

# **New Trouble to Enterprise Independent Innovation Start with the Claims to be Brought Against Luckin**

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## **ABSTRACT**

Recently, more and more enterprises adopted Directors and Officers Liability Insurance (hereinafter referred to as D&O) in order to lower managers' risks and strengthen external supervision of management. However, the excessive protection for directors' and officers' negligence could probably restrain the enterprises innovation. This paper uses data of A-share listed companies in China from 2008 to 2019 to verify this process, found that: after controlling the selective bias, the purchase of the D&O will still inhibit the enterprises innovation input. The innovation of this paper lies in the indication of the possibility that D&O induces moral hazard and opportunistic behaviour nowadays should not be underestimated, it inevitably leads a crowding-out effect to enterprise innovation input, which is rarely involved in previous studies. Except to this, the heterogeneity between China and U.S. in terms of securities market rules and business legal environment should be another important aspect to pay attention to in the process of Sinicization of D&O.

**Keywords:** *Corporate Governance, Directors and Officers' Liability Insurance, Corporation Innovation.*

## **1. INTRODUCTION**

On April 2, 2020, Luckin issued a statement admitting the fake transaction, and share price fell by 80% in response, while lawsuit filed by investors are also in full swing, the compensation amount was once thought to be the key for Luckin's survival. In this case, Luckin purchased D&O, yet it didn't drive innovation, or dampen managers' opportunism. As Luckin incident unfolded, D&O has once again come into focus. With a 96% coverage in U.S. (Boyer et al., 2012), D&O is regarded as a good way for enterprises to avoid risks and increase innovation, but is this really the case?

Innovation is crucial for enterprises' competence and requires incentive mechanism. Studies found, the tolerance on mistakes and even failures caused by innovation, as well as long-term incentives for innovation, significantly promote enterprise innovation.

Litigation risk also affects enterprise innovation decision. In 2002, the Supreme People's Court of the People's Republic of China issued a circular, which included responsibilities of directors and officers in the scope of tort litigation, shareholders can bring civil case against director and officer. Since then, cases involving listed companies have increased significantly year by

year. Huge economic losses, to some extent, intensifies managers' risk aversion behaviour. Studies have found that the greater the risk of external litigation, the more the number and amount of litigation, the more obvious the tendency of risk aversion (Li, 2019). As a result, D&O began to be accepted by more companies.

D&O was first born in the U.S. in early 20th century and originally becomes a tool to hedge professional risk of managers and reduce enterprises loss, but in terms of its practical effect, there are different opinions in the theoretical circle. Some believe D&O is conducive to provide risk compensation and financial cover for managers' decision-making errors by a third-party insurance companies, and to avoid short-sighted behaviour (Core, 2000), to help reducing agency cost (Xu & Wang, 2012), and improving enterprise risk taking level (Hu&Hu, 2017); while some studies found, D&O is likely to overprotect managers when it covers most of management risks, thus reducing manager's cost of self-interest and increasing the moral hazard and opportunistic behaviour of managers (Lin et al., 2011, 2013). And ultimately affect investment in innovation.

Different views on the role of D&O will inevitably lead to different results of corporate governance, so, this paper takes Chinese A-share listed companies from 2008

to 2019 as research samples, to examine the relationship between D&O and enterprise independent innovation. We Found: a negative correlation exists between R&O and R&D input; After considering the difference of external litigation risks, the increase of litigation amount will significantly weaken inhibiting effect of D&O on enterprise innovation. The results indicate that, the possibility to induce moral hazard and opportunistic behaviour by adopting D&O nowadays should not be underestimated, and this will inevitably lead a crowding-out effect to innovation input.

## **2. LITERATURE REVIEW AND RESEARCH HYPOTHESIS**

The paper mainly discusses the effect of purchasing D&O on enterprise independent innovation from aspect of litigation, therefore, in following part, I will review and analyse the existing literature from two aspects: economic consequences of D&O and the influencing factors of enterprises' independent innovation, and then propose the research hypothesis.

### ***2.1. The Demand Drivers of D&O***

Managers' risk aversion hypothesis says, managers' risk aversion preference, under the agency conflict, is the main reason for purchasing D&O (Core, 1997). With only a small premium to pay, managers can be bold enough to innovate, and will obtain excess profits due to the D&O bearing its losses even fails (Chalmers et al., 2002). While the shareholder benefit protection hypothesis says, the significance of full compensation of D&O is that it protects the interests of stakeholders, especially the interest of shareholders (Romano, 2000); According to financial protection effect hypothesis, business risk can be hedged and transferred after purchasing D&O (Mayers et al., 1990), which can significantly improve company's risk tolerance and weaken destructive power of external risks, even when bankruptcy, insurance can increase company value and partly alleviate agency conflict (MacMinn et al., 2013) to realize insurance tax credit effect at the same time.

### ***2.2. The Influencing Factors of Innovation***

Corporate governance is related to enterprise innovation closely (Tylecote et al., 2006). D&O also falls in the category of corporate governance, the escalation of agency conflicts between enterprise and managers is bound to stifle innovation, the higher agency cost is, the greater influence on innovation will be (Meckling, 1976). Therefore, D&O seems to provide a new solution. Some believe that, D&O can transfer risk to insurance company, who do professional risk rating to the insured enterprises before undertaking it to ensure the operation is legal and compliant (O'Sullivan, 2002), while after underwriting, insurance company will continually supervise operation to lower risks that directors and

officers violating laws (Wen, 2017). As risks are dispersed, companies are more willing to support large R&D investments; meanwhile, with insurance compensation, risk tolerance of managers are highly improved, which is conducive to innovation (Core, 2005). However, some scholars believe that, just because of purchasing D&O, the deterrent effect on directors' and officers' behaviour has greatly weakened, moral hazard is on the rise with insufficient self-discipline and law, which exacerbating self-serving actions (Lin et al., 2013), increase possibility of insider trading and reduce stock returns (Mursyidto et al., 2014), exacerbate earnings management practices (Hu, 2017), and increase financial cost (Hao, 2016). The increased premiums of next year will be seen as a new risk, which will also increase subsequent financial cost (Lin et al., 2013), and ultimately affect innovation input.

From the above, we considered that the risk pass-through ability of D&O is limited. In fact, liability limitation clauses which included in director and officer employment contract are already able to reduce their personal risk of compensation, whilst, D&O only increases the compensation fund which doesn't cover intentional violations and administrative. Therefore, actual risk-averse utility of D&O may not truly achieve the purpose of stimulating director and officer to improve corporate governance and innovation. In addition, from the external supervision hypothesis of D&O, external oversight can only be achieved through premium increases for next year, while the increased premium is still company cost and has nothing to do with individuals. So, the supervision effect is inevitably indirect, delayed, and limited. Finally, if managers' misconduct cannot be restrained effectively, the rising moral hazard may further exacerbate agency conflict, and ultimately forms crowding-out effect on innovation.

Therefore, we propose the following hypothesizes:

H1-A: The D&O has a promoting effect on the enterprise innovation input.

H1-B: The D&O has crowding-out effect on enterprise innovation input.

## **3. RESEARCH DESIGN**

### ***3.1. Data Sources and Sample Selection***

We select Shanghai and Shenzhen A-share listed companies from 2008 to 2019 as research samples, and process original data as follows: 1) ST&PT samples were eliminated; 2) remove samples with missing data; 3) to control the influence of outliers, all continuous variables were winsorized by 1% and 99%. D&O data are collected manually, data of enterprise innovation input and control variables are from CSMAR database.

### 3.2. Main Variable Definition

#### 3.2.1. D&O

Considering the availability of data, this paper adopt previous work to measure the D&O by a dummy variable which is set by whether enterprise buy D&O or not, If information disclosed by the listed company shows the purchase of D&O, then mark as 1, if not 0. As long as enterprises don't disclose to stop purchasing D&O, it is regard as continuing to buy it (Jia, 2013).

#### 3.2.2. Enterprise independent innovation

Compared with R&D output, manager has greater influence on input. So, R&D input is chosen to measure enterprise innovation. We use ratio of R&D input to current operating income to eliminate influence of scale.

#### 3.2.3. Control variables

Based on previous studies, we adopt corporate size (Size), leverage (Lev), return on equity (ROE), return on asset (RTAR), corporate growth (Growth), free cash flow (Fcf), cash holdings (Cash) as control variables.

### 3.3. Model Specification

This paper constructs following model based on the research of Hu (2017):

$$R\&D_{i,t} = \alpha + \beta_1 D\&O + \beta_2 Control_{i,t} + \beta_3 IND_{i,t} + \beta_4 Year_{i,t} + \varepsilon_i$$

Meanings of each variable are explained in above variables, Control refers to control variables, IND and Year are dummy variables,  $\alpha$  is constant term,  $\varepsilon$  is residual, if  $\beta_1$  is greater than 0, then hypothesis 1A is supported, otherwise, 1B is supported.

## 4. EMPIRICAL ANALYSIS

### 4.1. Descriptive Statistics

Table 1 shows the descriptive statistical results, R&D (R&D input/current revenue) mean value is 0.033, shows that R&D input in different enterprises varies greatly. D&O mean value is 0.082, means there are 8.2% enterprises have purchased D&O, mean value of ROE and corporate growth are 6% and 4.2%, gap between maximum and minimum values indicates quite difference in corporate profitability and growth.

### 4.2. Univariate Analysis

In this paper, difference in innovation investment between two groups is compared by grouping whether have bought D&O, Univariate analysis found: the mean values of the two groups are significantly different, and its T test and Z test results are significant at 1% level, this

preliminarily verifies the H1-B, that is, purchasing of D&O will reduce enterprises innovative input.

**Table 1.** Descriptive Statistics

	Obs	Mean	Std.Dev	Min	Max
R&D	22370	.033	.041	0	.231
D&O	22370	.082	.274	0	1
ROE	22370	.06	.121	-.613	.36
Lev	22370	.422	.215	.047	.933
RTAR	22370	.046	.061	-.204	.221
Growth	22370	.187	.402	-.297	2.739
Fcf	22370	.041	.074	-.197	.246
Cash	22370	.196	.148	.006	.715
Size	22370	22.054	1.405	19.549	26.922

### 4.3. Regression Result

Stata 14.0 is used to test the hypothesis, clustering is adjusted to control possible autocorrelation and heteroscedasticity problems, Table 2 shows the results.

**Table 2.** Regression Result

	(1) R&D	(2) R&D
D&O	-0.00789***	-0.00389***
ROE	-0.02006***	-0.00168
Lev	-0.05896***	-0.03691***
RTAR	-0.02075	-0.02895**
Growth	0.00399***	0.00160**
Fcf	-0.01409***	-0.01531***
Cash	0.02871***	0.02524***
Size	-0.00097**	-0.00113***
Constant	0.07617***	0.02344**
Ind	NO	YES
Year	NO	YES
Observations	22,370	22,370
Adjusted-R2	0.1498	0.3659

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Column (2) shows the coefficient is -0.00389 and still significant at 1% level after controlling fixed effect of industry and year, it verified H1-B by indicating a negative correlation between D&O and innovation. That is to say, incentive function of risk aversion effect of D&O to directors is significantly insufficient, and in turn weak supervision and legal deficiency encourages management opportunism. It means positive incentive function of D&O also depends on further improvement of whole system. Data observation on specific business also confirms this result: continued purchasing R&D have not resulted in increased innovation input.

## 5. ROBUSTNESS TEST

In order to ensure the reliability of regression results, robustness tests were carried out from the aspects of endogeneity and index sensitivity.

### 5.1. PSM Test

In order to control the influence of pre-screening by insurance companies, propensity score matching (PSM) is used to examine endogeneity. Firstly, use the dummy variable D&O to estimate the bias of all matched variable binaries by logit regression model, then use the near matching method to match the samples without D&O in 1:1 ratio, and regress it again, found: after correcting selectivity bias, the results still support the null hypothesis. Indicates that, directors opportunism tendency become more prominent after purchasing D&O, which finally inhibits the enterprise independent innovation. Due to space limitations, the results are not listed in the article. Please contact the author if needed.

### 5.2. Index Sensitivity Test

Taking into account the selection of indicators may have an impact on the results of the study, we conduct a sensitivity analysis by replacing the indicators.

Two substitution variables are selected, a dummy variable setting by whether has innovation and patent application amount which numbered by logarithm the outcome of patents amount plus 1, regress again. The results showed that, with two substitution variables, the influence coefficient of D&O on enterprise innovation is negative, and maintained a significance level of 1%, indicates that, D&O purchasing will inhibit corporate innovation. Results are not listed for the same reason.

## 6. CONCLUSION AND PROSPECT

Should be said, with the continuous improvement in legal environment of China and increasing awareness of minority shareholders' self-protection, as a new governance mechanism, D&O plays a positive role in reducing managers' agency cost and improving level of enterprise risk taking. But as said before, the effect of D&O on risk taking of managers' property without effective supervision, may induce more opportunistic behaviours, and ultimately forming a crowding-out effect on enterprise independent innovation.

On the one hand, the result is due to immaturity of D&O and limited role of incentive and supervision on capital market in China; On the other hand, it shows that the realization of positive role of D&O also needs a mature commercial and legal environment. Otherwise, moral hazard and opportunism psychology will make managers deviate from the purpose of maximizing shareholders' interests for sake of their own interests, which is not conducive for making innovative decisions.

On March 1, 2020, the new Securities Law of People's Republic of China was formally implemented, information disclosure obligation of listed companies is increased, this will undoubtedly strengthen constraints on managers' behavior, so as to suppress the manager's

opportunism mentality, and decisions might be made under it to inhibit innovation. Only in environment of an ever-perfect law and effective implementation, can D&O really become a win-win medicine for enterprises to both avoid risks and improve governance. And only then will Luckin's story become a thing of the past.

## AUTHORS' CONTRIBUTIONS

Results shows the possibility that D&O induces moral hazard and opportunistic behaviour in current surrounding should not be underestimated, it inevitably lead a crowding-out effect to the enterprise innovation input, which is rarely involved in previous studies. Except to this, D&O is still a novelty in China compared with the U.S., However, slow progress also reflects the two countries' heterogeneity in terms of securities market rules and business legal environment, this should be another important aspect to pay attention to in the process of the Sinicization of D&O.

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