Delta V_s$ . Under the condition of complete information:

$$\Delta V_s = V_{s2} - V_{s0} = \frac{(1-\alpha)N_0}{N_0 + N_1} (N_0P_0 + N_1P_1) - (1-\alpha)N_0P_0$$

Under the condition of information asymmetry:

$$\Delta V_s = V_{s2} - V_{s0} = \frac{(1-\alpha)N_0}{N_0 + N_1} (N_0P_0 + N_1P_1 - \Delta V) - (1-\alpha)N_0P_0$$

Under the condition of benefits of control:

$$\Delta V_s = V_{s2} - V_{s0} = \frac{(1-\alpha)N_0}{N_0 + N_1} (N_0P_0 + N_1P_1 - \Delta V - W) - (1-\alpha)N_0P_0$$

The result after detailed calculation

$$\Delta V_s = \frac{(1-\alpha)N_0N_1(P_1 - P_0)}{N_0 + N_1} \tag{4}$$

$$\Delta V_s = \frac{(1-\alpha)N_0[N_1(P_1 - P_0) - \varphi_s(\theta_s)]}{N_0 + N_1} \tag{5}$$

$$\Delta V_s = \frac{(1-\alpha)N_0[N_1(P_1 - P_0) - \varphi_s(\theta_s) - W]}{N_0 + N_1} \tag{6}$$

According to (4), the wealth variation of minor shareholders only related to  $P_1, P_0$ , and when  $P_1 > P_0$ , which means premium issue, minor shareholders will make profit from private placement. In fact, private placement is seldom issued and mostly is sold at discount. This point shows minor shareholders tend to lose money in the process of private placement, theoretically it provides proof for major shareholders transferring wealth and infringing the interests of minor shareholders.

From (5)-(4), (6)-(5), it not hard to find information asymmetry cut down the wealth space of minor shareholders to some extent, and the existence of the benefits of control make the minor shareholders' wealth space smaller.

### Wealth analysis of institution investors

$\Delta V_I$  is the variation of wealth before and after the placement of institution investor.

Under the condition of complete information:

$$\begin{aligned}\Delta V_I &= V_{I2} - V_{I0} - (1 - \beta)N_1P_1 \\ &= \frac{(1 - \beta)N_1}{N_0 + N_1}(N_0P_0 + N_1P_1) - (1 - \beta)N_1P_1\end{aligned}$$

Under the condition of information asymmetry:

$$\begin{aligned}\Delta V_I &= V_{I2} - V_{I0} - (1 - \beta)N_1P_1 \\ &= \frac{(1 - \beta)N_1}{N_0 + N_1}(N_0P_0 + N_1P_1 - \Delta V) - (1 - \beta)N_1P_1\end{aligned}$$

Under the condition of benefit of control:

$$\begin{aligned}\Delta V_I &= V_{I2} - V_{I0} - (1 - \beta)N_1P_1 \\ &= \frac{(1 - \beta)N_1}{N_0 + N_1}(N_0P_0 + N_1P_1 - \Delta V - W) - (1 - \beta)N_1P_1\end{aligned}$$

The result of calculation:

$$\Delta V_I = \frac{(1 - \beta)N_1N_0(P_0 - P_1)}{N_0 + N_1} \quad (7)$$

$$\Delta V_I = \frac{(1 - \beta)N_1[N_0(P_0 - P_1) - \varphi_I(\theta_I)]}{N_0 + N_1} \quad (8)$$

$$\Delta V_I = \frac{(1 - \beta)N_1[N_0(P_0 - P_1) - \varphi_I(\theta_I) - W]}{N_0 + N_1} \quad (9)$$

From (7) we can know investigators will make profit only when private placement is sold at discount, that is  $P_1 < P_0$ . From (8)-(7), (9)-(8), information asymmetry cuts down the wealth space of institution investors to some extent, and the existence of the benefits of control make the minor shareholders' wealth space smaller, it is similar to the case of minor shareholders.

## CONCLUSION

Based on Information Asymmetry Theory and Benefit of Control Theory, the wealth of major shareholders and minor shareholders and investors are studied under the condition of complete information and information asymmetry and control benefit, the results are as follows:

1. In the process of private placement, major shareholders tend to transfer wealth. Shareholders have different  $\Delta V$  as they grasp the different information of the company, then they make a different evaluation for the company, that is  $V_2 \geq V_2 - \varphi_I(\mathcal{G}_I) \geq V_2 - \varphi_S(\mathcal{G}_S)$ . So, correspond to minor shareholders and institution investors, information asymmetry expands the major shareholders' relative wealth space. Equally, it continues to be expanded by control benefit. Information asymmetry and control benefit is objectively existed in the process of private placement; Therefore, we consider that these objectively existence can explain wealth transfer motivation of major shareholders in a better way.



2. The difference of  $\alpha$  and  $\beta$  and the difference  $P_0$  and  $P_1$  are the key factors affecting wealth transfer of major shareholders. When the wealth of major shareholders increases, major shareholders are motivated to participate in targeted placement. We concluded that the borders of major shareholders participants are  $P_1 < P_0$  and  $\alpha < \beta$ ; or  $P_1 > P_0$  and  $\alpha > \beta$ . The discount level and the subscription ratios co-determine whether the wealth is transferred by the major shareholder and the amount of transferred wealth from the listed companies.

3. Minor shareholders will benefit from premium issue and institution investors will benefit from discount issue. In reality, private placement is mostly premium issue, seldom discount issue. This shows that minor shareholders tend to lose money in private placement. It provides theoretical evidence for major shareholders transfer wealth to exploit the rights of minor ones. In the meantime, institutional investor's plotting with major shareholders is an ideal choice in the real world. In addition, information asymmetry cuts down the wealth space between minor shareholders and institutional investors, and the existence of the benefits of control make their wealth space smaller.

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