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訴訟風險，董監事責任險，與公司經營績效 研究成果報告(精簡版)

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行政院國家科學委員會補助專題研究計畫 成果報告
 期中進度報告

訴訟風險，董監事責任險，與公司經營績效

Litigation Risk, Directors' and Officers' Insurance, and Firm's Performance

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計畫編號：NSC 95-2416-H-002-024-

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計畫中文摘要

當投資人投資失敗後，控告公司及其董監事似已蔚為風氣。為降低董監事之潛在財務風險，公司逐漸依賴董監事責任險來對當事人提供進一步之保障。尤其在安隆事件之後，董監事更面臨前所未有之注意及巨大之責任風險。就會計而言，董監事責任險之購買資料或許能提供投資者相當有價值之資訊，以判斷公司之潛在風險及未來之經營績效。為更充分瞭解董監事責任險之資訊意涵，我們需先嘗試回答有關董監事責任險之二個基本問題：(1)、那一類型的公司在購買此保險，為何購買？(2)、董監事責任險究竟是提供當事人好的激勵誘因或促進不好的道德危機，而進一步又如何影響公司經營績效？本研究以台灣證券交易所的資料並透過實證方法發現以下結果。(1) 有購買董監責任險的公司比沒有購買的公司有較高的法律風險。(2) 是否購買董監責任險對經營績效並無顯著影響。

關鍵字：

董監事責任險、訴訟風險、公司經營績效、道德危機、代理理論

Litigation Risk, Directors' and Officers' Insurance, and Firm's Performance

Abstract

It has become a trend that the investors sue the firms and their directors and officers when the investments go under. To reduce liability risk and judgment-proof problem, D&O insurance is a primary tool used in modern society by the firms to indemnify directors and officers for the potential loss arising from possible litigations. Especially after Enron scandal, directors and officers face unprecedented scrutiny and liability exposure. From accounting point of view, the D&O insurance purchase data may provide investors valuable information to assess the underlying risk of the firm and its future performance. The answers to two fundamental questions on D&O insurance will help us better understand the information implications of D&O insurance: (1) who is buying the D&O insurance and why do they buy? (2) does D&O insurance create moral hazard or provide incentives to directors and officers, and subsequently affect the firm's performance? We empirically test the data by using companies listed in Taiwan Security Exchanges and find that: (1) the firms purchase D&O have higher risk than the firms without purchasing; (2) but the operation performances are not different between the two groups.

Key Words: Director's and Officers' Insurance; Litigation Risk; Firm Performance; Moral Hazard; Agency Theory

Litigation Risk, Directors' and Officers' Insurance, and Firm's Performance.

1. Introduction

It has become a trend that the investors sue the firms and their directors and officers when the investments go under. To reduce liability risk and judgment-proof problem, D&O insurance is a primary tool used in modern society by the firms to indemnify directors and officers for the potential loss arising from possible litigations. Especially after Enron scandal, directors and officers face unprecedented scrutiny and liability exposure. Therefore, a comprehensive study on directors and officers' insurance is important to academic research. Especially the effect of D&O insurance on firm's performance is lacking in the literature.

Most of D&O research in the literature concentrates on the demand or determinant for D&O insurance, or its underwriting process. Core (1997) used data of Canadian firms to test three sources of demand: (1) demand for D&O personal coverage from contract requirement for risk averse directors and officers; (2) demand for D&O corporate coverage from an efficient corporate insurance decision; and (3) the demand for D&O insurance from managerial entrenchment. Similar research could be found in O'Sullivan (2002). Parry and Parry (1991) and Mayers and Smith (1982) provided explanation for why the firms purchased insurance, although their studies did directly address D&O insurance. Redington (2005) discussed the underwriting implications of Section 404 of Sabanes-Oxley Act of 2002 on D&O insurance. Mayers and Smith also investigated the underwriting problems for corporate insurance.

Apparently the effect of D&O insurance on corporate performance does not exist in the literature, with Chalmers, Dann and Harford (2002) as an exception. Chalmers, Dann and Harford (2002) used 72 IPO firms and found a significant negative relation between the three-year post IPO stock price performance and the D&O insurance purchases in conjunction with the IPO. They concluded that D&O insurance decisions revealed managers' opportunistic behaviors. This type of research does provide policy implications for information disclosures on D&O insurance purchase details. Although it is an important accounting issue, almost none research can be found in the accounting literature.

The purposes of this study are two folds: (1) refine the test on D&O insurance purchase and litigation risk faced by the firms; (2) provide a direct observation on how D&O insurance purchases affect the performance of firms. Our findings suggest that the firms purchase D&O are in higher risk measured with our estimation model; but the operation performances are not different between the two groups. Although we can not find the support for D&O improving operation performance, it shall not be interpreted that D&O has no effect on the firm operation. To answer this, a more detailed analysis is required.

2. Literature and Hypotheses Development

It is a common notion that the firms with higher exposures to the litigations will have stronger incentives in buying D&O insurance to indemnify their board of directors and officers. When the firms buying the D&O insurance, the premiums paid for insurance, under the fair rate principle, are determined based on the requested coverage and the probability of being sued and lost. Therefore, the total premium paid by a particular D&O insurance is a composite of litigation probability and requested coverage. Chalmers, Dann and Harford (2002) used the coverage being purchased as the proxy for manager's perceived damages and the per dollar coverage insurance premium as the proxy for the perceived probability of risk by insured. Prior Enron era, D&O insurance makes directors and officers immune from personal liability for corporate failure. Given the information asymmetry, firms determine the optimal purchase of D&O insurance according their self beliefs of the risk exposures and the estimated claims need to be paid in case of loss in litigation. However, this practice has been changed, according to Alles, Datar and Friedland (2005), when Enron and WorldCom directors are forced to pay settlements out of their personal assets by court. Therefore, Redinton (2005) and Baily (2005) both predicted that the trend on D&O insurance may cause the unavailability of adequate D&O coverage desired by the firms and the increase on the premium of such insurance after Enron and WorldCom scandal.

On the other hand, we may find a group of the firms electing not to purchase the D&O insurance. The firms with no D&O insurance may be either extremely high risk or extremely low risk according to Core (1997). When the firms are in a very high risk category, they may not able to find the carriers who are willing to underwrite their insurance. In contrary, the firms with very limited risk may choose not to purchase the D&O insurance in order to save the premiums. In summary, we derive the following hypothesis:

H1: The litigation risk for firms with D&O insurance is significantly higher than those without D&O insurance.

People usually concern whether D&O insurance will result in moral hazard of the insured (directors or officers) in reducing their efforts on protecting investors, which eventually affects firm's performance. The academic studies about the impact of liability insurance on the insured's preventive effort are controversial. Shavell (1982) suggested that the injurer's incentive of care was not affected by liability insurance once the insurer can observe the prevention activity and thus governmental intervention in insurance market is not desirable. However, Sarath (1991) showed that liability insurance may dilute the incentive of care when there is uncertainty in litigation. The empirical study by Sloan, Reilly and Schenzler (1995) on the other hand showed that driver's automobile liability insurance, especially compulsory insurance, discouraged binge drinking

behavior. Gutierrez (2003) used a principal-agent model and showed that the use of liability insurance could be optimal for a more efficient litigation strategy. Holderness (1990) suggested that the purchase of D&O insurance would result in the improvement of managerial behaviors because of the monitoring from the insurance company. Therefore, two competing hypotheses can be inferred from the literature:

H2(a) *The moral hazard hypothesis*: The purchase of D&O insurance creates moral hazard problems and results in a poor performance.

H2(b) *Optimal incentive and monitor hypothesis*: The purchase of D&O insurance aligns the incentives of directors and officers with shareholders and results in a better performance.

3. Sample and Research Design

3.1. Data and sample

In this study, we use Top 500 firms under Taiwan Common Wealth Magazine 2004 Annual Survey as the sample base. We then delete the non-public traded companies so that we can access the public available data base to collect necessary data items. The reason for using 2004 annual survey enables us to have the prior survey 2-year and post survey 1-year financial data. Therefore, we have the data from 2002 to 2005 for the public traded companies in Top 500 list.

We search the D&O insurance data, including the coverage amount, coverage dates, the premium paid, and the insurance companies through questionnaire, because the D&O insurance data are not available from the annual reports or any public data base.

3.2. Litigation risk and D&O insurance test

Although the positive relation of litigation risk and D&O insurance demand has been empirically documented, the tests are done indirectly or partially. O'Sullivan (2002) used UK companies and showed that the D&O insurance purchase was associated with weak corporate governance. Similarly, Core (2000) documented that that D&O premium are positively related excess CEO compensation by using Canadian companies as sample. In that study, the excess CEO compensation implies weak corporate governance. In both O'Sullivan (2002) and Core (2000) studies, they implicitly assume that weak corporate governance is equivalent to high litigation risk. Therefore, their tests are indirect. Core (1997) used ten possible litigation risk proxies and tested each individual proxy's association with D&O purchase by applying logit model. Although Core (1997) claimed that firms with higher litigation risk are more likely to purchase D&O insurance

and carry higher coverage, his conclusion was only partially and weakly supported by his tests.

In this study, we refine Core's litigation risk hypothesis test by using a summary measure of litigation risk proposed by Shu (2000). Shu (2000) constructed a summary measure to serve as a proxy for litigation risk faced by an auditor. In general, the investors usually sue the auditors, directors, and officers at the same time. The litigation exposure of the auditor can be assumed to be equal to that of the directors and officers. Shu (2000) used the following logit model to estimate the litigation risk measure for each firm in the sample:

$$Y = B_0 + B_1 \text{ Size} + B_2 \text{ Inventory/lagged assets} + B_3 \text{ Receivables/lagged assets} + \\ B_4 \text{ Return on assets} + B_5 \text{ Financial leverage} + B_6 \text{ Sale growth} + \\ B_7 \text{ Current ratio} + B_8 \text{ Stock return} + B_9 \text{ Beta} + \\ B_{10} \text{ Stock turnover} + B_{11} \text{ Qualified opinion dummy},$$

where Y is one for firms with litigation with investors and zero for non-litigation firms. All variables for the litigation sample are measured in the year associated with litigation. In this study, we will use 2002 and 2003 data to form the litigation risk summary measure for each sample firm.

To test H1, we will compare the mean of the summary measure of litigation risk for the firms with D&O insurance purchase in 2004 with that for the firms without purchasing D&O insurance in 2004.

3.3. D&O insurance and firm's performance test

By the agency theory of Jensen and Meckling (1976), there are conflicts of interests between shareholders and managers. Fama and Jensen (1983) further state that the board of directors have a fiduciary duty to exercise care monitoring management on behalf of all shareholders under the separation of ownership and control. The lower agency cost, the better is the corporate performance, which will eventually enhance the shareholder values. One way to reduce the agency costs is to design a right managerial incentive contract. Does D&O insurance provide the right incentives to directors and officers and help to improve the firm's performance? Does D&O insurance, in opposite, reduce the incentives of directors and officers, because it free the personal liabilities of directors and officers?

In this study, we will use three performance measures to test hypothesis 2: (1) stock return; (2) net income; and (3) return on assets. We will group our sample into two sub-samples, one with D&O insurance and one without D&O insurance, based on 2004 D&O insurance data. We will compare the performance difference of the two groups for each individual performance measure. To make the performance comparison meaningful, we use ROE as the performance measure for

comparison:

4. Empirical Results

4.1. The litigation risk estimation model

In order to test the relation between litigation risk and D&O insurance, we first construct a summary measure to serve as a proxy for litigation risk. According to Shu (2000), we regress the sample data in year 2001 and 2002 with the logit model to estimate the litigation risk. The model and the predictions are based on previously documented litigation-related variables. They include firm size, current ratio, financial condition, growth rate, accounts receivable, inventories and stock turnover (Alexander, 1991; Stice, 1991; Lys and Watts, 1994; Jones and Weingram, 1996). We also include qualified opinions for the lawsuit years, since the events leading to qualified opinions might also give rise to auditor litigation.

Multinomial logistic regression

Number of obs = 741

Wald chi2(11) = 40.00

Prob > chi2 = 0.0000

Pseudo R2 = 0.2948

Log pseudolikelihood = -54.434248

litigation risk	Predicted sign	Coef.	Std.	z	P> z	[95% Conf. Interval]	
lnasset	+	0.764122	0.404186	1.89	0.059	-0.02807	1.556312
inventory	+	-3.49E-07	2.25E-07	-1.55	0.121	-7.90E-07	9.17E-08
receivable	+	-6.33E-07	5.21E-07	-1.21	0.225	-1.66E-06	3.89E-07
ROA	-	-0.03981	0.022316	-1.78	0.074	-0.08355	0.003925

Current ratio	-	-0.040194	0.013138	3.06	0.002	0.014445	0.065944
Financial leverage	+	0.01202	0.006031	1.99	0.046	0.000199	0.023841
Sales growth	+	0.01165	0.007859	1.48	0.138	-0.00375	0.027053
Stock return	-	-0.00069	0.006747	-0.1	0.919	-0.01391	0.012537
beta	+	-0.81155	0.8491	-0.96	0.339	-2.47575	0.852658
Stock turnover	+	0.00214	0.001087	1.97	0.049	1.02E-05	0.004269
Cpa opinion	+	1.312079	0.765291	1.71	0.086	-0.18786	2.812023
_cons	?	-17.5342	6.610739	-2.65	0.008	-30.491	-4.57742

As the result shows, the firms with large size(measured with log of total assets) will have higher litigation risk, even though the inventory and receivables are insignificant, respectively. Return on asset is negatively related to litigation risk at a significant level. The result concludes that litigation is related to the variables that increase plaintiffs' incentives to bring lawsuits: firm size (measured as the log of total assets), firm structure, stock turnover, and closeness to financial distress (stock return, financial leverage).

After the construction of litigation risk model, we use it to estimate the expected litigation risk for our D&O data which is obtained by questionnaire. In order to test the incentive for purchasing D&O insurance, we divide the D&O data into two subgroups. One is the firms purchasing D&O insurance and the other one is those without. The two D&O subgroups data are summarized as follow:

4.2. D&O insurance and the litigation risk

Descriptive Statistics for firms with D&O insurance

Variable	Obs	Mean	Std. Dev.	Min	Max
lnasset	32	16.23689	1.305939	14.44682	19.21568
inventory	32	2270703	3390011	15134	1.38E+07
receivable	32	4929233	1.05E+07	208901	5.52E+07
ROA	32	8.424375	9.952626	-27.44	24.06
Current ratio	32	44.01406	11.942	15.61	65.6
financial leverage	32	4.600937	20.51341	-0.36	117
sales growth	32	25.99938	30.53898	-36.34	141.85
stock return	32	0.4521031	0.2723099	-0.0418	0.9682
Beta	32	2.425625	40.89042	-67.0667	111.1884
stock turnover	32	54.75594	82.85485	2.59	449.62
Cpa	32	0.65625	0.4825587	0	1
ROE	32	14.13781	19.21519	-63.7	37.24
estimated litigation risk	32	17.11404	32.95229	-75.79962	68.52764

* the estimated litigation risk is shown as the percentage.

Descriptive Statistics for firms without D&O insurance

Variable	Obs	Mean	Std. Dev.	Min	Max
D&O	49	0	0	0	0
lnasset	49	15.89804	0.9683525	13.73696	18.9839

inventory	49	1615700	1926226	97554	8741797
receivable	49	1744901	1963524	222711	1.24E+07
ROA	49	7.657755	8.515531	-8	32.39
Current ratio	49	43.50102	15.81472	16.18	77.03
financial leverage	49	5.231837	15.33214	-6.36	107.6
sales growth	49	24.75224	34.19029	-62.96	123.99
stock return	49	1.279141	0.199725	0.4681	1.5686
beta	49	31.09696	46.33825	-71.8902	131.9323
stock turnover	49	426.6669	272.148	53.23	1050.93
cpa	49	0.4489796	0.5025445	0	1
ROE	49	11.39224	15.10981	-27.3	47.38
estimated litigation risk	49	-10.26559	37.68125	-92.03281	72.16824

* the estimated litigation risk is shown as the percentage.

As can be seen, firms without D&O insurance tend to be small. The mean of the firms with D&O sample is 16.24 in log of the total assets, as compared to 15.9 for the mean in the non D&O sample. The differences are highly significant using the *t*-test. Taken at face value, this is intuitive with the D&O purchasing incentive since previous work has documented a positive relation between firm size and D&O insurance.

The non D&O group has higher beta and stock turnover (the proportion of shares traded at least once in the year prior to resignation, as defined below) than the other. A stylized fact is that class-action lawsuits tend to be precipitated by large drops in stock prices. The more volatile the stock price, the greater the probability of a substantial price drop, leading to higher legal exposure. Stock turnover could also relate to plaintiffs' incentives to initiate lawsuits because shareholder damages typically increase in the number of shares traded at the allegedly wrong price. Turnover is calculated as $[1 - \Pi(1 - \text{volumetradedDayt} / \text{totalsharesDayt})]$.

The non D&O sample has higher stock return than the other sample. The mean return is 1.28, as compared to 0.45 for the with-D&O firms. In addition, the non D&O sample is closer to financial distress as reflected by the lower ROA, lower current ratio, and higher leverage. Firms' financial distress can affect the incentive for purchasing D&O indirectly via its relation with litigation risk since financial distress has been shown to increase the probability of litigation.

To test H1(a), we will compare the mean of the summary measure of litigation risk for the firms with D&O insurance purchase in 2004 with that for the firms without purchasing D&O insurance in 2004.

Group(D&O)	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	49	-10.2656	5.383036	37.68125	-21.0889	0.557726
1	32	17.11404	5.825197	32.95229	5.233473	28.99461
combined	81	0.551052	4.236947	38.13253	-7.88074	8.982846
diff		-27.3796	8.159489		-43.6207	-11.1386

t-statistics	degrees of freedom	Pr(T > t)
-3.3556	79	0.0012

The p-value are statistically significant which shows that the mean of estimated litigation risk in two groups(with vs. without D&O insurance) are significant different. Therefore, our hypothesis 1 is supported that the demand for D&O insurance is to hedge the risk.

4.3. D&O insurance and firm performance

Our next question is to test whether the firms purchasing D&O insurance have higher operation performance. We use return on equity (ROE) as the performance measure to test hypothesis 2. We group our sample into two sub-samples, one with D&O insurance and one

without D&O insurance, based on 2004 D&O insurance data. We then compared the performance difference of the two groups with respect to their ROE.

Group(D&O)	Obs	Mean	Std. Err.	Std. Dev.	[95% Conf. Interval]	
0	49	11.39224	2.158544	15.10981	7.0522	15.73229
1	32	14.13781	3.396797	19.21519	7.209999	21.06563
combined	81	12.47691	1.865482	16.78934	8.764486	16.18934
diff		-2.74557	3.827585		-10.3642	4.87305

t-statistics	degrees of freedom	Pr(T > t)
-0.7173	79	0.4753

The p-value are not significant which shows that the mean of the performance in two groups (with vs. without D&O insurance) are not in significant difference. This finding does not hypothesis 2. However, we shall not interpret this result as the proof that D&O insurance has no effect on the firm performance.

In fact many factors can affect the firm performance. In order to draw a meaningful conclusion, we need to further study the board of directors structure and the experiences.

5. Conclusion

In this paper, we refine the risk assessment test and find that the demand for D&O insurance is driving by the risk concerns of the firms. This result is consistent with the previous literature. Our contribution is to introduce a new risk estimation method and find the result is robust. However, we can not find the performance difference between the two groups, with and without D&O insurance. This result may be subject to estimation error, because the firms buying the D&O are experiencing higher risks. The D&O insurance may encourage better board members and subsequently improves the operation risk and performance, comparing with its own. In this paper, we derive the conclusion based on the group comparison which may be problematic.

In the future research, we many need to look at the board structure to infer the effect of D&O insurance on the firms operation. The performance measures may be required to make the risk adjustment before using for comparison.

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