

## **See No Evils? - Do Risk Factors Matter for the ChiNext IPO Initial Underpricing?**

### **Abstract**

Using a unique dataset, this paper investigates the relationship between the IPO returns and the risk factors disclosed in the IPO prospectuses for 281 ChiNext IPOs from October 30, 2009 to December 31, 2011. Our dataset consists of a universe of 59 risk factors. Our goal is to determine if disclosing of the risk factors has any impact on ChiNext IPO initial returns, after controlling for the market-, firm- and offer-specific characteristics. Our preliminary results suggest that the majority of the 59 risk factors do not matter. The only three risk factors that matter are “business and prospects may be subject to interruptions caused by litigation”, “uncertainty in overseas expansions/ competitions”, and “possible penalty for overdue taxes or insufficient tax withholding.” Concerns for litigation and overdue tax penalty affect both the opening price and the closing price returns on the first day of trading. It is intriguing to find out that contrary to our expectations, the impact of the litigation concern is positive. “Uncertainty in overseas expansions/competitions” is the only significant risk factor for the 21<sup>st</sup> trading day return (monthly closing price return, or MPR). It appears that investors were fully aware of the challenges faced by the younger and smaller Chinese firms in their efforts to expand market shares overseas.

JEL Classification: G12, G14, G15

Keywords: IPO initial underpricing, IPO prospectus, Risk factors, 2SLS model, GARCH\_M model with ARMA adjustment

## **See No Evils? - Do Risk Factors Matter for the ChiNext IPO Initial Underpricing?**

### **1. Introduction**

A major challenge faced by a privately held company that desires to go public is to determine the per share price for its initial public offering (IPO). While an overpriced IPO will dampen market demand, the underpriced IPO undersells the company. The task calls for careful analysis of the multiple facets of many factors; its complexity has led to reach literature aiming to better understand the pricing of IPOs, or, more actually, the underpricing of IPOs.

Since the first wave of hot IPO markets in the 80's, the high initial return on IPOs has been well-documented across global markets. The first Chinese IPO was launched in 1989, and the average initial return exceeded 200% in the first decade of its IPO history. Various factors have been reported for causing the severe underpricing of the Chinese IPOs; however, as its market continues to evolve, many findings are no longer applicable. With the strong economic performance and the unremitting policy changes imposed by the government, the Chinese IPO markets continue to attract great interest among scholars.

This paper examines the information content of IPO prospectuses on initial returns with special focus on the disclosure of risk factors. It is built upon a previous study (Hussein and Zhou, 2014) which investigates the initial returns for 2,219 Chinese IPOs from January 1992 to January 2012. In that paper, we control for both cross-sectional and time-varying volatility, and we find that even though Chinese IPOs provide the highest average of initial returns among all IPO markets, the initial return and its return volatility are significantly and positively correlated. Given that the return volatility proxies for the pricing error<sup>1</sup>, our results indicate that the pricing

---

<sup>1</sup> See Lowry, Officer, and Schwert (2010), and Hussein and Zhou (2014)

error has significant impact on the initial return. This paper attempts to answer our next research question: what are the determinants of the pricing error?

Using a unique dataset, this paper investigates the relationship between the initial returns and the risk factors disclosed in the IPO prospectuses for 281 ChiNext IPOs from October 30, 2009 to December 31, 2011. We are interested in learning if underwriters do apply the information disclosed in the IPO prospectuses in making their underwriting decisions. We select the ChiNext IPOs for several reasons. First, as the newest addition to the Chinese IPO markets – ChiNext was launched on October 30, 2009 and all the ChiNext IPO prospectuses are required to follow a standardized template. Table 1 shows the sample “Table of Contents” for the template. Second, the average gap between the pricing date and listing date for the ChiNext IPOs is 15.79 days and is much shorter than the average gap of 30 days for all other Chinese IPOs during the same period. A shorter gap between the pricing date and listing date narrows the window of market uncertainty; hence makes IPO pricing more relevant. Last, but not least, firms listed on ChiNext market are younger and smaller, and are considered riskier than most of the other IPOs.

Our preliminary results suggest that from a universe of 59 risk factors the majority of them do not have impacts on the IPO returns. The only three risk factors that matter are “business and prospects may be subject to the interruptions caused by litigations”, “uncertainty in overseas expansions/competitions”, and “possible penalty for overdue taxes or insufficient tax withholding.” Concerns for litigations and overdue tax penalty affect both the opening price and the closing price returns on the first day of the trading. It is intriguing to find out that contrary to our expectations, the impact of the litigation concern is positive. “Uncertainty in overseas expansions/ competitions” is the only significant risk factor for the 21<sup>st</sup> trading day return (monthly closing price return). It appears that underwriters were fully aware of the challenges faced by the younger and smaller Chinese firms in their efforts to expand market shares overseas.

The rest of paper is organized as follows. Section 2 provides a brief review of literature about IPO underpricing, especially in the relationship between litigation risk from IPO risk disclosure and IPO initial returns. Section 3 covers our dataset and variable selection. Section 4 specifies our methodology and regression models. Section 5 provides empirical results and Section 6 concludes the paper.

## **2. Literature Review**

The effects of risk disclosure and its effect on IPO initial returns can be examined from two streams of literature: the effects of risk on return and the benefit of information disclosure on the valuation of IPO shares. As most investors are risk-averse there is a positive relationship between IPO risk and initial return. Studies on the Chinese IPO markets have also documented that investors expect higher returns for investing in riskier IPO shares (Zhou and Zhou 2010, Hussein and Zhou 2014). As a result, a higher perceived risk of an IPO will cause a greater discount on its offer price; which then leads to bigger pricing errors and eventually higher initial returns. However, there is a gap in the exiting literature on what constitutes “perceived risk”. Does information disclosed in the IPO prospectus help mitigate the classic information asymmetry issues faced by IPO firms? What are the relationships between the risk factors disclosed in IPO prospectus and IPO initial return?

Tinic (1988) and Hughes and Thakor (1992) proposed litigation risk as an intuitively plausible and economically relevant factor for underpricing in IPOs. The Securities Act of 1933 gives investors the right to sue issuers and underwriters if the share value drops below the offer price due to material omissions in the prospectus. In light of the uncertainty surrounding an IPO, especially the potential reputational losses associated with litigation, IPO issuers and underwriters who are concerned about lawsuits may attempt to hedge litigation risk by underpricing the IPO.

Drake and Vetsuypens (1993) study the effect of litigation risk by examining the differences in initial returns between IPOs sued by investors and those not sued by investors, and find no direct evidence that underpricing reduces the incidence of a lawsuit. Lowry and Shu (2002), however, take into account the endogeneity of initial returns and lawsuit incidence and find support for both insurance and deterrence effect as predicted by litigation risk theories. Their results suggest that the litigation risk indeed affect initial returns.

The underlying assumption in current studies of litigation risk is that stock market losses alone are sufficient to extract legal penalties. In reality, two conditions must be met. First, investors must have suffered damages in the form of investment losses. Second, investors must be able to produce evidence of a material omission in the firms' disclosure that existed at the time of their initial investment. This can be done by either underpricing (to reduce damages) or by enhancing disclosure (to reduce the probability of a material omission). Our paper examines the second claim, which is the informational role in the risk disclosure from ChiNext IPO prospectus on their initial returns.

### **3. Data Description**

The exclusive dataset was generated by hand through detailed review of Section IV - Risk Factors of each of the 281 ChiNext IPO prospectuses. Through the process, a universe of 59 unique risk factors were created, which were then further grouped into four different categories: macroeconomic risk factors (ma1 - ma6), Sector-specific risk factors (sc1 - sc7), company-common risk factors (cc1 - cc19), and company-unique risk factors (cu1 - cu29). See Appendix One for the list of the 59 risk factors. Of the 59 zero-one dummy variables, "cc3, use of proceeds" has the highest frequency - 236 firms had disclosed this risk factor in its IPO

prospectus; “cu26, possible destructions caused by graffiti” has the lowest frequency - only three firms reported this risk factor in its prospectus.

Through the hand collecting process, the authors discovered three evident patterns. First, firms belong to the same sector tend to report similar sets of risk factors. For example, pharmaceutical IPOs all reported that “ma4, changes in related government policies” as one of their major concerns. Second, certain risk factors always go hand-in-hand. A good example is the pair of “cu2, overseas expansion” and “ma6, foreign exchange rate risk”; firms reported concerns for their overseas expansions also included foreign exchange rate risk. We recorded 11 pairs out of the 59 risk factors. Third, there is a wide range of company-unique risk factors and many of them have low frequency. As mentioned earlier, “cu26, possible destructions caused by graffiti” were reported by three firms only.

With a whopping universe of 59 variables, the challenge is to identify key risk factors. We conducted three stages of screening. First, we check the correlation coefficients between each pair of the 59 risk factors and the correlation coefficients between each of the 59 risk factors and IPO returns. We dropped 40 risk factors whose correlation coefficients with the IPO returns are less than 0.1. Our next step was to check if any of the 19 factors are among the 11 pairs. We found 2 pairs, and we dropped one factor from each pair based on each factor’s correlation with the IPO returns. Our last step was to plug the remaining 17 factors into regressions against IPOs returns; we then dropped seven more risk factors whose p-value is above 0.1. Through these three screening methods, 49 risk factors were deemed irrelevant, and our final list contains 10 risk factors.

Our goal is to determine if disclosing of the 10 risk factors has any impact on ChiNext IPO returns. Based the findings of the existing IPO pricing literate, we have selected 12 control

variables and one structural break dummy variable<sup>2</sup>. Table 2 provides the description of all 22 variables – 12 control variables (CVs) and 10 risk factors (RFs), and their expected impacts on the initial underpricing.

#### 4. Methodology

We first run regression (1) on the opening price return (OPR) with a variable reduction process, using only 12 control variables and 1 policy break dummy in Table 4 and report the results in Penal A of Table 3. We then add the 10 risk factors and run regression (2) using the same variable reduction technique again and report the results in Penal B of Table 4. Then, we improve the regression models by imposing a GARCH-M model with an ARMA(1,1) process in the residuals. We run regression (3) using the variable identified from regression (2), and report the results in Penal C of Table 4. We repeat the same analysis for the closing price return (CPR) and the 21<sup>st</sup> trading day return (monthly closing price return, MPR). We report the results in Tables 5 and 6, respectively.

$$OPR_i = \alpha_i + \sum_{j=1}^m \beta_j CV_{i,j} + \lambda_1 BD_1 + \varepsilon_i \quad (1)$$

$$OPR_i = \alpha_i + \sum_{j=1}^m \beta_j CV_{i,j} + \lambda_1 BD_1 + \sum_{k=1}^n \gamma_k RF_{i,k} + \varepsilon_i \quad (2)$$

$$OPR_i = \alpha_i + \sum_{j=1}^m \beta_j CV_{i,j} + \lambda_1 BD_1 + \sum_{k=1}^n \gamma_k RF_{i,k} + \rho_i \ln(\sigma_i^2) + \left(\frac{1-\theta(L)}{1-\phi(L)}\right) + \varepsilon_i \quad (3)$$

#### 5. Results

Table 3 reports the descriptive statistics for all 22 variables and the three different measures of IPO returns - opening price return (OPR), closing price return (CPR), and 21<sup>st</sup> trading day (monthly closing price return, MPR).

---

<sup>2</sup> See Chi and Padgett (2005), Chiou, Li, Cheng, and Chang (2010), Gannon and Zhou (2008), Guo and Brooks (2008), Guo, Brooks, and Fung (2011), and Deng and Zhou (2014)

Our preliminary results suggest that the majority of the risk factors do not matter in ChiNext IPO underpricing. The only three risk factors that have impacts on the ChiNext IPO returns are RF1 - Business and prospects may be subject to the interruptions caused by litigations, RF5 - Overseas expansion/competition, and RF10 - Penalty for overdue taxes or insufficient tax withholding. Results in Panel B of Table 4 indicate that only RF1, concerns for litigations and RF10, penalty for overdue taxes or insufficient tax withholdings have impacts on the opening price returns (OPR). However, the impacts of RF10, penalty for overdue taxes or insufficient tax withholdings disappears after considering the cross-sectional and cross-time variations. Note that contrary to our expectations that concerns for potential litigations would lower the opening price and thus has a negative impact on OPR, the coefficient for RF1 are both positive in Panels B and C in Table 4. In searching for plausible explanations, we went back to our dataset. We discovered that a total of 49 out of the 281 firms disclosed concerns for litigations in their IPO prospectus. Their 4-digit industry codes span across 32 out of the entire 86 subsectors. The top three subsectors with most firms reporting this concern are “Broadcasting, Film & TV Industry” (3 out of 3), “Medical Equipment Manufacturing” (3 out of 8), and “Computer Application Services” (7 out of 19). One plausible explanation is that investors interpreted the concern for litigations as an indicator for some sort of innovation; their speculation led them to believe that these firms are leaders of their peers. Therefore, instead of avoiding firms that disclosed potential litigations as a concern, investors are attracted to them.

Results for Closing Price Returns (CPR) reported in Table 5 are similar to those for Opening Price Returns (OPR). Again, RF1 - Business and prospects may be subject to the interruptions caused by litigations and RF10 - Penalty for overdue taxes or insufficient tax withholding are significant determinants. The sign of their coefficients stay the same: positive for RF1 and negative for FR10. One important difference is that the effect of RF10 on CPR remains significant even after considering the cross-sectional and cross-time variations. The coefficient for RF 10 is negative for both OPR and CPR and matches our expectations that possible penalty for overdue taxes or insufficient tax withholding will



dampen investors' enthusiasm about the firm's IPO. 52 firms disclosed this risk factor. Their 4-digit industry codes span across 31 out of the entire 86 subsectors. The top three subsectors with most firms reporting this concern are "Medical Equipment Manufacturing" (4 out of 8), "Special Equipment Manufacturing" (6 out of 17), and "Electronic Parts and Device Manufacturing" (4 out of 20).

Table 6 reports results for the 21<sup>st</sup> trading day return (monthly closing price return, MPR). The only risk factor remains significant is RF5 – overseas expansion/competition. The coefficient for RF 5 stays significant and negative for both the OLS and the GARCH-M model specifications. 72 firms disclosed this risk factor. Their 4-digit industry codes span across 39 out of the entire 86 subsectors. The top three subsectors with most firms reporting this concern are "Other Electronic Equipment Manufacturing" (8 out of 10), "Special Chemicals Manufacturing" (5 out of 12), and "Electronic Parts and Device Manufacturing" (5 out of 20). Our results suggest that investors were fully aware of the challenges faced by the younger and smaller Chinese firms in their efforts to expand market shares overseas.

## **6. Conclusions**

Our preliminary results suggest that the majority of the 59 risk factors do not have impacts on the IPO returns. The only three risk factors that matter are "Business and prospects may be subject to the interruptions caused by litigations", "uncertainty in overseas expansion / competition", and "possible penalty for overdue taxes or insufficient tax withholding." Concerns for litigations and overdue tax penalty affect investors' assessment for both the opening price and the closing price on the first day of the trading. It is intriguing to find out that contrary to our expectations, the impact of the litigation concern is positive. "Uncertainty in overseas expansion / competition" is the only significant risk factor for the 21<sup>st</sup> trading day return (monthly closing price return, MPR). It appears that investors were fully aware of the challenges faced by the younger and smaller Chinese firms in their efforts to expand market shares overseas.

## References

Chi, Jing, and Carol Padget, 2005, The performance and long-run characteristics of the Chinese IPO market, *Pacific Economic Review* 10, 451-469.

Chiou, Jeng-ren, Ming-yuan Leon Li, Li Cheng, and Shih-yuan Chang, 2010, Pricing and allocation mechanisms in underpricing of Chinese IPOs, *The Chinese Economy* 43, 93-108.

Deng, Qi and Zhong-guo Zhou, 2014, Offline oversubscription, issue size, and market momentum: The driving forces for ChiNext IPO's initial underpricing, *The Chinese Economy*, forthcoming.

Drake, Phillip D, and Michael R. Vetsuypens, 1993, IPO Underpricing and insurance against legal liability, *Financial Management* 22 (1), 64-73.

Gannon, Gerard, and Yuwei Zhou, 2008, Conflicts of interest and China's A-share underpricing, *International Review of Financial Analysis* 17, 491-506.

Guo, Heifung and Robert Brooks, 2008, Underpricing of Chinese A-share IPOs and short-run underperformance under the approval system from 2001 to 2005, *International Review of Financial Analysis* 17, 984-997.

Guo, Heifung, Robert Brooks, and Hung-Gay Fung, 2011, Underpricing of Chinese initial public offerings, *The Chinese Economy* 44, 72-85.

Hughes, Patricia J., and Anjan V. Thakor, 1992, Litigation risk, intermediation, and the underpricing of initial public offerings, *The Review of Financial Studies* 5 (4), 709-742.

Hussein, Monica, and Zhong-guo Zhou, 2014, The initial return and its conditional return volatility: Evidence from the Chinese IPO market, *Review of Pacific Basin Financial Markets and Policies*, forthcoming.

Lowry, Michelle, Micah S. Officer, and G. William Schwert, 2010, The variability of IPO initial returns, *Journal of Finance* 65, 425-465.

Lowry, Michelle, and Susan Shu, 2002, Litigation risk and IPO underpricing, *Journal of Financial Economics* 65 (3), 309-335.

Tinic, Seha M., 1988, Anatomy of initial public offering of common stock, *Journal of Finance* 43, 789-822.

Zhou, Zhong-guo, and Janet Zhou, 2010, Chinese IPO activity, pricing, and market cycles, *Review of Quantitative Finance and Accounting* 34, 483-503.

**Table 1 – Sample Template for ChiNext IPO Prospectus**

The ChiNext Board, the Chinese counterpart of the US NASDAQ was launched on October 30, 2009. The board requires all IPO firms to adopt the following Table of Contents for their IPO Prospectus.

---

Table of Contents	
	Notice to Investors
Section I	Certain defined terms and conventions
Section II	Overview of the company
Section III	Overview of the IPO
Section IV	Risk factors
Section V	Organization and ownership structures of the company
Section VI	Business and operations
Section VII	Peer competition and related party transactions
Section VIII	Information for supervisors, board of directors and management
Section IX	Management and corporate governance
Section X	Financial statements
Section XI	Use of proceeds
Section XII	Forward-looking statements
Section XIII	Other important items
Section XIV	Disclaimers – supervisors, board of directors, management, and dealers and brokers
Section XV	Attachments

---

**Table 2 – Control, Dummy, and Risk Factors for ChiNext IPO Underpricing**

We propose 12 control variables and 1 structural break dummy, based on the existing IPO pricing literature, to analyze their impacts on ChiNext IPO initial returns. We further propose 10 risk factors from ChiNext IPO prospectus to analyze their impact on ChiNext IPO initial underpricing. We define each of the variables in this table and project their possible impacts on the initial underpricing.

<b>Control Variables</b>	<b>Projected Sign</b>
(CV1) Offline Subscription Rate = Number of Shares Bid at or above Offer Price / Total Shares Allocated (for Institutional)	+
(CV2) Online Subscription Rate = Number of Shares Bid at or above Offer Price / Total Shares Allocated (for Individual)	+
(CV3) Issue Size (Logarithm of Offer Price Times Number of Shares offered)	-
(CV4) Previous Year Profit Growth before IPO	-
(CV5) Industry ID	+
(CV6) Pre-Issue P/E Ratio	-
(CV7) Number of BOD Members	?
(CV8) Pricing to Listing Day Daley	+
(CV9) 1 <sup>st</sup> (Listing) Day Market Condition (SZSE Index Return)	+
(CV10) 1 <sup>st</sup> (Listing) Day Total Trading Value (Logarithm)	+
(CV11) Listing Day to 21 <sup>st</sup> Trading Day Market Condition (SZSE Index Return)	+
(CV12) 21 <sup>st</sup> Trading Day Total Trading Value (Logarithm)	+
<b>Structural Break Dummy</b>	
Policy Dummy (Whether All Shares Offered to Institutional and Individual Floating upon Listing)	-
<b>Risk Factors</b>	
(RF1) Business and prospects may be subject to the interruptions caused by litigations/law suits	-
(RF2) New business model operating in a rapidly evolving market	+/-
(RF3) Over-funding agency conflicts	-
(RF4) Surging labor costs	-
(RF5) Overseas expansion/competition	+/-
(RF6) Quality control and production safety	+/-
(RF7) Shift in technology or user / consumer preference	+/-
(RF8) Leasing of factory and/or office buildings	+/-
(RF9) Possible destructions caused by graffiti	-
(RF10) Penalty for overdue taxes or insufficient tax withholding	-

**Table 3 - Descriptive Statistics for ChiNext IPO Underpricing**

We provide descriptive statistics for 12 control variables and 1 policy dummy variable, all based on the existing literature in Chinese IPO pricing, along with 10 risk factors from ChiNext IPO prospectus in this table. All the variables are defined and labeled in Table 1. In addition, we also provide summary statistics for the opening price return (OPR), closing price return (CPR), and 21<sup>st</sup> trading day (monthly closing price return (MPR) for all 281 ChiNext IPOs over the period from October 20, 2009 to December 31, 2011. All the returns are measured in percentages.

Penal A: Statistics for 12 Control Variables and 1 Policy Break Dummy													
	CV1	CV2	CV3	CV4	CV5	CV6	CV7	CV8	CV9	CV10	CV11	CV12	DV1
Mean	44.93	143.62	20.20	0.59	8.83	61.64	8.39	15.79	0.0032	19.91	-0.0067	17.62	0.69
Stdev	33.23	74.77	0.55	0.74	3.60	22.42	1.44	5.66	0.0706	0.62	0.0169	0.92	0.46
Max	173.72	345.00	21.66	9.70	16.00	150.82	13.00	52.00	0.2298	22.06	0.0474	19.95	1.00
Min	2.00	5.00	18.96	-0.18	1.00	18.12	5.00	10.00	-0.1548	18.36	-0.0622	15.15	0.00
Median	37.25	136.00	20.16	0.44	8.00	59.23	9.00	14.00	-0.0015	19.89	-0.0029	17.57	1.00
Skewness	1.08	0.47	0.35	7.67	0.23	0.97	-0.32	2.96	0.4589	0.21	-0.3666	-0.04	-0.85
Kurtosis	0.97	-0.29	-0.06	85.75	-0.61	1.41	0.95	10.79	0.4334	0.81	0.9603	-0.15	-1.29
Penal B: Statistics for Opening, Closing, and 21 <sup>st</sup> Trading Day Closing Price Returns, and 10 Risk Exposure Variables													
	OPR	CPR	MPR	RF1	RF2	RF3	RF4	RF5	RF6	RF7	RF8	RF9	RF10
Mean	0.3517	0.3791	0.3369	0.17	0.33	0.04	0.01	0.26	0.34	0.61	0.14	0.01	0.19
Stdev	0.3097	0.3888	0.4623	0.38	0.47	0.20	0.12	0.44	0.48	0.49	0.34	0.10	0.39
Max	1.5210	2.0973	3.1025	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Min	-0.1200	-0.1668	-0.2304	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Median	0.3055	0.2743	0.2320	0.00	0.00	0.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00
Skewness	0.8206	1.4726	1.9102	1.73	0.72	4.55	8.25	1.12	0.67	-0.46	2.14	9.57	1.63
Kurtosis	0.4065	2.9031	5.8453	0.98	-1.49	18.82	66.46	-0.74	-1.56	-1.80	2.62	90.30	0.66

**Table 4 – Determinants for Opening Price Return (OPR)**

We first run regression (1) on the opening price return with a variable reduction process, using only 12 control variables and 1 policy break dummy, and report the results in Penal A. We then add additional 10 risk factors and run regression (2) and report the results in Penal B. Finally, we improve the regression models by imposing a GARCH-M model with an ARMA(1,1) process in the residuals. We run regression (3) and report the results in Penal C.

$$OPR_i = \alpha_i + \sum_{j=1}^m \beta_j CV_{i,j} + \lambda_1 BD_1 + \varepsilon_i \quad (1)$$

$$OPR_i = \alpha_i + \sum_{j=1}^m \beta_j CV_{i,j} + \lambda_1 BD_1 + \sum_{k=1}^n \gamma_k RF_{i,k} + \varepsilon_i \quad (2)$$

$$OPR_i = \alpha_i + \sum_{j=1}^m \beta_j CV_{i,j} + \lambda_1 BD_1 + \sum_{k=1}^n \gamma_k RF_{i,k} + \rho_i \ln(\sigma_i^2) + \left(\frac{1-\theta(L)}{1-\phi(L)}\right) + \varepsilon_i \quad (3)$$

Penal A: OLS Model with Control Variables from Regression (1)					
Significant Variables	Non-standardized		Standardized	p-value	Change in R <sup>2</sup>
	Beta	S.E.	Beta		
Constant	2.444	0.530		0.00	
Offline Subscription Rate	0.005	0.001	0.49	0.00	0.31
Online Subscription Rate	0.001	0.001	0.22	0.00	0.10
Listing Day Market Condition	0.012	0.002	0.28	0.00	0.08
Issue Size	-0.120	0.026	-0.21	0.00	0.04
Adjusted R <sup>2</sup>					0.53
Penal B: OLS Model with Control and Risk Factors from Regression (2)					
Significant Variables	Non-standardized		Standardized	p-value	Change in R <sup>2</sup>
	Beta	S.E.	Beta		
Constant	2.515	0.520		0.00	
Offline Subscription Rate	0.004	0.001	0.46	0.00	0.31
Online Subscription Rate	0.001	0.001	0.22	0.00	0.10
Listing Day Market Condition	0.012	0.002	0.28	0.00	0.08
Issue Size	-0.124	0.026	-0.22	0.00	0.04
RF1 litigations/law suits	0.094	0.034	-0.12	0.00	0.01
RF10 Penalty for overdue taxes	-0.068	0.033	-0.09	0.01	0.01
Adjusted R <sup>2</sup>					0.55
Penal C: GARCH-M Model with ARMA (1,1) Process with All Variables from Regression (3)					
Significant Variables	Non-standardized		p-value		
	Beta	S.E.	p-value		
Constant	-0.020	0.05	0.74		
Offline Subscription Rate	0.004	0.00	0.00		
Online Subscription Rate	0.001	0.00	0.00		
Listing Day Market Condition	0.012	0.003	0.00		
RF1 litigations/law suits	0.053	0.028	0.06		
AR(1)	0.879	0.047	0.00		
MA(1)	0.575	0.047	0.00		
Adjusted R <sup>2</sup>			0.64		

**Table 5 – Determinants for Closing Price Return (CRP)**

We first run regression (1) on the closing price return with a variable reduction process, using only 12 control variables and 1 policy break dummy, and report the results in Penal A. We then add additional 10 risk factors and run regression (2) and report the results in Penal B. Finally, we improve the regression models by imposing a GARCH-M model with an ARMA(1,1) process in the residuals. We run regression (3) and report the results in Penal C.

$$CPR_i = \alpha_i + \sum_{j=1}^m \beta_j CV_{i,j} + \lambda_1 BD_1 + \varepsilon_i \quad (1)$$

$$CPR_i = \alpha_i + \sum_{j=1}^m \beta_j CV_{i,j} + \lambda_1 BD_1 + \sum_{k=1}^n \gamma_k RF_{i,k} + \varepsilon_i \quad (2)$$

$$CPR_i = \alpha_i + \sum_{j=1}^m \beta_j CV_{i,j} + \lambda_1 BD_1 + \sum_{k=1}^n \gamma_k RF_{i,k} + \rho_i \ln(\sigma_i^2) + \left(\frac{1-\theta(L)}{1-\phi(L)}\right) + \varepsilon_i \quad (3)$$

Penal A: OLS Model with Control Variables from Regression (1)					
Significant Variables	Non-standardized		Standardized	p-value	Change in R <sup>2</sup>
	Beta	S.E.	Beta		
Constant	3.708	0.612		0.00	
Offline Subscription Rate	0.006	0.001	0.52	0.00	0.28
Listing Day Market Condition	0.016	0.002	0.33	0.00	0.11
Issue Size	-0.178	0.030	-0.28	0.00	0.10
Pre-issue P/E Ratio	-0.002	0.001	-0.12	0.02	0.01
Adjusted R <sup>2</sup>					0.50
Penal B: OLS Model with Control and Risk Factors from Regression (2)					
Significant Variables	Non-standardized		Standardized	p-value	Change in R <sup>2</sup>
	Beta	S.E.	Beta		
Constant	3.823	0.596		0.00	
Offline Subscription Rate	0.004	0.001	0.46	0.00	0.28
Listing Day Market Condition	0.012	0.002	0.28	0.00	0.11
Issue Size	-0.124	0.026	-0.22	0.00	0.10
RF1 litigations/law suits	0.118	0.039	0.13	0.00	0.02
RF10 Penalty for overdue taxes	-0.116	0.038	-0.13	0.00	0.02
Pre-issue P/E Ratio	-0.002	0.001	-0.11	0.02	0.01
Adjusted R <sup>2</sup>					0.54
Penal C: GARCH-M Model with ARMA (1,1) Process with All Variables from Regression (3)					
Significant Variables	Non-standardized		p-value		
	Beta	S.E.			
Constant	2.906	0.520	0.00		
Offline Subscription Rate	0.004	0.001	0.00		
Listing Day Market Condition	0.015	0.003	0.00		
Issue Size	-0.130	0.026	0.00		
RF1 litigations/law suits	0.080	0.026	0.01		
RF10 Penalty for overdue taxes	-0.070	0.031	0.03		
Conditional Variance	0.018	0.007	0.01		
AR(1)	0.924	0.035	0.00		
MA(1)	0.672	0.068	0.00		
Adjusted R <sup>2</sup>			0.65		



**Table 6 – Determinants for 21<sup>st</sup> Trading Day (Monthly) Closing Price Return**

We first run regression (1) on the 21<sup>st</sup> trading day closing price return (MPR) with a variable reduction process, using only 12 control variables and 1 policy break dummy, and report the results in Penal A. We then add additional 10 risk factors and run regression (2) and report the results in Penal B. Finally, we improve the regression models by imposing a GARCH-M model with an ARMA(1,1) process in the residuals. We run regression (3) and report the results in Penal C.

$$MPR_i = \alpha_i + \sum_{j=1}^m \beta_j CV_{i,j} + \lambda_1 BD_1 + \varepsilon_i \quad (1)$$

$$MPR_i = \alpha_i + \sum_{j=1}^m \beta_j CV_{i,j} + \lambda_1 BD_1 + \sum_{k=1}^n \gamma_k RF_{i,k} + \varepsilon_i \quad (2)$$

$$MPR_i = \alpha_i + \sum_{j=1}^m \beta_j CV_{i,j} + \lambda_1 BD_1 + \sum_{k=1}^n \gamma_k RF_{i,k} + \rho_i \ln(\sigma_i^2) + \left(\frac{1-\theta(L)}{1-\phi(L)}\right) + \varepsilon_i \quad (3)$$

Penal A: OLS Model with Control Variables from Regression (1)						
Significant Variables	Non-standardized		Standardized	p-value	Change in R <sup>2</sup>	
	Beta	S.E.	Beta			
Constant	2.385	0.644		0.00		
21 Trading Day Market Condition	0.013	0.002	0.23	0.00	0.22	
Offline Subscription Rate	0.002	0.001	0.17	0.00	0.12	
Issue Size	-0.445	0.037	-0.59	0.00	0.10	
21 <sup>st</sup> Day Trading Value	0.330	0.038	0.49	0.00	0.13	
Pricing to Listing Delay	0.016	0.003	0.22	0.00	0.04	
Adjusted R <sup>2</sup>						0.60
Penal B: OLS Model with Control and Risk Factors from Regression (2)						
Significant Variables	Non-standardized		Standardized	p-value	Change in R <sup>2</sup>	
	Beta	S.E.	Beta			
Constant	2.418	0.638		0.00		
21 Trading Day Market Condition	0.013	0.002	0.23	0.00	0.22	
Offline Subscription Rate	0.002	0.001	0.17	0.00	0.12	
Issue Size	-0.449	0.037	-0.59	0.00	0.10	
21 <sup>st</sup> Day Trading Value	0.330	0.038	0.50	0.00	0.13	
Pricing to Listing Delay	0.016	0.003	0.21	0.00	0.04	
RF5 overseas expansion/competition	-0.092	0.036	-0.10	0.01	0.01	
Adjusted R <sup>2</sup>						0.61
Penal C: GARCH-M Model with ARMA (1,1) Process with All Variables from Regression (3)						
Significant Variables	Non-standardized		p-value			
	Beta	S.E.				
Constant	1.384	0.600	0.00			
21 Trading Day Market Condition	0.009	0.004	0.01			
Offline Subscription Rate	0.002	0.001	0.01			
Issue Size	-0.338	0.040	0.00			
21 <sup>st</sup> Day Trading Value	0.279	0.038	0.00			
Pricing to Listing Delay	0.013	0.004	0.00			
RF5 overseas expansion/competition	-0.065	0.031	0.04			
Conditional Variance	0.015	0.006	0.01			
AR(1)	0.852	0.062	0.00			
MA(1)	0.582	0.095	0.00			
Adjusted R <sup>2</sup>				0.69		

## **Appendix One List of Risk Factors**

Appendix One reports the universe of 59 risk factors disclosed in the IPO prospectus by the 281 ChiNext IPOs from October 30, 2009 to December 31, 2011.

---

### **A. Risks Related to Macroeconomics (ma1 ~ ma6)**

- ma1 Policy changes on taxation and government subsidy
  - ma2 Macroeconomic growth
  - ma3 Natural disasters or other adverse events
  - ma4 Changes in government strategic planning
  - ma5 Stock market risk
  - ma6 Foreign exchange risk
- 

### **B. Risks Related to the Industry (sc1 ~ sc7)**

- sc1 Market competition
  - sc2 Sector policy changes
  - sc3 Piracy, intellectual property and Trademark Infringement
  - sc4 Litigations / Lawsuits
  - sc5 Government disapproval of patents, trademarks, business models, etc.
  - sc6 Turnover of highly skilled personnel
  - sc7 New business model in a rapidly evolving market
- 

### **C. Risks Common to All Firms (cc1 ~ cc19)**

- cc1 Return on Assets ratio (ROA) may suffer in the short-term
  - cc2 Dilution of ownership and control
  - cc3 Uses of IPO proceeds
  - cc4 Turnover of management personnel
  - cc5 Higher level of Accounts Receivable which may result in higher customer default rate
  - cc6 Increase in production costs: raw materials
  - cc7 Insufficient operating cash flow to support various stages of rapid growth
  - cc8 Managerial incompetency during the period of rapid growth
  - cc9 Inventory control may be ineffective at times during the period of rapid growth
  - cc10 Continued and safeguarded R&D efforts
  - cc11 Gross Profit Margin (GPM) may suffer in the short-term
  - cc12 Higher depreciation and amortization costs due to proposed capital expenditures
  - cc13 Fail to maintain an effective system of internal controls
  - cc14 Higher level of prepaid expenses
  - cc15 Insufficient working capital to support rapid growth
  - cc16 Over-funding agency conflicts
  - cc17 The execution of the proposed projects or business undertakings
  - cc18 Uncertainty in Raw material supply
  - cc19 Increase in production costs: labor
-

#### **Appendix One List of Risk Factors (Continue)**

Appendix One reports the universe of 59 risk factors disclosed in the IPO prospectus by the 281 ChiNext IPOs from October 30, 2009 to December 31, 2011.

---

#### **D. Risks Unique to Individual Firm (cu1 – cu27)**

- cu1 Major client and/or market dependency
  - cu2 Overseas Operation / Market Expansion
  - cu3 Conservational laws and regulations
  - cu4 Quality control and operation safety
  - cu5 Dependence on single source third-party contract manufacturer
  - cu6 Cyclical business
  - cu7 Government mandates for employee benefits
  - cu8 Changes in Technology and/or user preference
  - cu9 Renewal of copyrights
  - cu10 Unfavorable foreign government mandates on trade and collaboration policies
  - cu11 Accounting and settlement of the business transactions
  - cu12 Management of Foreign subsidiaries
  - cu13 Key upstream suppliers dependency
  - cu14 Joint ventures, tech collaborations, outsourcing & subcontracting
  - cu15 Parent-subsidiary dynamics and related party transactions
  - cu16 Brokers and retailers management
  - cu17 Penalty for overdue taxes and insufficient tax withholding
  - cu18 Asset- or mortgage-backed loans
  - cu19 Warehouse safety and insurance coverage
  - cu20 Risk of leasing
  - cu21 Dependent on single financing source for all funding needs
  - cu22 Short-term liquidity Risk
  - cu23 Long-term solvency risk
  - cu24 Development of newer edition of text and books
  - cu25 Migration on TV broadcast platforms
  - cu26 Concerns for graffiti and other destructions to the newly built retailing stores
  - cu27 Conflict of interests and other agency issues
-