

## DECISION TO GO PUBLIC: EMPIRICAL ANALYSIS ON FINANCIAL INDUSTRIES IN TAIWAN

Lin-Yhi CHOU<sup>1</sup> and Shin-Herng Michelle CHU<sup>2</sup>

**Abstract:** *Data from Taiwan's banks and insurance companies over the period from 1981 to 2007 were used to analyze factors that motivate managers when making going public decision. In general, obtaining new capital, establishing business holding companies and conforming to capital requirement set by the regulators are factors that affect the going public decision for both banks and insurance companies. In addition, high financial leverage banks have a high probability seeking public listing, which supports the risk diversification motive. For insurance companies, the motive for public listing includes enhancing company image and increasing revenue.*

**Keywords:** *banking industry, insurance industry, going public, acquisition, diversification and risk sharing, requirement operating capital regulations.*

### 1. INTRODUCTION

Why do firms go public? Capital markets theory suggested that obtaining new funds, enhancing company image, and exploiting investors' mispricing are important reasons for initial public offerings (IPOs). Studies by Pagano, Panetta and Zingales (1998), Fischer (2000) and Boehmer and Ljungqvist, (2004), they examined the determinants of IPOs using private firms in Italy and in German market. Their results indicated that asset scale, age, and profitability of a firm are important factors that affect private firms' decision to go public. Rosen *et. al.* (2005) showed that risk diversification as well as merger and acquisition (henceforth M&A) activities are major motives for U.S. banks to go public. Similar to Pagano, Panetta and Zingales (1998)'s study, Shen and Wei (2007) compared firms that choose IPOs and those that do not in Taiwan's market. Their findings suggested that information asymmetry, listing costs, liquidity, owners' diversification desire, and market timing are factors influencing IPO decisions.

In Taiwan, the capital market has an unique regulatory environment, that is, the government requires all firms that exceed a minimum asset size to file financial

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<sup>1</sup> Department of Finance, China University of Science and Technology, Taiwan.

<sup>2</sup> Department of Finance, Feng Chia University, Taiwan. *E-mail: chush@fcu.edu.tw*

statements with the security exchange official, even if their shares are not publicly traded. In addition, banks and insurance companies are required to go public if their operating capital exceeds the threshold set up by the regulators. Given this unique legal environment, we follow the methods proposed by Rosen *et. al.* (2005) and examine the factors that motivate firms in Taiwan's banking and insurance industries to go public. We further discuss the relation between the enforcement of industry-specific regulations and going public decision.

We use a sample of public and private banks and insurance companies over the period from 1981 to 2007 to construct a matched sample of firms that go public and otherwise that stay private. Pre-issue data is available for most sample firms in Taiwan owing to regulations. Specifically, the government requires all firms that exceed a minimum asset size to file financial statements with the SEC there, even if their shares are not publicly traded. The regulations in Taiwan permit us to identify firms that met IPO requirements but chose not to go public. Also, the unique regulatory environment allows a clear comparison of firms that choose IPOs and those that do not.

Our empirical findings suggest that banks with poor profitability were unlikely to go public, however, the establishment of a financial shareholding group was also a key factor that affected companies to go public. As for the insurance companies, increase in profitability and insurance premium are major factors that drive the going public decision. We also found that insurance companies with a low liabilities-to-assets ratio were more likely to go public, suggesting that increasing operating capital standards may be an influential decision factor for going public.

Different from Shen and Wei (2007), we find strong evidence that IPOs are not motivated by financing needs or constraints. Nevertheless, some of our results are consistent with theirs—in particular, we find that larger and profitable firms are more likely to list equity. Other findings in our study also provide support for, though not overwhelmingly, information asymmetry, listing costs, liquidity, owners' diversification desire, and market timing as factors influencing IPO decisions. Finally, we present support to the hypothesis that venture capital provide certification to firm credibility.

In the next section we describe regulations and legal environment regarding going public in Taiwan. In the following section, we review the relevant theoretical and empirical literature on the decision to convert to public ownership. Section four depicting the data collected and defining the variables; section five describes the empirical models and reports our findings. The last section summarizes concluding remarks.

## **2. LISTING REGULATIONS AND ENVIRONMENT IN TAIWAN**

This section introduces applicable laws and regulations on listing for banking and insurance industries in Taiwan. We further draws implications from the impact of these regulations on going public decisions. The applicable regulations include the requirements for minimum registered capital, bank credit granting, and depositing a special operating reserve.

### **2.1 Listing Related Regulations**

In accordance with the regulation provided by the Financial Supervisory Commission (Taiwan), before 1990, the minimum operating capital of banks and insurers was NTD50 million; after 1990, the minimum level has significantly increased to NTD10 billion for banking industry and NTD2 billion for insurance industry. In latter cases, a bank should have sufficient deposit of NTD10 billion, the required minimum operating capital and an insurance company NTD2 billion, where the deficiency should be made up within 10 years. As the increase in the minimum operating capital raises operating cost for financial industry, the increase is expected to have a positive impact on the likelihood of going public for insurance companies. Before the release of the regulations provided above, for example, there were merely 10 listed banks and 2 listed insurers; after the releases, there were still 24 banks while the number of listed insurance firms was increased to 11.

Lending is one of the major business activities in Taiwan's banking industry. To garner more fund for lending as well as collecting more service charge (such as arrangement, participation, underwriting, commitment, agency, consultant, and lawyer fees) and interest, a bank may choose to go public with fundraising. A larger lending amount, however, will entail high default risk. Thus, banks should provide 2%~100% of lending amounts as an allowance for bad debts, in accordance Article 5 of the Regulations Governing the Procedures for Banking Institutions.

When there is a higher probability of loss in insurance industry, more operating reserves should be deposited (Article 11 of the Insurance Law). Such operating reserves include policy reserves, unearned premium reserves, special reserves, loss reserves, and other reserve funds. Policy reserves are the value of insurance proceeds. Unearned premium reserves are provided for unearned premium. Special reserves are prepared for any contingency that a company may face. If a company suffers a loss amount larger than total operating reserves and its capital is less than the minimum operating capital, original shareholders should invest more funds and therefore will encourage the company to go public with fundraising, in which they may also sell securities in a public market.

## 2.2 Listing Environment

Listed banks and insurance companies are provided in Table 1.<sup>1</sup> There were 30 sample banks listed in TWSE (Taiwan Stock Exchange), with an average operating history of 41 years. Apart from the above, there were 15 private banks with an average operating history of 48 years, indicating that private banks had a longer operating history. In insurance industry, there were 11 listed insurance companies with an average operating history of 50 years and 12 non-listed insurance with an averaged operating history of 27 years, indicating listed insurance companies had a longer operating history.

**Table 1**  
**Numbers of Listed Banks and Insurance Companies in Taiwan**

This table reports the numbers of Taiwan's listed banks and insurance companies. Bank sample was studied between 1981 and 2007, and the insurance company sample was studied between 1989 and 2005. After 1990, banks and insurance companies were required to increase minimum operating capitals. This regulation led to a rapid increase in the numbers of listed banks between 1993 and 1995, and in the numbers of listed insurance companies between 1992 and 1995. There were 6 banks and 1 insurance company listed on the stock exchange before 1983, and these companies were excluded from the listing sample. Foreign companies cannot list on the stock exchange, thus these companies were deleted from the entire sample.

<i>Year</i>	<i>Numbers of listed banks</i>	<i>Numbers of banks in the sample</i>	<i>Listed Banks</i>
<i>Panel A: Numbers of Listed Banks in the sample</i>			
1983	2	5	IBTAIPEI KTB
1984	2	5	Kaohsiung Busi. Bank Taichung Bank
1985	0	6	
1986	0	7	
1987	0	8	
1988	0	10	
1989	0	10	
1990	0	10	
1991	1	13	CTCB
1992	0	13	
1993	0	16	
1994	1	20	Farmers Bank
1995	0	32	
1996	3	37	CTB Cathay United Bank Jih Sun Bank
1997	3	41	Grand Com. Bank Dah AnTaipei Fubon Bank

*Cont. table 1*

<i>Year</i>	<i>Numbers of listed banks</i>	<i>Numbers of banks in the sample</i>	<i>Listed Banks</i>
1998	11	41	Taiwan Business Bank Cathay Bank Bank of Kaohsiung Cosmos Bank Union Bank of Taiwan Bank Sino Pac E.Sun Bank Fubon Bank Yuanta Bank Taishin Bank Far Eastern Bank
1999	4	42	The Chinese Bank Chung Shing Bank Ta Chong Bank En Tie Bank
2000	1	42	Ind. Bank of Taiwan
2001	0	44	
2002	0	43	
2003	0	42	
2004	1	41	TCB Bank
2005	0	38	
2006	0	37	
2007	1	33	BOT

  

<i>Year</i>	<i>Numbers of listed insurance companies</i>	<i>Numbers of insurance companies in the sample</i>	<i>Insurance companies</i>
<i>Panel B: Numbers of listed insurance companies in the sample</i>			
1992	1	14	Union Ins.
1993	2	16	Shin Kong Life Fubon Ins.
1994	1	18	Chung Kuo Insurance
1995	1	19	China Life Insurance
1996	0	20	
1997	2	23	TFMI Taiwan Life Ins.
1998	0	23	
1999	1	23	South China Insu.
2000	3	23	Shinkong Insurance Central Reinsurance First Insurance

During 2002-2007, there were 16 consolidation cases in Taiwan, which has formed a new type of organization-financial shareholding companies. Bidding companies were 11 parent companies of the financial shareholding companies and 4 independent banks. Target banks were 10 independent banks and 6 state-owned banks, two of which were considered to be financially distressed.

In insurance industry, there were merely two insurance companies sold in the securities market. By contrast, there were only two listed insurance agencies with acquisition records, suggesting a weak relation between M&A activities and the decision for going public among banks and insurance companies.

According to Handler's (1989) definition, a family-held company refers to a company where there are two or more seats in the board of directors held by a family. We have 8 family-held banks in Taiwan, accounting for a quarter of listed banks. Only 4 insurance companies were family-held, accounting a third of listed insurance companies. As all of these family-held companies established financial holding companies between 2002 and 2007, this paper is designed to use financial holding companies as dummy variables in replacement of family-held companies.

### 3. RELEVANT LITERATURE ON GOING PUBLIC DECISION

Previous literature document the motives of going public, including obtaining new funds, enhancing company image, and exploiting investors' mispricing of company stocks. In this section, we discuss the theoretical and empirical going public decision literature, with a focus on the effect of government regulations on the IPO decision.

#### 3.1 Theory

Röell (1996) argues that obtaining new funds is one of the objectives of going public. The purpose of raising funds would be the genuine motives for choosing to go public. Based on previous literature, these motives encompass M&A activities, reducing financial leverage, liquidity, risk diversification, and sell-out of the company.

Buckland and Davis (1989), Ransley (1984) and Pagano *et. al.* (1998) study the motives for outside financing among companies in USA, UK, and Italy. They show that M&A activities do affect managers' going public decision. , argues that IPO serves as a forerunner to the firm being acquired. Since the owner of the firm can sell shares in the equity market to dispersed shareholders while retain enough voting control, this allows the owner to exact future buyer's private benefits. From a survey analysis conducted by Ransley (1984), the results indicate that 53 percent of British managers regard M&A the main reason for going public.

Reducing financial leverage is also a motive for going public. Gavish and Kalay (1983) and Dewatripont and Tirole (1994) and Röell (1996) conclude that debt financing will increase financial risk for investors and therefore equity financing can be an alternative approach to lower financial leverage of a firm.

A pioneer work by Pickens (1987) proposes that liquidity may lead to appreciation of future equity capital. Models set up by Pagano and Röell (1998)

and Brennan and Franks (1995) suggest that founding shareholders prefer selling securities to diversified investors to prevent excessive intervention from external shareholders. In general, increasing stock liquidity is also a reason for companies to raise capital in a public market. However, trading costs can be a heavy burden for small firms, hence, may deter small firms from going public successfully.<sup>2</sup>

There are two articles proposing that the dissemination cost would affect the decision for going public. Subrahmanyam and Titman (1999) document that when the dissemination cost is lower, the number of investors will be dramatically increased, resulting in the choice of public fundraising. Chemmanur and Fulghieri (1999) point out that a large and old company is more likely to acquire funds from investors with higher liquidity when the dissemination cost is lower.

On the subject of risk sharing being one of the reasons for firms to go public, Pagano (1993), Stoughton and Zechner (1998) and Chemmanur and Fulghieri (1999), show that it is more likely for a company to choose going public when it encounters high risk. This is mainly because that the expected loss of a company with high risk will be larger in the future, and therefore founding shareholders would encourage public trading to alleviate the average loss they will assume.

Going public enhances company image and revenues. According to the analysis by Ransley (1984), 36 percent of British managers and, according to Rydqvist and Högholm (1995), 67 percent of Swedish managers suggest that going public may be helpful to product sales and profitability for a company.<sup>3</sup> Helwege and Packer (2001) and Albornoz and Pope (2004) assume that going public may facilitate consumers' understanding of the company's advantages and garner more customers with higher revenues.

### **3.2 Empirical Evidence**

Among empirical literature references involving the discussion about going public, empirical findings by Pagano *et. al.* (1998) are quoted most frequently. They find that when the market-to-book value of equity in the same industry becomes larger, it indicates a higher growth expected, thereby encouraging the company to go public. In addition, they deemed the scale of a company the second important factor for decision for going public in Italy. The probability of going public will be higher for larger firms. In the U.S. banking industry, Rosen *et. al.* (2005) found that consolidation is one of the major motives for going public among banks. In addition, the ratio of loans-to-assets is positively correlated with the probability of going public.

Shen and Wei (2007) studied non-financial companies in Taiwan and found that if a company has higher expected risk, its investors will require higher return

on investment, and therefore the company will have lower cash flow and is more likely to go public. Alternatively, it is also found that a Taiwanese company with a larger operating scale will have a higher probability of going public. Increasing stock liquidity in the market is also one of the motives for public trading among financial institutions. However, it is more significant in the number of Taiwanese listed firms acquiring other companies than private firms. In light of the argument, going public is a step toward consolidation and acquisition.

Sah and Stiglitz (1986), Allen and Gale (1999) suggest that high financial leverage will increase the probability of going public. Rosen *et. al.* (2005) found that a bank with higher debts is more likely to go public. However, Albornoz and Pope (2004) and Shen and Wei (2007) found that the debt-to-asset ratio is negatively correlated with the probability of going public, based on the reason that listing regulations may stop a company with a high debt-to-asset ratio from going public.

Compliance with applicable regulations is also an objective of public trading for financial industry (such as compliance with regulations governing the minimum capital and credit rating). If the minimum operating capital is elevated and new capital regulations are enforced, a bank will choose public trading for legal compliance. However, as data from US banks in the study by Rosen *et. al.* (2005) do not include those obtained from banks failing to comply with legal requirements, it is impossible to understand the relation between enforcement of regulations and the probability of going public.

In insurance industry, equity financing always involves the issue about demutualization. However, demutualization among insurance agencies does not necessarily mean public trading, because the motives for going public for insurance companies have seldom expressly addressed in early literature and, besides, the relation between regulations and the probability of going public has never been examined. This study is intended to use regulations as one of the control variables for examination of its relation with public trading.

#### **4. SAMPLE**

In this section we will introduce our data sources, sample selection and statistical characteristics of each variable.

##### **4.1 Sources and Samples**

Financial statement figures for public banks and insurance companies are exacted from the data bank developed by the Taiwan Economic Journal (TEJ). Data regarding non-listed banks and insurance agencies were obtained from annual reports of companies during 1981-2007. To avoid the impact from 2008 worldwide



financial crisis, sample period is cut off by the end of 2007. The financial sector in Taiwan is relatively small, our sample consist of 30 listed and 15 non-listed banks, 11 listed and 12 non-listed insurance companies over the sample period. A total of 68 local banks and insurance companies.

During 2001-2007, there were 12 financial shareholding companies established in Taiwan. These financial shareholding companies hold 12 banks and 7 insurance agencies, which after establishment of business holding companies would be excluded from our samples. Thus, this paper address this problem by constructing an artificial holding company structure to backfill the data for business holding companies that own a single bank.

There were 14 bidding banks and 5 bidding insurance companies consolidating 16 independent banks and 7 insurance agencies during 1997-2007, however, only 9 banks and 2 insurers of which were listed. This is quite similar to target firms where only 10 banks and 2 insurers were listed firms.

#### **4.2 Summary Statistics**

Table 2 shows descriptive statistics of the variables and Table 3 shows the difference between listed and non-listed companies. Panel A of Table 3 shows the difference in characteristics between listed and non-listed banks. Taiwan's listed banks have larger operating scale. For example, the average asset (NTD 3187 billion) of listed banks is significantly larger than that (NTD 1181 billion) of non-listed banks. Moreover, the total equity of listed banks is NTD 205 billion and that of non-listed banks was NTD 79 billion. However, expansion of a bank usually accompanies tremendous debts, and the difference among the means is at the significance level of less than 5% ( $t = -7.252$ ). As listed banks have larger operating scale, and the number of branches and the number of employees of listed banks are higher than those of non-listed banks. The difference among the means is at the significance level of less than 10%. Listed banks have a higher growth rate, with the difference among the means at the significance level of less than 5%.

Making loans is one of the major services provided by financial institutions. Listed banks' means of loans are NTD 2,073 billion and non-listed banks' means of loans are NTD 640 billion. However, listed banks have higher operating risk; for example, both the amount of bad debts and the bad debts ratio of listed banks are higher than those of non-listed banks, with the difference among the means at the significance level of less than 1%.

Listed bank has a higher chance of becoming acquiring firm in the market (an average of 0.271), when compared to private bank. However, listed banks do not have a higher chance of being target companies.

**Table 2**  
**Summary Statistics**

In Panel A, the summary statistics refer to the bank sample between 1981 and 2007, and in Panel B to the insurance company sample between 1989 and 2003. The samples consisted of 45 local banks and 23 local insurance companies. Financial distress company's total equities are less than zero. Return on assets is EBITDA (earnings before interest, taxes, depreciation, and amortization) over total assets. Return on equities is EBITDA (earnings before interest, taxes, depreciation, and amortization) over total equity. Cash-to-equity ratio is amounts of cash to total equity. Bank age is banks' operating history and Insurance companies' age is insurance companies operating history. Chargeoff-to-loans ratio is amounts of uncollectable accounts to amounts of loans per bank. Amounts of claims gap are amounts of claims minus amounts of operating reserves.

	<i>Mean</i>	<i>Standard deviation</i>	<i>Minimum</i>	<i>Maximum</i>
<i>Panel A: Banks</i>				
Total Assets (in million dollars)	2,464,147	3,473,331	14,599	41,307,822
Total equities (in million dollars)	159,825	214,133	-600,658	2,764,114
Total liabilities (in million dollars)	2,304,322	3,288,904	1,082	38,543,708
Amounts of loans (in million dollars)	1,556,248	2,033,155	226	16,988,479
Return on Assets (percent)	0.035	0.182	-1.77	1.8
Assets growth rate (percent)	0.147	0.62	-1.075	10.661
Amounts of uncollectable accounts (in million dollars)	16,023	29,234	0	244,162
Numbers of branches	48	36	5	299
Amounts of cash	10,159,777	93,678,896	0	2,371,193,182
Amounts of deposits (in million dollars)	2,822,376	3,805,919	36,728	25,095,224
Numbers of employees	1,957	1,747	98	8,792
Amounts of salaries per bank in ten thousand dollars	1,957,532	2,129,167	96,432	10,998,489
Return on equities (percent)	0.453	2.661	-34.583	17.058
Bank age	41.005	21.999	8	94
Liabilities-to-assets ratio (percent)	0.929	0.162	0.01	3.034
Loans-to-assets ratio (percent)	0.629	0.182	0.001	2.226
Chargesoff-to-loans ratio (percent)	0.011	0.02	0	0.263
Deposits per branch in million dollars	55,099	47,471	2,295	434,196
Salary per employee in million dollars	12	20	2	275
Cash-to-equity ratio (percent)	0.567	0.877	0	8.578
Market-to-book ratio of equity in the same industry	3.888	4.885	0.870	29.840
Sample size			491	
<i>Panel B. Insurance companies</i>				
Special reserves in million dollars	14,530	15,736	0	90,989
Amounts of reserves million dollars	369,979	1,080,697	0	9,718,435
Amounts of cash (in million dollars)	74,875	136,883	0	964,575

*Cont. table 2*

	<i>Mean</i>	<i>Standard deviation</i>	<i>Minimum</i>	<i>Maximum</i>
Amounts of assets (in million dollars)	491,558	1,355,272	4,109	12,292,219
Amounts of liabilities (in million dollars)	438,754	1,282,475	34	11,692,263
Amounts of equities (in million dollars)	52,804	90,810	-30,326	698,822
Amounts of claims (in million dollars)	60,762	105,567	0	905,282
Direct premiums written (in million dollars)	133,237	234,925	0	1,503,113
Return on assets (percent)	0.201	0.2272	-0.558	0.287
Assets growth rate	200	2,273	0	29,749
Numbers of employees	2,413	4,933	50	27,466
Salaries per insurance company in million dollars	10,944	23,119	542	175,231
Return on equities (percent)	0.654	0.431	-0.237	4.601
Insurance company's age	37.288	18.366	13	76
Liabilities-to-assets ratio (percent)	0.74	0.232	0.00369	1.441
Claims-to-direct written premiums ratio (percent)	0.002527	6.687	0	1
Direct premiums written per employee in million dollars	125	236	0	1,573
Salary per employee in million dollars	7	8	0.28	74
Cash-to-equity ratio (percent)	2	16	-117	231
Amounts of claims gap per equity	-8.428	70.547	-995.13	324.57
Market-to-book ratio of equity in the same industry	3.932	4.380	0.870	29.840
Sample size			273	

Panel B of Table 3 shows the difference in characteristics among listed insurance companies and non-listed insurance companies. In Taiwan, a listed insurance companies have larger operating scale than the private insurance companies. For example, the mean asset size of the listed insurance companies (NTD 851 billion) is significantly higher than that of non-listed insurance companies (NTD 195 billion). Those public insurance companies that have larger operating scale, also have more employees than the non-listed insurance companies. In addition, the total equity of listed insurance companies (NTD 90 billion) is also higher than the private insurance companies (NTD 21 billion).

As insurance premiums are major source of revenues for an insurance company, Taiwan's listed insurance companies have higher premium revenues than the non-listed insurance companies. Besides, listed insurance companies with higher premium revenues are required to provide more reserves. To measure operating risk of an insurance company, we deduct the claim amount from operating reserves and find that listed insurance companies have a lower net amount of claim (negative NTD 554 billion), indicating that listed insurance companies have stronger solvency.

**Table 3**  
**The Difference in Mean analysis–non-listed companies and listed companies**

This table presents descriptive statistics for listed companies and non-listed companies in the year of the IPO. Bank sample consisted of 30 listed and 15 non-listed local banks between 1983 and 2007, and insurance company sample consisted of 11 listed and 12 non-listed local companies over the period from 1992 to 2005. S.D. is standard deviation. Two-sample t test assumed unequal variance if the t test for variance equality was rejected at the 10 percent level. Bank results are reported in panel A, and insurance companies were showed on panel B.

	<i>Non-listed banks</i>		<i>Listed banks</i>		<i>Mean difference</i>
	<i>Mean</i>	<i>S.D.</i>	<i>Mean</i>	<i>S.D.</i>	<i>t-value</i>
<i>Panel A: Banks</i>					
Total Assets (in N.T. million dollars)	1,181,266	2,828,357	3,187,903	3,595,299	-7.334***
Total equities (in N.T. million dollars)	79,156	201,321	205,335	207,857	-7.493 ***
Total liabilities (in N.T. million dollars)	1,102,110	2,643,690	2,982,567	3,423,462	-7.252***
Amounts of loans (in N.T. million dollars)	639,954	694,545	2,073,188	2,336,052	-9.137***
Return on Assets (percent)	0.083	0.291	0.008	0.047	5.086***
Assets growth rate (percent)	0.078	0.132	0.186	0.767	-2.137**
Amounts of uncollectable accounts (in N.T. ten thousand dollars)	521,938	824,280	2,211,776	3,458,937	-7.338***
Numbers of branches	41	35	51	36	-3.540**
Amounts of cash	14,765,210	155,268,980	7,561,554	12,013,103	0.938
Amounts of deposits (in N.T. million dollars)	3,133,287	5,149,823	2,646,970	2,767,182	1.561
Numbers of employees	1,788	1,912	2,052	1,641	-1.848*
Amounts of salaries per bank in N.T. million dollars	22,405	26,560	17,978	17,475	2.548***
Return on equities (percent)	1.102	4.305	0.087	0.525	4.733***
Bank age	48	20	37	22	5.818***
Liabilities-to-assets ratio (percent)	0.919	0.127	0.934	0.179	-1.126
Loans-to-assets ratio (percent)	0.614	0.252	0.637	0.125	-1.559
Charges off -to-loans ratio (percent)	0.008	0.012	0.012	0.023	-2.262***
Deposits per branch in N.T. million dollars	63,365	55,613	50,436	41,543	3.350***
Salary per employee in N.T. million dollars	18	31	8	5	6.486***
Cash-to-equity ratio (percent)	0.672	1.058	0.508	0.750	2.303**
Probability of bidding company	0.125	0.331	0.271	0.446	-4.172***
Probability of target company	0.305	0.461	0.306	0.462	-0.035
Numbers of observation			320		

*Cont. table 3*

	Non-listed insurance companies		Listed insurance companies		Mean difference
	Mean	S.D.	Mean	S.D.	t-value
Special reserves in million dollars	8,610	8,877	21,737	18,968	-8.610***
Amounts of operating reserves in N.T. million dollars	147,430	335,202	642,600	1,527,725	-4.411***
Amounts of cash (in N.T. million dollars)	36,324	46,046	121,806	187,267	-6.169***
Amounts of assets (in N.T. million dollars)	195,693	424,086	851,742	1,905,212	-4.683***
Amounts of liabilities (in N.T. million dollars)	174,236	402,393	760,777	1,808,909	-4.410***
Amounts of equities (in N.T. million dollars)	21,457	30,300	90,964	120,667	-7.774***
Amounts of claims (in N.T. million dollars)	34,128	63,534	93,185	133,978	-5.469***
Direct premiums written (in N.T. million dollars)	78,523	134,739	199,847	304,204	-5.018***
Return on assets (percent)	0.364	0.303	0.028	0.029	1.511
Assets growth rate (percent)	364.889	3061.051	0.075	0.090	1.512
Numbers of employees	1,586	2,558	3,420	6,656	-3.553***
Salaries per insurance company in N.T. million dollars	5,049	5,118	18,120	32,603	-5.532***
Insurance company's age	27	17	50	11	-14.740***
Liabilities-to-assets ratio (percent)	0.743	0.277	0.740	0.154	0.129
Return on equities (percent)	1.1951	5.775	0.105	0.208	2.617***
Direct premiums written per employee in N.T. million dollars	98	186	160	283	-2.464***
Amounts of claims gap per equity	-11.59	88.213	-2.869	5.244	-1.300
Cash-to-equity ratio (percent)	3.008	21.825	1.756	2.578	0.721
Probability of bidding company	0.008	0.273	0.009	0.289	-2.930
Probability of target company	0.328	0.471	0.009	0.289	5.144***
Numbers of observations			136		

\* represents 10% significance level, \*\* represents 5% significance level, \*\*\* represents 1% significance level.

Lastly, Non-listed insurance companies have a higher chance of being target firms (average = 0.382), in contrast with that of listed insurance companies (average = 0.009). However, listed banks do not have a higher chance of being target firms.

### 4.3 Variable Definitions and Methodology

In this section, we introduce the definition of variables and set up the empirical models. The expected relation between each variable and the probability of going public is shown in Table 4. From the previous literature, factors that are important

to the going public decision include obtaining new funds, enhancing company image, and exploiting investors' mispricing. Followings are variables used in the probit model for each of the above IPO decision factor.

Table 4

#### A. Obtaining new funds Determinants of the decision to go public

Probit model estimates the effect of the variables listed on the probability of going public, and estimation method is maximum likelihood. There are two samples to test the effect of the variables listed on the probability of going public (Rosen *et. al.* (2005) approach and Pagano *et. al.* (1998) approach). From, Rosen *et. al.* (2005) dependent variable is 0 if the company belongs to the category of non-listed company and 1 if the company belonged to the category of listed company. We present results whole sample in column (3 years prior through 5 years post, with at least two years prior and three years post of data). On the other hand, Pagano *et. al.* (1998)'s dependent variable is 0 if the company is not listed and 1 at the year of listing (observations for public companies are dropped from the sample). We present results in the sub sample column. ROA is return on assets. Bank results are reported in panel A, and insurance company results are reported in panel B. Business holding company dummy is 1 if the company belongs to the category of business holding company and 0 if the company does not. T81 to T106 are year dummy variables. For example, T81 represents companies that survived in 1981, and T106 represents companies that survived in 2006. Standard errors are in parentheses.

Variable	IPO	
	Whole sample	Sub sample
<i>Panel A: Banks</i>		
Constant	-11.240 *** (1.483)	-12.505 *** (1.919)
Log total assets	0.583 *** (0.072)	0.598 *** (0.095)
Assets growth rate	0.228 (0.170)	0.243 (0.190)
ROA	-1.481 *** (0.830)	-2.124 *** (0.719)
Liabilities-to-assets ratio	0.447 (0.371)	1.109 * (0.585)
Loans-to-assets ratio	0.348 (0.322)	0.551 (0.645)
Bank age	-0.008 *** (0.003)	-0.012 *** (0.004)
Business holding companies dummy	0.425 * (0.134)	0.329 *** (0.178)
Branches	0.001 (0.003)	0.004 (0.004)
Deposits per branch	-0.016 (0.026)	0.015 (0.033)
T91	0.601 (0.516)	0.960 * (0.544)
Sample Size	491	320
McFadden R-squared	0.294	0.341

Cont. table 4

<i>Variable</i>	<i>IPO</i>	
	<i>Whole sample</i>	<i>Sub sample</i>
<i>Panel B: Insurance companies</i>		
Constant	-17.619 *** (2.377)	-31.479 *** (6.669)
Log total assets	0.941 *** (0.145)	1.877 *** (0.407)
Assets growth rate	-3.054 *** (1.128)	-4.780 *** (1.444)
ROA	3.054 *** (1.128)	4.780 *** (1.444)
Liabilities-to-assets ratio	-3.262 *** (0.748)	-4.626 *** (1.361)
Claims-to-premiums ratio	0.003 (0.011)	-0.967 (1.448)
Insurance companies' age	0.100 *** (0.011)	0.104 *** (0.026)
Business holding companies dummy	1.208 *** (0.263)	1.480 ** (0.680)
Direct premiums written per employee	0.058 * (0.033)	0.038 *** (0.013)
T92	0.939 (0.676)	1.622 * (0.848)
Sample Size	273	136
McFadden <i>R</i> -squared	0.592	0.712

\* represents 10% significance level, \*\* represents 5% significance level, \*\*\* represents 1% significance level.

Generally, the motives for obtaining new funds include liquidity, M&A activities, reducing financial leverage and risk diversification. Variables under this IPO motivation are:

### *Log of Assets*

Chemmanur and Fulghiere (1999) argue that a larger and older company has a lower dissemination cost. This study measures a company's operating scale by the log of assets and expects a positive correlation between the operating scale and the probability of public trading.

### *Age of a Bank or Insurance Company*

The age used in this study refers to the operating age, which is calculated by deducting the establishing year from 2007. A young firm usually suffers higher dissemination cost and is unlikely to find investors, and therefore has a lower probability of going public. Therefore, the company's age should be negatively correlated with the probability of going public.

### ***Financial holding companies***

Rosen *et. al.* (2005) found a positive relation between financial shareholding companies and the probability of public trading. We set up a dummy variable, if sample banks and insurance companies are subsidiaries to a business holding company, this variable takes on a value of one, zero otherwise.

### ***Growth of amounts of assets per year***

We use annual growth rate in total assets to proxy the growth of a firm. The annual asset growth rate is expected to be positively correlated with the probability of going public.

### ***Ratio of Debt to Asset***

Reducing financial leverage is a motive for a company to choose financing sources. According to the pecking order theory developed by Myers and Majluf (1984), equity capital is at the bottom of the pecking order. For this reason, this paper follows previous literature and uses the ratio of debt to asset as a measure for financial leverage. We expect a positive relation between the ratio of debt to asset and the probability of going public.

### ***Loans-to-assets ratio and Claims-to-premium ratio***

The loans-to-assets ratio and the claims-to-premiums ratio are used to measure the degree of risk diversification for shareholders. Chemmanur and Fulghieri (1999), Fischer (2000) and Shen and Wei (2007), they show that a company with high uncertainty in cash flow is more likely to go public. Uncertainty in cash flow is associated with the default ratio of loans. A bank has to make reserve deposits for overdue loans. If a loan is not repaid 12 months after the closing date, the reserves should be provided as the allowance for bad debts and will be recognized as losses at the end of the fiscal year with the approval of the board of directors. If the company goes public, original shareholders may alleviate such losses incurred from bad debts due to risk sharing and portfolio diversification.

As for insurance industry, when the loss ratio in insurance industry rises, the uncertainty in cash flow will also increase. These two variables are positively correlated with the probability of going public.

After IPO, operating risk in banking industry will rise<sup>4</sup>, banks and insurers may want to obtain more service charge and premiums, and original shareholders may sell part of their shares through public trading to reduce the loss they shall assume. Therefore, we expect to see a positive relationship between the variables of operating risk in banks and insurance companies and the probability of public trading.



### ***Cash-to-equity ratio***

Shen and Wei (2007) argue that a high risk company is characterized as having a high cost of capital and therefore has less cash flow. Furthermore, a company with high risk is more likely to choose going public; thus, we expect a negative correlation between the cash-to-equity ratio and the probability of listing.<sup>5</sup>

### ***B. Enhancing company's image and revenues***

Under the enhancing company's image and revenues as IPO motive, we use the following measures for the probit model:

#### ***Revenues of Banks and Insurance Companies***

According to Albornoz and Pope (2004), customers of a listed company will have more insight into the company's product information, so sales will be easier. Stoughton *et. al.* (2001) argue that a product of a listed company has better quality and the price will be higher, therefore the company may garner higher revenues. Similarly, listed banks may receive more deposits because of high popularity; listed insurance companies may gain credibility from clients. We argue that the average revenue of listed banks will increase, and the insurance premium per policy client for insurance companies will be higher. In this paper, the revenue variable is measured by the average revenue of each bank and the average premium for each insurance company. We expect a positive correlation between revenues and the probability of listing.<sup>6</sup>

#### ***Number of Branches of a Bank***

Rosen *et. al.*,(2005) find there is a positive correlation between the number of branches and the probability of listing, suggesting that a bank would choose going public in consideration that business expansion may generate more revenues. We expect that the number of branches is positively correlated with the probability of public trading.

### ***C. Exploiting mispricing***

#### ***Return on Asset***

This paper uses return on assets (ROA), calculated as the profit for banking and insurance industry (net profit before tax and depreciation) over total assets, as a surrogate variable. ROA represents earnings distributed per dollar of assets. Previous studies showed that a company may choose going public at the time of high profitability while exploiting investors' mispricing.<sup>7</sup>

Pagano *et. al.* (1998) find that the profitability of a company will decline after listing, inferring that a company usually goes public as uncertainty in profit growth is high. Therefore, we expect that the probability of listing will be increased for a company at the time of higher profitability.

Since 1990, government in Taiwan imposed a capital requirement for banks and insurance companies. This paper therefore uses a dummy variable to control the regulatory effect of increasing operating capital.

### *Variable of Increasing Operating Capital*

In the banking industry, the minimum operating capital increase from NTD50 million to NTD10 billion after 1990. Therefore, in the fiscal year 1990, the variable is 1; otherwise, 0. In insurance industry, the operating capital I required to increase from NTD50 million to NTD2 billion after 1992. In the fiscal year of 1992, the variable is 1; otherwise, 0.

Taiwan government requires financial institutions to make up the capital deficiency within 10 years after enforcement of the regulation. To comply with the regulation, the capital investment by shareholders will increase, bank and insurance companies therefore have a higher probability of going public. Therefore, we expect a positive relation between the regulation control variable and the probability of going public.

## **5. PROBIT MODELS AND EMPIRICAL RESULTS**

### **5.1 The Probit Models**

Parallel to Rosen *et. al.* (2005), we use the probit model to verify the relation between probability of listing and the motive for public trading in banking and insurance industry. Further, as there are differences in business between banking industry and insurance sector, surrogate variables of risk sharing are different<sup>8</sup>. This paper applies the same empirical method to examine empirical findings in banking and insurance industries respectively.

#### *The probit model for banks is noted in (1.A)*

IPOBANK =  $f(\log \text{ total assets, Assets growth rate, return on assets (ROA), Liabilities- to-assets ratio, Loans-to-assets ratio, Banks' age, Business holding company, Branches, Deposits per branch, Year dummy})$  (1.A)

#### *For insurance companies, the probit model is noted in (1.B)*

IPOINS =  $f(\log \text{ total assets, Assets growth rate, return on assets (ROA), Liabilities- to-assets ratio, Claims-to-premiums ratio, Insurance companies' age, Business holding company, Direct premiums written per employee, Year dummy})$  (1.B)

Where IPOBANK and IPOINS are probability of going IPO for banks and insurance companies respectively. When  $IPO_{it} = 0$ , it indicates that the company remains private in year  $t$ . If  $= 1$ , this indicates the company issues shares to the public in Year  $t$ .  $F()$  symbolizes an accumulative standard normal distribution function. is a dummy variable which represents the fiscal year. Note that except for the year of capital increase, the coefficients of in Equations (1.A) and (1.B) are not shown in Table 4.

With the reference of Rosen *et. al.* (2005), this paper uses the Probit model to examine whether banks and insurance companies go public for the reason of being acquired. The empirical model is shown in Equation (2).

$$\text{Target} = f(\text{IPO Bank, Log total assets, return on assets (ROA), Liabilities-to-assets ratio, Bank age, Business holding company, Salary per employee, cash-to-equity ratio, Year dummy}) \quad (2)$$

When Target = 1, it indicates that the company is acquired in fiscal year  $t$ ; when Target = 0, it indicates that the company is not acquired in fiscal year  $t$ .  $F()$  symbolizes an accumulative standard normal distribution function. Year dummy is a dummy variable of fiscal year.

We also use the Probit model to examine whether a bank or insurance company goes public for acquisition reason. The empirical model is in Equation (3).

$$\text{BID} = f(\text{IPO Bank, Log total assets, return on assets (ROA), Liabilities-to-assets ratio, Bank age, Business holding company, Salary per employee, cash-to-equity ratio, Year dummy}) \quad (3)$$

When BID = 1, it indicates the company acquires another company in fiscal year  $t$ ; when BID = 0, it indicates the company does not acquire any company in fiscal year  $t$ .  $F()$  symbolizes an accumulative standard normal distribution function. Year dummy is a dummy variable of fiscal year.

## 5.2 Empirical Results

This section empirically examines the motives for going IPO among Taiwan's banks and insurance companies with the Probit model and verify whether an M&A activity is one of the motives for listing. Finally, we use the OLS algorithm to analyze the results after listing. By referring to different characteristics of Taiwan's banking and insurance industries in terms of going public, we divide samples into two parts: banking industry and insurance industry.

### 5.2.1 Determinants of the Decision to Go Public

Table reports the empirical findings of the motives for Taiwan's banks and insurance companies to go public. It is not surprising that the operating scale is a

key factor for decisions to go public. A 1% rise in the asset of a bank will increase the probability of listing by 0.583%, while a 1% rise in the asset of an insurance company will increase the probability of listing by 0.941%.

In addition to the motive for obtaining new funds, larger banks or insurance companies may choose going public due to lower average listing cost (*i.e.* low underwriting cost ratio and certificate fee ratio). Moreover, a larger company may transfer an image of goodwill to consumers through listing; thus it's easier to raise funds through public trading. The positive correlation between the operating scale of insurance companies and the probability of listing is consistent with what was proposed in previous literature (Pagano *et. al.*, 1998, Rosen *et. al.*, 2005; Shen and Wei, 2007). However, in banking industry, the motive for liquidity is proven in this study while the positive coefficient of the scale is insignificant.

In Taiwan, we find that an insurance company with lower asset growth is more likely to choose going public. An insurance company with a 1% increase in assets will decrease the probability of going public by 3.054%, suggesting that when an insurance company sees slow asset growth, the probability of listing will increase dramatically. The main reason is that listed insurance companies are mostly mature firms that suffer slow asset growth due to its decreasing market share since market liberalization. By contrast, there is a positive correlation between the asset growth and the probability of listing in banking industry, which, however, does not show significance in this study. The negative correlation between the asset growth and the probability of IPO is not consistent with the findings proposed by Pagano *et. al.* (1998) and Rosen *et. al.* (2005).

According to past literature, a company may choose going IPO when it garners acceptable ROA (Pagano *et. al.*, 1998; Rosen *et. al.*, 2005). In this study, we found that a 1% increase in ROA for an insurance company will increase the probability of going IPO by 3.054%, significant at the 1 percent level, suggesting that an insurance company may choose going public when it obtains optimal return on assets. The findings are consistent to those in the existing literature. However, the banking industry showed a significantly negative reaction: when ROA decreased by 1%, the probability of listing will be increased by 1.481%, which is also statistically significant, indicating that a bank may choose public trading when it confronts with great losses.

From Table 6, when financial leverage in an insurance company increases by 1%, the probability of listing will also increase by 1.109%. This implies that a bank with higher financial leverage will have a larger probability of listing. Alternatively, in insurance industry, the regulations requiring capital increase will result in lower financial leverage. Given a 1% increase in financial leverage, the probability of going public will increase by 3.262% in insurance industry.

If a young bank or insurance company without long established record in the market chooses to go public, investors may be reluctant to make investment due to unfamiliarity, leading to lack of liquidity for young banks and insurance companies. This argument has been proven in Taiwan's insurance industry. However, there is a negative correlation between young banks and the probability of listing, because non-listed bank have a longer operating history than listed bank in Taiwan. Our result coincides with the empirical finding in respect of US bank data proposed by Rosen *et. al.* (2005).

It is found in this paper that there are motives for increasing corporate reputation and revenues existing in insurance industry. For insurance companies, if the premium revenue increases by 1%, the probability of going public will be significantly increased by 0.058%. The implication is that enhancing corporate reputation is an IPO decision factor to explain why insurance companies choose to go public. However, this motive is not observed in banks, mainly because non-listed banks have a much longer history than listed banks in Taiwan and customers are acquainted with those long established non-listed banks.

Our analysis incorporates dummy variables for regulation enforcement in the model. We found that the legal requirement for capital significantly increases the probability of going public (by 10%) in both banking and insurance industries, suggesting that the regulation of capital increase has a major impact on the probability of IPO in banking and insurance industries.

### ***5.2.2 Do companies go public to sell out to an acquirer?***

Mergers and acquisitions are important motives for managers when making going public decision. Unfortunately, M&A activities in Taiwan's banking and insurance industries are regulated, which may inhibit the consolidation cases for banks and insurance companies. In this study, a probit model is set up to examine the relation between the probabilities of being merged or acquired in listed banks and insurance companies, while, in this model, the bank's scale, profit, leverage, age and payroll are controlled.

Results reported in Table 5 try to answer the question: is a bank (or insurance company) that goes public more likely to be acquired than a bank (or insurance company) that stays private? We found that the probability of being acquired for listed insurance companies is 0.611%, which is lower than the private insurance companies. This indicates that M&A is not a motive for target firms to go public in Taiwan's insurance industry. As for banking industry, there is an insignificantly negative correlation between listed companies and the probability of being acquired.

**Table 5**  
**Is a bank (or insurance company) that goes public more likely to be acquired than a bank (or insurance company) that stays private?**

This table presents probit regressions of the likelihood that a company will be acquired after the listing year. The dependent variable is 1 if company belongs to category of target firm and 0 otherwise. Eleven listed banks and 2 listed insurance companies belong to the category of target banks. Banking results are exhibited in panel A, and insurance company results are exhibited in panel B. Standard errors are in parentheses.

<i>Variable</i>	<i>Target bank</i>	
	<i>Whole sample</i>	<i>Sub sample</i>
<i>Panel A: Banks</i>		
Constant	-6.256*** (1.164)	-6.990*** (1.977)
IPO bank	-0.087 (0.134)	-0.045 (0.187)
Log total assets	0.199*** (0.055)	0.235** (0.096)
ROA	-1.643*** (0.363)	-1.866*** (0.388)
Liabilities-to-assets ratio	0.581* (0.323)	0.656 (0.574)
Bank age	0.026*** (0.003)	0.026*** (0.004)
Business holding companies dummy	0.303 (0.122)	0.263** (0.168)
Salary per employee in ten thousand dollars	2.680E-06 (3.050E-05)	3.790E-05 (6.980E-05)
Cash-to-equity ratio	1.367 (0.671)	-1.610E-08** (6.390E-09)
McFadden <i>R</i> -squared	0.214	0.228
Sample size	491	320
<i>Variable</i>	<i>Target Company</i>	
	<i>Whole sample</i>	<i>Sub sample</i>
<i>Panel B: Insurance companies</i>		
Constant	-1.008 (2.525)	-63.263*** (11.740)
IPO company	-0.611* (0.365)	1.084 (0.660)
Log total assets	0.013 (0.158)	4.262*** (0.805)
ROA	0.209 (0.262)	0.330 (0.303)
Liabilities-to-assets ratio	0.057 (0.672)	3.204** (1.252)

*Cont. table 5*

<i>Variable</i>	<i>Target Company</i>	
	<i>Whole sample</i>	<i>Sub sample</i>
Insurance companies' age	0.004 (0.008)	-0.180*** (0.040)
Business holding companies dummy	-0.886*** (0.213)	-13.877*** (1.807)
Salary per employee in ten thousand dollars	0.168 (0.176)	0.112*** (0.034)
Cash-to-equity ratio	-0.106 (0.111)	-0.025 (0.019)
Amounts of claims gap per equity	0.029*** (0.001)	0.076*** (0.017)
McFadden <i>R</i> -squared	0.160	0.631
Sample size	273	136

\* represents 10% significance level, \*\* represents 5% significance level, \*\*\* represents 1% significance level.

**Table 6**

**Is a bank (or insurance company) that goes public more likely to acquire another bank (or insurance company) than a bank (or insurance company) that stays private?**

This table presents probit regressions of the likelihood that a company will make an acquisition after the listing year. The dependent variable is 1 if company belongs to category of bidding firm and 0 otherwise. Eight listed banks and 2 listed insurance companies belong to the category of bidding banks. Banking results are exhibited in panel A, insurance company results are exhibited in panel B. Standard errors are in parentheses.

<i>Variable</i>	<i>BID bank</i>	
	<i>Whole sample</i>	<i>Sub sample</i>
<i>Panel A: Banks</i>		
Constant	-2.596** (1.317)	-5.897** (2.500)
IPO bank	0.008 (0.160)	-0.360 (0.249)
Log total assets	0.088 (0.065)	0.232* (0.121)
ROA	0.970** (0.406)	2.106*** (0.614)
Liabilities-to-assets ratio	0.263 (0.372)	0.915 (0.578)
Bank age	-0.006** (0.003)	-0.017*** (0.004)
Business holding companies dummy	0.855*** (0.126)	1.432*** (0.194)
Salary per employee in ten thousand dollars	-1.010E-04** (4.050E-05)	-2.390E-04 (1.450E-04)

*Cont. table 6*

<i>Variable</i>	<i>BID bank</i>	
	<i>Whole sample</i>	<i>Sub sample</i>
Cash-to-equity ratio	-0.028 (0.863)	2.430E-08*** (8.260E-09)
McFadden <i>R</i> -squared	0.255	0.346
Sample size	491	320
<i>Variable</i>	<i>BID insurance company</i>	
	<i>Whole sample</i>	<i>Sub sample</i>
<i>Panel B: The insurance company sample</i>		
Constant	-42.534*** (14.578)	-6.244** (2.954)
IPO company	16.610 (10.172)	0.282 (0.205)
Log total assets	2.050** (0.952)	0.374* (0.195)
ROA	-2.323 (1.847)	-0.045 (0.187)
Liabilities-to-assets ratio	-0.850 (1.630)	-0.183 (0.479)
Insurance companies' age	-0.731** (0.309)	-0.012* (0.007)
Business holding companies dummy	-153.188 (56.658)	-0.291 (0.203)
Salary per employee in ten thousand dollars	-0.088 (0.327)	-0.049 (0.126)
Cash-to-equity ratio	-0.215** (0.096)	-0.140*** (0.035)
Amounts of claims gap per equity	-0.183 (0.073)	-0.028*** (0.008)
McFadden <i>R</i> -squared	0.804	0.205
Sample size	273	136

\* represents 10% significance level, \*\* represents 5% significance level, \*\*\* represents 1 % significance level.

Table 6 shows an insignificantly positive coefficient on IPO dummy for both banks and insurance companies. This suggests that there is no difference between the probability of acquiring other companies for listed banks and that for non-listed banks. Similar results are reported for insurance companies.

## 6. CONCLUSIONS

In this study, we attempt to understand why banks or insurance companies go public in Taiwan. Different from U.S. and U.K., banking and insurance industries in Taiwan are subject to special regulatory requirements, thereby leading to



differences between the motives for Taiwan's banking and insurance industries to go public.

Between 2002 and 2007, establishing a financial holding company is the major reason for a bank or insurance agency to go public. These financial shareholding companies first encourage their affiliate bank or insurance company to go public and then exchange their shares with the parent company for compliance with procedures for establishment of a financial shareholding company.

In the year when the requirement for capital increase is enforced, we find that the probability of going IPO for banking and insurance industries increases, suggesting that the regulation requiring operating capital increase will encourage IPO among banks and insurance agencies.

Consistent with the previous studies, *t*. The motives for going public for both banking and insurance industries include obtaining new funds, establishing financial shareholding companies, and complying with requirements for operating capital increase. For banks, going public decision is positively related to financial leverage which supports the risk diversification theory. Enhancing company image and revenues are motives for IPO for insurance companies only.

### *References*

- Albornoz B. and Peter F. Pope, (2004), The determinates of the going public decision: Evidence from the U.K. IVIE working paper.
- Allen, Franklin and Douglas Gale, (1999), Diversity of opinion and the financing of new technologies, *Journal of Financial Intermediation* 8, 68-89.
- Boehmer E. and A. Ljungqvist, (2004), On the decision to go public: Evidence from privately-held firms. Deutsche Bundesbank discussion paper.
- Brennan, M.J. and J. Franks, (1997), Underpricing, ownership and control in initial public offerings of equity securities in the U.K., *Journal of Financial Economics* 45, 391-413.
- Buckland Roger and Edward W. Davis, (1990), The pricing of new issues on the unlisted securities market: The influence of firm size in the context of the information content of new issue prospectuses, *The British Accounting Review* 22, 207-222.
- Chemmanur T. J. and P. Fulghieri, (1999), A theory of the going-public decision. *The review of financial studies* 12(2), 249-279.
- Dewatripont, M. and J. Tirole (1994). A theory of debt and equity: diversity of securities and manager-shareholder congruence, *The Quarterly Journal of Economics* 109, 1027-1054.
- Ellingsen, Tore and Kristian Rydqvist, (1997), The stock market as a screening device and the decision to go public, working paper.
- Fischer, C. 2000, Why do companies go public? Empirical evidence from Germany's neuer market. Working paper, Institute for capital market research and finance, Ludwig-Maximilians University.

- Gavish, Bezalel, and Avner Kalay (1983), On the asset substitution problem, *Journal of Financial and Quantitative Analysis* 18, 21-30.
- Handler, Wendy C. (1989), Methodological issues and considerations in studying family business, *Family Business Review* 2, 257-276.
- Helwege, Jean and Frank Packer, (2001), The decision to go public: evidence from corporate bond issuers. Working paper Ohio University, August.
- Holmstriim, B. and J. Tirole, (1993), Market liquidity and performance monitoring, *Journal of Political Economy* 101, 678-709.
- Myers, Stewart and Nicholas Majluf, (1984), Corporate financing and investment decisions when firms have information that investors do not have, *The Journal of Financial Economics* 13, 187-221.
- Pagano, M., (1993), The flotation of companies on the stock market - a coordination failure model, *European Economic Review* 37, 1101-1125.
- Pagano, M., F. Panetta and L. Zingales, (1995), The stock market as a source of capital: Some lessons from initial public offerings in Italy, *European Economic Review*. 40, 1057-1069.
- Pagano, M. and A. Röell, (1998), The choice of stock ownership structure: Agency costs, monitoring, and the decision to go public, *The Quarterly Journal of Economics* 113, 187-225.
- Pagno M., F. Panetta, and L. Zingales, (1998), Why do companies go public? An empirical analysis, *The Journal of Finance* 72(1), 27-64.
- Pickens, T. Boone Jr., (1987), Boone (Houghton Mifflin, Boston, MA).
- Ransley, R.D., (1984), A research project into the operation and development of the non-listed securities market 1980-1984, Unpublished (London Business School, London).
- Rydqvist, Kristian and Kenneth Hiigholm, (1995), Going public in the 1980s: Evidence from Sweden, *European Financial Management* 1(3), 287-315.
- Röell A. (1996), The decision to go public: an overview. *European economic review* 40, 1071-1081.
- Rosen R.J., S.B. Smart, and C.J. Zutter (2005), Why do firms go public? Evidence from the banking industry. *Working paper*. Federal Reserve System.
- Sah, R. and Ooseph E. Stiglitz, (1986), The architecture of economic systems: hierarchies and polyarchies, *American Economic Review* 76, 716-727.
- Shen, Y. P. and Wei P. (2007), Why do companies choose to go IPOs? New results using data from Taiwan. *Journal of economics and finance* 31(3), 359-367.
- Stoughton, N. and J. Zechner, (1998), IPO-mechanisms, monitoring, and ownership structure, *Journal of Financial Economics* 49, 45-77.
- Stoughton, N., A. Wong, and J. Zechner, (2001), IPOs and product quality, *The Journal of Business* 74, 375-408.
- Subrahmanyam A. and S. Titman, (1999), The going-public decision and the development of financial markets, *The Journal of Finance* 54, 1045-1082.
- Yosha, Oved, (1995), Information disclosure costs and the choice of financing source, *Journal of Financial Intermediation* 4, 3-20.
- Zingales, Luigi (1995), Insider ownership and the decision to go public. *Review of Economic Studies* 62, 425-448.

### **Notes**

- <sup>1</sup> As of 2007, there have been only 58 listed banking/financial companies (36 banks, 12 insurers, and 27 securities firms). However, the market value of these securities accounted for 13.68% of the total market value, making banking/financial industries the third largest sector in Taiwan securities market. The total market value approximated NTD3.74 trillion (around USD124.77 billion).
- <sup>2</sup> See Holmström and Tirole (1993), Pagano (1993), Yosha (1995), Ellingen and Rydqvist (1997), Pagano and Röell (1998).
- <sup>3</sup> Also, Pagano *et al.* (1998) arguet that a subsidiary's going public will raise goodwill capital of the parent company.
- <sup>4</sup> For example, increasing ratio of loan-to- asset, increasing ratio of bad debts to total loans, and increasing claim shortage, in which the total claim amount deducted by operating reserves and them divided by total equity and increasing loss ratio.
- <sup>5</sup> This paper uses the cash-to-equity ratio in place of cash flow. The cash-to-equity ratio measures percentage of cash distributed to shareholders.
- <sup>6</sup> These revenue variables are positively correlated with dummy variables of a listed bank or listed insurance company.
- <sup>7</sup> See Pagano *et al.* (1998), Fisher (2000) and Shen and We (2007).
- <sup>8</sup> *i.e.* the ratio of the loan amount to total assets in banking industry, and the loss ratio in insurance industry.