

Misjudgment of Controlling Shareholder: Lessons from Financial Distress

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ABSTRACT

We present a model to explain the relationship between wealth expropriation by the controlling shareholder and the probability for a company falling into financial distress. Under a concentrated ownership environment, controlling shareholders may have motivations to expropriate wealth from the minority shareholders. Owing to the expected rents from expropriation, they are unwilling to purposely drive the company into financial distress. According to our model, without considering the influence of the amount of expropriation on the profitability of a firm, a controlling shareholder may overestimate his/her optimal amount of embezzlement and unintentionally drive the firm into financial distress.

Keywords: Controlling shareholder, Financial distress, Wealth expropriation.

I. Introduction

La Porta, Lopez-de-Silanes and Shleifer (1999), Claessens, Djankov and Lang (2000), and Faccio and Lang (2002) empirically determined that on average, more than 60% of public traded companies around the world have an ultimate owner except in the US, UK and Japan¹. Moreover, most of the companies with ultimate owners are family-controlled. Under a concentrated ownership environment, the most significant cost lies in the fundamental conflicts of interests between majority and minority shareholders. The derived agency problem is the expropriation of minority interests by the controlling shareholders.

They also found that the controlling shareholders of publicly traded companies in most countries typically have voting rights significantly in excess of their cash flow rights. The larger the deviation between voting and cash flow rights,

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¹ To be qualified as an ultimate owner, the largest shareholder must control at least 20% of the voting rights. Please refer to the next section for further discussions.

the stronger the ultimate owners' incentive to expropriate minority interests. More voting rights provides the owners with more power for wealth expropriation, while less cash flow rights reduces the owners' share of the losses from wealth expropriation.

Although empirical results support that the threats of expropriation by the controlling shareholder tend to reduce corporate value², whether it will lead to a higher probability of financial distress remains an open question. Financial distress may lead to bankruptcy, liquidation or significant changes in control that may truncate the stream of expected rents from expropriation.

Expropriation may be realized through various ways of embezzlement and resource transfers to the benefit of the controlling shareholder, as reported by La Porta, Lopez-de-Silanes, Shleifer and Vishny (2000) and Johnson et al. (2000)³. Misconduct on the controlling shareholder's part further worsens the firm's financial performance and hurts the firm's competitiveness. In the wake of an economic recession or severe competition, these firms tend to become the victims of financial distress. Moreover, the ultimate owner may use corporate funds for stock churning and fail to recover the funds if the stock market turns bearish. The firm in turn falls into solvency difficulty followed by financial distress.

Lee and Yeh (2004) adopted three variables to proxy for the risk of expropriation by the controlling shareholder, namely, the percentage of directors controlled by the controlling shareholder, the percentage of stock the controlling shareholders pledged for bank loans (pledge ratio), and the deviation of control

² Claessens et al. (2002), La Porta et al. (2002), and Lemmon and Lins (2001) examined the relationship between firm value, the ownership structure and the strength of legal institutions. Collectively, these studies found that firm value is positively related to investor protection measures and to the cash flow rights held by the controlling shareholder, and negatively related to the deviation of control from cash flow rights.

³ La Porta et al. (2000) indicated that the controlling shareholders may enrich themselves by not paying out dividends, they may also transfer profits to other business entities they control, steal corporate assets outright, or sell corporate assets to other firms they control at below market prices. In addition, expropriation may be prosecuted further through (1) diverting business opportunities to other firms where the controlling shareholders can derive better private benefits, (2) installing unqualified family members in managerial positions, or (3) overpaying executives. Johnson et al. (2000) also observed certain cases of expropriation during the Asian Financial Crisis. They concluded that in most of these cases, management was able to transfer cash and other assets out of a company with outside investors, perhaps to pay the management's personal debts, to shore up another company with different shareholders, or to go straight into a foreign bank account. The fact that the controlling shareholders in most emerging markets also occupy top management positions paves an easy way to achieve these types of expropriation transfers.

away from cash flow rights. Taiwanese listed firms, characterized by a high degree of ownership concentration similar to that in most countries, are used as our empirical samples. The evidence suggests that the three variables mentioned above are positively related to the risk of financial distress, even after controlling for the possible influence of financial performance. Generally speaking, firms with weak corporate governance are vulnerable to economic downturns and the probability of falling into financial distress increases.

However, a controlling insider may desire to go on expropriating wealth for a very long time. For example, Claessens, Djankov, and Klapper (1999) found that East Asian firms controlled by management/family groups were less likely to file for bankruptcy during the crisis. They argued that this insurance against bankruptcy might come at the expense of the minority shareholders. If so, expropriating insiders and weak governance should not enhance the probability of financial distress.

We developed a model to clarify the relationship between wealth expropriation by the controlling shareholder and the probability for a company falling into financial distress. This model might uncover answers to explain this seeming paradox. Sometimes, leading a company into financial distress is due to misjudgments by the controlling shareholders that lead to the financial distress. In other words, they do not kill the goose that lays the golden egg on purpose.

Without considering that wealth expropriation damages the ability of the firm to grow and earn profits, the controlling shareholders may expropriate too much. The more wealth embezzled the greater impact on the company's profitability or growth potential. Excess wealth expropriation will not only reduce the amount of investment in the company, it also decreases the probability for having a high return. Therefore, if the controlling stockholders do not account for the influence of wealth embezzlement on the profitability of the company, they are likely to overestimate the optimal theft amount and thereby unconsciously drive the firm into financial distress.

II. The Model

Our model depends on the models used in La Porta et al. (2002) and Johnson et al. (2000), both of which deal with the effects of cash flow ownership by a controlling shareholder on firm evaluation. Their models inferred that the amount expropriated by the controlling shareholder would only have an impact on the investment amount in a company. Unlike the above studies, our model considers that the amount embezzled by the controlling shareholder may not only affect the investment amount but also the profitability of a company. The reduced profitability may be due to the weakened competitiveness resulting from the funds transferred to the controlling stockholder. In our model, the controlling stockholder may expropriate money at first and then invest the remainder.

Consider the following simple model of a firm controlled by a single shareholder or family. We assumed that this controlling shareholder has equity ownership α in the firm, $0 < \alpha < 1$. We supposed that the controlling shareholder transfers money relative to the amount of the controlling shareholder's investment, assuming that the proportion is s , $0 \leq s \leq 1$. The ways in which wealth can be transferred take a variety of forms such as non-arms-length asset transactions, outright theft transfers, etc.

The firm has a cash amount, I , which it invests in a project with a gross rate depending on the amount of money the controlling shareholder transfers. In the best situation, the rate of return from this investment project can reach R_1 . In the worst situation, the rate of return is R_2 , $R_1 > R_2 > 1$. Let the probability density function be $P_g(s) = (e/(e-1))e^{-s} > 0$, (which conforms the definition of probability density function: $\int_0^1 P_g(s) ds = 1$, $P_g(s) \geq 0$). Suppose that the likelihood of making the highest rate of return and the likelihood of making the lowest rate are $P_g(s)$ and $1 - P_g(s)$, respectively. Because $P_g'(s) < 0$ and $P_g''(s) > 0$, $P_g(s)$ is continuously monotonically decreasing. The greater the wealth expropriation ratio, the lower the probability of making the highest return. The expected rate of return $E(R) = P_g(s) R_1 + (1 - P_g(s)) R_2 = (e/(e-1)) [e^{-s} R_1 + (1 - e^{-s}) R_2] > R_2$, $E_s(R) < 0$, $E_{ss}(R) > 0$. As a result, the greater the expropriation ratio, the lower the expected profitability. Moreover, let D be the debt of the firm and $0 \leq D < I$. The cost of the debt is K_d , and $K_d < R$ ensures the company investment incentive. Suppose that the

firm has no costs and taxes, the profits are then $E(R)I$. Furthermore, the condition for financial distress is $(1-s)IR(s) < (1+k_d)D$, namely, the rest of the cash flow after investment by the company is not enough to pay for the debt after the controlling shareholder completes wealth expropriation.

Because the transfers are likely to be discovered and the controlling shareholder may be punished, expropriation seems costly. Suppose that the controlling stockholder's expected punishment is $C(s)=s^2/(2k)$ and k denotes the quality of the shareholder protection of a country. A higher s value represents the problem of illegal transfers being strict that the punishment load will be heavy. If k gets larger, it is less costly to make illegal transfers. Assume that the probability of punishment is $P_c(s) = 2s$, $0 < s < 1$ (which conforms to the probability density function definition: $\int_0^1 P_c(s)ds = 1$, $P_c(s) \geq 0$), $P_g'(s) > 0$. When the expropriated amount becomes larger, the potential for discipline becomes greater. Consequently, the expected cost of punishment is $E(C(k,s)) = \int_0^1 C(s)P_c(s)ds = s^3/k$, $E_s(C(k,s)) = 3s^2/k > 0$, indicating that the greater the expropriated amount, the greater the expected punishment cost.

Proposition I (Relationship between wealth expropriation and profitability):
Without considering the influence of the wealth expropriation amount on the profitability of a company, the controlling shareholder will overestimate the optimal embezzlement amount.

(a) Consider the expropriation influences on corporate profitability

Under the above assumptions, our job is to find the optimal amount of theft s^* that maximizes the controlling shareholder utility function —

$$Utility1 \equiv \alpha[(1-s)IE(R) - (1+k_d)D] + sIE(R) - E(C(k,s))IE(R). \quad (1)$$

where the first term is the share of the after theft and investment cash flow distributed to the controlling shareholder. The second term is the direct benefit of the theft (he may use the money to invest in other projects and we assume that the rate of return is the same as the firm project). The last term is the cost of

punishment, which we assumed to rely on some specific future cash flow. Thus,

$$\begin{aligned} \text{Utility}_1 &= \alpha \left\{ (1-s) \left(\frac{e}{e-1} \right) [e^{-s}R_1 + (1-e^{-s})R_2] I - (1+k_d)D \right\} + s \left(\frac{e}{e-1} \right) I [e^{-s}R_1 + (1-e^{-s})R_2] \\ &\quad - \left(\frac{s^3}{k} \right) \left(\frac{e}{e-1} \right) I [e^{-s}R_1 + (1-e^{-s})R_2] \end{aligned}$$

Since $e/(e-1) > 0$, s^* will also maximize U_1 .

Define $U_1: [0,1] \rightarrow \mathbb{R}$, $I > 0, R_1 > R_2 > 0, k > 1, 0 < \alpha < 1, 0 < s < 1$, where

$$\begin{aligned} U_1 &\equiv \alpha \left\{ (1-s) [e^{-s}R_1 + (1-e^{-s})R_2] I - (1+k_d)D \right\} + s I [e^{-s}R_1 + (1-e^{-s})R_2] \\ &\quad - \left(\frac{s^3}{k} \right) I [e^{-s}R_1 + (1-e^{-s})R_2] \\ &= I [e^{-s}R_1 + (1-e^{-s})R_2] \left[\alpha(1-s) + s - \left(\frac{s^3}{k} \right) \right] - (1+k_d)D\alpha. \end{aligned}$$

Define $g(s) \equiv e^{-s}R_1 + (1-e^{-s})R_2$. (2)

$$f(s) \equiv \alpha(1-s) + s - \left(\frac{s^3}{k} \right). \quad (3)$$

$$\beta = (1+k_d)D\alpha. \quad (4)$$

Hence, $U_1(s) = Ig(s)f(s) - \beta, 0 < s < 1$,

$$g(s) = e^{-s}(R_1 - R_2) + R_2 > 0.$$

$$f(s) = \alpha(1-s) + s - \left(\frac{s^3}{k} \right) = \alpha(1-s) + \frac{[s(k-s^2)]}{k} > 0.$$

$$g'(s) = -e^{-s}(R_1 - R_2) < 0.$$

Since g is continuous on $[0,1]$ and $g'(s) < 0$ on $(0,1)$, g is strictly decreasing on $[0,1]$.

Thus,

$$\begin{aligned} f'(s) &= -\alpha + 1 - \left(\frac{3}{k} \right) s^2 = (1-\alpha) - \left(\frac{3}{k} \right) s^2 \\ &= \left((1-\alpha)^{1/2} + \left(\frac{3}{k} \right)^{1/2} s \right) \left((1-\alpha)^{1/2} - \left(\frac{3}{k} \right)^{1/2} s \right). \end{aligned} \quad (5)$$

Let $0 < s_0 < 1$, $f'(s_0) = 0 \rightarrow s_0 = [(1-\alpha)/(3/k)]^{1/2}$ while negative value is out of the range.

As a result, if $0 \leq s \leq s_0$, then $f'(s) > 0$; else if $s = s_0$, then $f'(s) = 0$; else if

$s_0 \leq s \leq 1$, then $f'(s) < 0$. Therefore, as $0 < [(1-\alpha)/(3/k)]^{1/2} < 1$, the maximum of f occurs on s_0 .

$$U_1'(s) = I(gf)'(s) = I[g'(s)f(s) + g(s)f'(s)].$$

where $0 < s < 1$. By equation (2) · (3), and (4), we obtain $g'(s) < 0$, $f(s) > 0$, $g(s) > 0$. The first term of $U_1'(s)$ is negative. If $s_0 \leq s \leq 1$, then $f(s) < 0$ so $g(s)f'(s) < 0$, and $g'(s)f(s) + g(s)f'(s) < 0$. Thus, $U_1'(s) < 0$ when $s_0 \leq s \leq 1$. That is, U_1 is strictly decreasing on $[s_0, 1]$. Also, U_1 is continuous on $[0, 1]$, so maximum of U_1 exists on $[0, 1]$. That is to say, there exists s^* such that $U_1(s^*) \geq U_1(s)$ and $0 \leq s^* \leq 1$. Thus, we obtain $0 \leq s^* \leq s_0 = [(1-\alpha)/(3/k)]^{1/2} = (k(1-\alpha)/3)^{1/2}$.

By equation (5), while $0 \leq s^* \leq s_0$, f' is strictly decreasing on $[0, s_0]$. Since

$$f'(s) = \left(\frac{3}{k}\right)(s_0 - s)(s_0 + s) = \left(\frac{3}{k}\right)(s_0^2 - s^2) > 0.$$

$$f''(s) = -6s/k < 0.$$

Also, by equation (2) and (4), g is strictly decreasing on $[0, s_0]$ and $g > 0$ on $[0, s_0]$.

Hence, gf' is strictly decreasing on $[0, s_0]$. Moreover, for any $s \in [0, s_0]$,

$$\begin{aligned} \max(gf'(s)) &= g(0)f'(0) = R_0(1-\alpha) > 0, \\ \min(gf'(s)) &= g(s_0)f'(s_0) = 0. \end{aligned} \tag{6}$$

Based on equation (2) · (3) · (4), and (6), $U_1'(s_0) = I[g'(s_0)f(s_0) + g(s_0)f'(s_0)] < 0$.

As a result, s_0 cannot be the point that makes U_1 maximum, thus $0 \leq s^* < s_0 = (k(1-\alpha)/3)^{1/2}$.

(b) Consider that expropriation does not influence corporate profitability

Suppose that the constant R is the rate of return for the firm investment project. For any s , $0 \leq s \leq 1$, s fulfills the controlling shareholder utility function:

$$\begin{aligned} \text{Utility2} &\equiv \alpha[(1-s)IR - (1+k_d)D] + sIR(C(k,s))IR \\ &= \alpha(1-s)IR + sIR - \left(\frac{s^3}{k}\right)IR - (1+k_d)D\alpha. \end{aligned}$$

Let $\text{Utility2}' = -\alpha IR - IR - (3s^2/k)IR = 0$.

We would like to find the optimal amount of theft that maximizes Utility2. Since the 2nd order differentiation on s' is negative, s' is the point that allows Utility2 to attain maximum, where $-\alpha + 1 - 3s'/k = 0$. Therefore, $s' = (k(1-\alpha)/3)^{1/2}$.

(c) Discussion

According to equation (2) and (3), we have shown that $s' > s^*$. Therefore, if it is presumed that the expropriated amount has no influence on the profitability of the company, the controlling shareholder will overestimate the optimal expropriation value.

Proposition II (Relationship between wealth expropriation and financial distress): Excess expropriation by the controlling shareholder is likely to lead to financial distress for a firm.

We attempted to show that a more conservative value, s^* , brings about financial distress. s' has the probability to induce financial distress. According to the preceding utility function for the controlling stockholder who engages in wealth embezzlement, taking account of the impact of wealth theft on the profitability of the company, the stockholder may find that a more conservative optimal value s^* cannot exempt expropriation from causing financial distress. Hence, we attempt to separate s^* into two cases and use the relationship between s' and s^* — $s' > s^*$ — to determine whether s' will lead to financial distress.

(1) optimal value of theft s^* leads to financial distress

Presuming that the optimal theft value s^* causes financial distress, that is, s^* meets the condition for financial distress $(1 - s^*)IR(s^*) < (1 + k_d)D$. Because $(1 - s)$ and $R(s)$ decrease as s increases, respectively, $(1 - s)IR(s)$ is a decreasing function of s . Since we know from proposition 1 that s' exceeds s^* , $(1 - s')IR(s') < (1 + k_d)D$ is the necessary result. Therefore, the optimal ratio s' will also bring about financial distress to the company. In other words, if the optimal theft value s^* , calculated as one assumes that expropriation influences the profitability of corporation, leads to financial distress, then the optimal theft value s' , calculated as one assumes that expropriation does not influence the profitability of corporation, will certainly attract financial distress.

(2) Optimal theft value s^* does not lead to financial distress

According our hypothesis, the optimal theft value s^* does not lead to financial distress. Hence, $(1-s^*)IR(s^*) > (1+k_d)D$. Assume that $h(s) = (1-s)IR(s)$, because $(1-s)$ and $R(s)$ are continuous functions and $h'(s) < 0$, $h''(s) > 0$, $h(s)$ are continuous monotone decreasing functions and concave above. Because s' is larger than s^* , we only know $h(s') < h(s^*)$. If the expropriation ratio s corresponds to financial distress, $(1+k_d)D$, lies between s^* and s' . The probability of causing financial distress will then be larger than zero under conditions in which one ignores the impact of the theft volume on the firm's profitability, provided every point on $[s^*, s']$ has a probability larger than zero.

(3) Discussion

In case (1), we showed that when s^* leads to financial distress, s' will surely lead to financial distress. In case (2), when s^* does not lead to financial distress, s' has the probability to result in financial distress. In summary, when leaving out the influence of the amount of expropriation on the firm's profitability, a controlling shareholder may acquire an optimal amount of theft that is likely to induce financial distress on the firm.

In conclusion, Proposition 1 reveals that a controlling shareholder will overestimate the optimal amount of wealth expropriation without considering its influence on the firm's profitability. Proposition 2 shows that the excess wealth expropriation has the probability to produce firm financial distress. Putting the two propositions together, we can see why a controlling shareholder who engages in wealth expropriation, though unwilling to see the firm get into trouble, inadvertently causes financial distress.

III. Empirical Issues

In the preceding section we presented a model to interpret how excess wealth embezzlement may bring about financial distress in a company. Using our model, the amount of wealth-expropriated by the controlling shareholder would affect a company's profitability. The controlling shareholder overestimates the embezzlement amount without considering the influence on the profitability. This leads the company into financial distress. However, it is difficult to directly

determine whether the controlling shareholder's expropriations over the optimal amount would cause the company to fall into financial distress.

We infer that the controlling shareholder would commit less expropriation in a company with better corporate governance. Conversely, if a firm has worse corporate governance, the controlling shareholders in those companies would expropriate more. We further infer that the controlling shareholders of distressed firms with poor corporate governance expropriate more than the optimal embezzlement amounts, thereby hurting the profitability of the company.

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控制股東之失算:財務危機之教訓

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摘要

我們提出一個模型來解釋控制股東財富侵占與公司財務危機之間的關係。在股權集中的環境之下，控制股東可能有誘因而剝削小股東財富。在考慮到預期侵占成本的情形下，控制股東並不願意故意使公司陷入財務危機。我們的模型指出，控制股東在忽略侵占對公司獲利力造成的影響之下，可能會高估自己財富侵占的最適量，因而不小心使公司面臨財務危機。

關鍵詞彙：控制股東，財務危機，財富侵占

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