

An Examination of the Factors Accounting for Initial Public Offering

Underpricing in Korea Exchange

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Abstract

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Historical research has shown that large positive abnormal returns are always generated during the period immediately following issuance of IPOs. This paper will re-examine the existence of IPO underpricing in Korea Exchange in 2010, determine the impact of multiple factors on the degree of IPO underpricing, and discuss how these factors affect the degree of IPO underpricing in the Korea Exchange. The factors include the insider holding percentage, firms' systematic risk, total issue amount, underwriters' reputation ranking, and IPO age of the issue firms. The results of this research show that insider holding percentage, total issue amount, and IPO age influence the underpricing of IPOs. The large insider holding percentage and total issue amount usually contributes to a lower degree of underpricing. The mature firm's IPO stocks would have more possibility to be priced correctly. Finally, because of the limitation of the research and models, the test result may not be accurately for IPOs forecast in the Korea Exchange.

Table of Contents

Acknowledgments	I
Abstract	II
Table of Content	III
List of Tables	V
Chapter 1: Introduction	1
Chapter 2: Review of the Literature	4
2.1 Asymmetric Information and Winner's Curse Hypothesis	6
2.2 Asymmetric Information and the Signaling Hypothesis, and Underwriters' Reputation	7
2.3 Asymmetric Information and Market Feedback Hypothesis	10
2.4 The Ownership Dispersion Hypothesis	10
2.5 Ex-ante Uncertainty Hypothesis	11
2.5.1 Offering Size	11
2.5.2 Firm Age	11
Chapter 3: Research Data and Methodology	13
3.1 Data Description	13
3.2 Models	14
3.2.1 The Existence of IPO Underpricing: The Dependent Variable	14

3.2.2 Model Specification: The Independent Variables	15
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Chapter 4: Result Analysis

Chapter 5: Conclusion and Limitations	25
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References	27
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List of Tables

Table 2.1: Summary of Average Initial Return in Different Regions

Table 3.1: Summary of Top 46 Underwriters in the Korea Exchange from 2003 to
2010.

Table 4.1: Summary of the Variables

Table 4.2: Regression Analysis of DUP and Independent Variables

Table 4.3: Regression analysis of risk and DUP

Table 4.4: Regression analysis of reputation ranking and DUP

CHAPTER 1

Introduction

When a private company needs to raise funds for new profitable projects, sometimes the traditional methods like bank financing and retained earnings are not able to effectively achieve the purpose. Alternatively, the company could resort to external financing via underwriters or investment bankers. This is the case for the newer and less established companies (Karlis, 2000). The first time the stocks of the company are sold on the stock market to public investors is referred to as initial public offering (IPO). According to Miller and Reilly (1987), the understanding of the market or initial public offerings is important not only for investors and underwriters, but also for financial managers.

There are a variety of reasons why private companies choose to go public. According to Rock (1986), the owners of the companies can diversify their risks by going public. Moreover, companies can use IPO to raise capital for expansion of operations, increase liquidity for the shareholders, improve the company's reputation, and the stocks of the companies can be used to make acquisitions and compensate employees. (See J. Draho 2004.) On the other hand, going public might cause problems to the companies as well. Those companies would lose their privacy by disclosing the information with regard to their operations and financial health, and they are also burdened by the high expenses which come from the IPO directly.

As soon as companies issue the IPO and go public, ideally, their stocks in the market should reflect the intrinsic value of the companies. However, researches have documented that this is not the case. Historical researches have shown that large positive abnormal returns are always generated during the period immediately following issuance of IPOs. According to the data from 1980 to 2007 in Korea, the abnormal return is as high as 57.4% (Loughran, Ritter, and Rydqvist, 2008). The high abnormal returns are from the IPO underpricing. If in the process of IPO, the price of the first trading day is lower than the offering price, or the price of IPO stock in the primary market is lower than the price in the secondary market, the stock is considered to be underpriced. Nowadays researches have shown the IPO underpricing phenomenon has been experienced in almost every stock market around the world (Loughran, Ritter, and Rydqvist, 1994).

The principal objective of this paper is to examine IPOs in Korea exchange to provide one case of the evidence on the world scale. This paper will re-examine the existence of IPO underpricing in Korea Exchange in 2010, determine the impact of multiple factors on the degree of IPO underpricing and as well, discuss how these factors affect the degree of IPO underpricing in the Korea Exchange. The factors include the insider holding percentage, firms' systematic risk, total issue amount, underwriters' reputation ranking, and IPO age of the issue firms.

The structure of rest of the paper is as follows. First, the concepts and past researches will be summarized. Then, the sample and the models will be introduced. Moreover, the results from the models will be analyzed, as well as the conclusions and limitations will be drawn.

Chapter 2

Review of the Literature

The objective of this chapter is to show the prevailing theories and support IPO underpricing. The main purpose is to discuss theories behind IPO underpricing based on the past research.

Karlis (2000) in his research demonstrated that the abnormal initial return from the difference between the offering price and the first day closing price cannot be simply explained away by auditing error. The reason is that the random error would be subordinate to the normal distribution law, which means the underpriced situation would not always be the case; the auditing error would also tend to overprice the IPO stocks. Contemporarily, the phenomenon of IPO underpricing has been proved and examined by a number of researches, and is now widely accepted. In practice, investors purchase the stocks at the offering price of the IPO, and earn a positive initial return right after the issuance.

Table 2.1: Summary of Average Initial Return in Different Regions

Region	Sample Size	Average Initial Return
Asia	10601	65.49%
South America	353	30.59%
Africa	232	22.87%
Europe	8117	17.50%
North America	12642	16.41%
China (largest)	1394	164.50%
Russia (smallest)	40	4.2%

Table 2.1 is a summary of the research of Loughran, Ritter, and Rydqvist in 2008. I divided the countries into different continents, and calculated the weighted average initial return for each of the continents. As we can see the phenomenon of IPO underpricing appears globally, and the stock markets in Asia and North America have the highest and the lowest average initial return in the world. Furthermore, China and Russia respectively are the countries that have the largest and lowest average initial returns in the certain period in the world.

There are several well known hypotheses that attempt to explain the phenomenon of IPO underpricing.

2.1 Asymmetric Information and Winner's Curse Hypothesis

The theory of "Winner's Curse" for IPO was first advanced by Rock (1986). In this theory, there are three risk-neutral parties in IPO activities, which are the issuers, the underwriters, and the investors, among which two kinds of investors were defined, which are well-informed investors and uninformed investors. Each party faces asymmetric information about the IPO activities: the issuers own the inside information of the companies, but they cannot estimate the demand and need the investment banks (the underwriter) to audit and get in touch with the investors; the underwriters know about the financial situation of the companies and have well-functioning sales markets and network, and also own available information about potential investors in the market; the well-informed investors have private information and know about the range of expected market price due to capital or resource advantages, while the uninformed investors can only invest randomly due to lack of necessary knowledge of the companies. Theoretically, the informed investors will bid all underpriced IPOs, and by the law of large numbers the uninformed investors will hardly break even or overbid and suffer from the "winner's curse". So the uninformed investors will consider the share they are able to purchase as the share that the informed investors abandoned. So if this happened in practice, the uninformed investors would all leave the IPO market, therefore the demand of stocks in IPOs would drop. In order to prevent the decline from happening, the stocks therefore are

usually underpriced as an additional premium to attract the uninformed investors participating in the IPOs market.

The Winner's Curse Hypothesis was extended by Beatty and Ritter in 1986. They demonstrated that there exist uncertainty about the market clearing price of IPO, and it is positively related to the degree of IPO underpricing. In their research they suggest the smaller the company it is, the lower offering price it should set in order to give investors a higher initial return as a premium to compensate for the uncertainty.

2.2 Asymmetric Information and the Signaling Hypothesis, and Underwriters' Reputation

Allen and Faulhaber (1989), Welch (1989), and Grinblatt and Hwang (1989) tried to explain IPO underpricing by using signaling hypothesis. This hypothesis stated that there are asymmetric information between the issuers and the investors. As mentioned above, the issuers own superior information such as the value of the IPO than the investors. So the rational investors are facing the lemon problem in the IPO. They will think the issuers are willing to sell their stocks at average price only because their stocks are of low quality (Welch and Ritter, 2002). As a result, issuers or the underwriters can use underpricing IPO as a signal to show the quality of the stocks being offered to investors, because the cost of underpricing for a bad company is significant.

Moreover, some of the good companies may choose to retain a large portion of their own stocks and underprice the rest to signal their value. The rationale behind that is the companies can sell their stocks later at higher prices (Karlis, 2010). For instance, the government issuers often use this strategy to signal their faith in their stocks in the IPO (Perotti, 1995; Mok and Hui, 1998).

In addition, Rogue (1973) used 250 samples to run regressions trying to explain the relationship between the underwriters' reputation and IPO underpricing. In that research, he demonstrated that prestigious underwriters would set the offer price of the stocks closer to the true value of the stocks than the less reputable underwriters. Megginson and Weiss (1991), and Sharma and Seraphim (2010) concluded the same from their research as well. Rogue also found the negative relationship between the reputation of the underwriters and the degree of IPO underpricing from his model.

Willenborg (1999) presented his theory about the impact of the underwriters' reputation to the degree of IPO underpricing as well. He indicated that companies may have different reasons for seeking their underwriters. In his study, the samples were divided into two groups based on how established the company is. From the perspective of investors, on one hand, if the issuers hire more reputable underwriters, this may give the market the signal that the issuers' financial statements are accurately analyzed, and the offer price will not be over the true value. This is the informational

signaling effect which will attract investors. On the other hand, even if the stocks are overpriced on the IPOs, with prestigious underwriters the investors will have a better chance to get their investment back through securities litigation. This was defined as the insurance signaling effect which will also raise the demand of the IPO. If the underwriters are aware of these effects, they will lower the stock prices of the IPO in order to reduce downside risks which include the risks of having undersubscribed and overpriced offerings and getting involved with securities litigation due to investing in high risk companies.

From the viewpoint of underwriters, if the issuer and the investment bank have an underwriting contract, the underwriter will buy all the stocks from the issuer and set an IPO price to sell to the investors. The issuer will discount the stock price as a compensation for the liquidity and risk premium to the investors. In this circumstance the underwriters will benefit from the economies of scale, or from their reputation (Karlis, 2000). According to Beatty and Ritter (1986), the underwriters have incentive to enforce the underpricing equilibrium, and there are three conditions for that. First of all, the underwriters cannot estimate the exact value of the stocks. Secondly, the underwriters are able to benefit from their reputation. Moreover, if the underwriters "cheat", they can no longer benefit from their reputation. So from the above research, they suggested the reputation of the underwriters should have a positive relationship with the degree of IPO underpricing, because the prestigious underwriters are bound by their own interest to set lower prices.

2.3 Asymmetric Information and Market Feedback Hypothesis

This hypothesis is also under the condition of the existence of asymmetric information. However, this hypothesis assumes the investors have superior information than the issuers. If this is the case, during the pre-sale bookbuilding period of the IPO, the stocks may be underpriced on purpose by underwriters in order to induce investors to reveal their valuations of the stocks (Benveniste and Spindt, 1989, Benveniste and Wilhelm, 1990). Furthermore, according to Hanley (1993), if the demand is high enough, after the pre-sale bookbuilding period the underwriters may not strictly adjust the stock price at all.

2.4 The Ownership Dispersion Hypothesis

This hypothesis is also attempt to explain IPO underpricing from the perspective of issuers:

Issuing firms may intentionally underprice their shares in order to generate excess demand and so be able to have a large number of small shareholders.

This dispersed ownership will both increase the liquidity of the market for the stock, and make it more difficult for outsiders to challenge management.

(Ritter, 1998, P. 10)

2.5 Ex-ante Uncertainty Hypothesis

2.5.1 Offering Size

In order to find the relationship between the price of an IPO and financial variables like offering size in the Korean market, Kim, Krinsky, and Lee (1995) used a sample of 260 IPOs listed on the Korea Stock Exchange from 1985 to 1990 to do the test. They divided the samples into two sections based on the offering date, and ran multiple regression tests. The results showed that the impact of offering size on the IPO market price is significant, and offering size is positively related to the market price of IPOs.

2.5.2 Firm Age

Ritter (1984) claims that due to the asymmetry information theory, small and young companies underpriced their stocks by a greater amount than the big and old companies. In his study, he asserted "IPOs of newer companies display higher initial returns than those of older, more mature companies" (Sullivan and Unite, 1999). Moreover, Clark (2002) proved that the IPO underpricing is shown to depend upon the firm's age. He used a sample with 1234 companies and divided them into two

groups, which were the high-tech group and the non high-tech group. Results showed that for the high-tech group the relationship between firm age and IPO underpricing is negative, while the relationship is positive for the non high-tech group. The possible causes might be that for older non high-tech companies, their incomes should be stable and persistent, so they do not need to underprice their stocks to attract the investors; for the younger high-tech companies, they may neither have past revenue records nor earn any profits, and their stocks are not attractive to the large institutional investors, so underpricing the stocks seems to be their only option (Karlis, 2000). Whereas Ritter (1991) in his research points out that for all industries the older the firms are, the less uncertainty the companies should have, so the relationship between the firm's age and the degree of IPO underpricing should be always negative.

Chapter 3

Research Data and Methodology

In this chapter, the research data and methodology will be introduced. To be more specific, this chapter is organized as follows. A detailed data description is provided first, and linear regression analysis will be used then to test if underpricing exists. Then the data from Korea Exchange will be used to test multiple influences to the degree of IPO underpricing, and regression result of specific factors will be provided to analyze the influence to the IPO underpricing.

3.1 Data Description

All data used in the test is collected from the Bloomberg Terminal. The sample includes all initial public offerings that occurred in Korea Exchange from January 1 to December 31, 2010. There is data from 101 companies in different industries, including industrials, technology, financials, consumer goods, etc. The data from 29 companies was removed from the test due to missing relative information. So the remaining 72 companies are used in the test.

The reasons for choosing this range are that the influence of the Asian financial crisis is not significant at this period, and the Korean economy grew stably. Also, the Korea Exchange was reformed in January 2005 and became a much more mature market.

3.2 Models

In this part of the paper the dependent variable and the independent variables will be defined respectively, and the models for multiple regression analysis will be introduced.

3.2.1 The Existence of IPO Underpricing: The Dependent Variable

The degree of IPO underpricing is measured by the abnormal initial return. To be more specific, it is measured by the first day return. The offer price is the price that the company set to sell the stocks at the beginning of the first trading day, and the first-day closing price indicates what the investors are willing to pay for the firm's IPO stocks. If the offering price is lower than the first day closing price, then the IPO stocks are underpriced and there is money left on the table for new investors. Since existing shareholders settle for a lower offering price than what they could have gotten, money left on the table is the wealth transfer from existing shareholders to new shareholders.

To test the existence of IPO underpricing in Korea Exchange, the well-known model is to test the degree of IPO underpricing, which is defined as follows.

Model 1

$$DUP = \frac{P_{i1} - P_{i0}}{P_{i0}}$$

Where

DUP : Degree of IPO underpricing

P_{i1} : First day closing pricing of stock i

P_{i0} : Offering pricing of stock i

Based on the above, if DUP is positive, that indicates the IPO is underpriced; if DUP is negative, the IPO is overpriced; if DUP equals to zero, the IPO is correctly priced.

3.2.2 Model Specification: The Independent Variables

In order to test the influence of the degree of IPO underpricing of specific factors in this part, the Ordinary Least Square (OLS) regression method is used in the regression model.

Model 2

$$DUP = \alpha + \beta_1 X_{\text{holding}*i} + \beta_2 X_{\text{risk}} + \beta_3 X_{\text{amount}*i} + \beta_4 X_{\text{ranking}} + \beta_5 D_{\text{AGE}} + \varepsilon$$

Where

α : The constant term of the model

$X_{\text{holding}*i}$: The percentage of insider holding of stock i

X_{risk} : The beta coefficient of the company

$X_{\text{amount}*i}$: The total offer amount of stock i

X_{ranking} : The reputation ranking of the underwriters

D_{AGE} : Dummy variable of issuer's age, which is defined as:

$$D_{\text{AGE}} = \begin{cases} 1, & \text{if the age of issuer is not less than 35} \\ 0, & \text{otherwise} \end{cases}$$

ε : The error term of the model

1. Insider holdings. This variable refers to the percentage of shares holding by the insider of the companies before the IPO. This variable is set based on the Asymmetric Information Hypothesis and the Signaling Hypothesis. Research has shown that the percentage of insider holding can influence DUP at some level, because a high percentage of insider holding will signal the owner's faith to the shares.

2. Risks. This variable is measured by the issuing company's systematic risk, i.e., the beta of the issuing company. Research has proven that the higher the uncertainty the company has, the higher the DUP the issue would have, because a high risk company need to give a premium for the extra risk.

3. Total issue amount. This variable is calculated by the quantity of issued shares

multiplied by the offer price of the IPO. Plenty of hypotheses have explained that the large issue amount would diversify the shareholders of the issuing company, and would attract uninformed investors to buy the IPO shares.

4. Underwriter's reputation. This variable is mainly based on the Signaling Hypothesis. The issuing company can hire a more reputable underwriter for the IPO, and it would signal to the market that the information of the issuing company is more reliable. The following table is retrieved from Bloomberg Terminal. I used a period of 2003 to 2010 to rank the underwriters, and the underwriters' reputation is ranked based on the issue size. See Table 3.1 below.

Table 3.1: Summary of Top 46 Underwriters in the Korea Exchange from 2003 to 2010.

Underwriter	Rank	Mkt Share (%)
UBS	1	10.1
Credit Suisse	2	10
Daewoo Securities Co Ltd	3	9.3
Samsung Securities Co Ltd	4	8.6
Morgan Stanley	5	7.6
Citi	6	7.4
Korea Investment & Securities Co	7	6.7
Woori Investment & Securities Co Ltd	8	5.5

Shinhan Investment Corp	9	5.2
JP Morgan	10	3.9
Bank of America Merrill Lynch	11	3.2
Goldman Sachs & Co	12	3
TongYang Securities Inc	13	2.1
Mirae Asset Securities	14	1.9
Hyundai Securities	15	1.8
Lehman Brothers	16	1.5
Deutsche Bank AG	17	1.4
Kyobo Securities	18	1.4
RBS	19	1.3
Hanwha Securities	20	1.3
Macquarie Group Ltd	21	0.8
Nomura Holdings Inc	22	0.8
Daishin Securities	23	0.7
HMC Investment Securities Co Ltd	24	0.7
Credit Agricole CIB	25	0.5
HI Investment & Securities Co Ltd	26	0.3
Eugene Investment & Securities Co Ltd	27	0.3
KB Investment & Securities Co Ltd	28	0.3
Shinyoung Securities Co Ltd	29	0.3
NH Investment & Securities Co Ltd	30	0.3

Kiwoom Securities Co Ltd	31	0.3
IBK Securities Co Ltd	32	0.2
Dongbu Securities	33	0.2
Meritz Securities Co Ltd	34	0.1
Hanyang Securities	35	0.1
Hana Daetoo Securities Co Ltd	36	0.1
SK Securities	37	0.1
Bridge Securities Co Ltd	38	0.1
Hana Investment Banking & Securities	39	0.1
Daiwa Securities Group Inc	40	0.1
LG Investment Securities Co Ltd	41	0.1
Solomon Investment & Securities Co Ltd	42	0.1
Golden Bridge Investment & Securities Co	43	0.1
E*trade Korea Co Ltd	44	0
Bookook Securities	45	0
KTB Securities Co Ltd	46	0

5. Firm age. This is defined in years, by the IPO date minus the firm's founded date.

Firm age is a typical ex-ante uncertainty proxy which may affect the IPO underpricing.

It can represent the firm's maturity level as well as the risk level, so it is a factor that

the investors will be concerned about. Usually the older firms will have fewer

possibilities to misprice their IPO stocks. In the following regression analysis, the

firm's age is defined as a dummy variable. Firms with ages greater than 30 are realized as older firms, and the variable DAGE is represented as 1, otherwise it is represented as 0.

Based on the above model, the following hypotheses are expected in the results of the test:

Hypothesis 1: A negative relationship between the percentage of insider holding stocks and DUP;

Hypothesis2: A positive relationship between the systematic risk and DUP;

Hypothesis 3: A negative relationship between the total offering amount of each stock and DUP;

Hypothesis 4: A negative relationship between the underwriter's reputation ranking and DUP;

Hypothesis 5: A negative relationship between the age of the company and DUP.

Chapter 4

Results Analysis

In this part of the paper the results of the test will be discussed and the regression model will be generated. Moreover, the relationship between each factor and the degree of IPO underpricing will be analyzed.

Table 4.1: Summary of the Variables

Variable	Obs	Mean	Dev.	Min	Max
dup	72	0.1219944	0.2293261	-0.387	0.7
holding	72	0.2015446	0.198555	0	0.7214
risk	72	0.7465278	0.6239632	-1.65	1.95
amount	72	11758.13	8484.87	1000	44000
ranking	72	16.51389	11.75572	2	46
dage	72	0.1111111	0.3164751	0	1

The summary is done via the STATA program, and it includes the basic five statistical properties, such as number of observations, mean, maximum and minimum number of each sample observations. Among the 72 companies in Korea, the average dup is 12.19944%, which indicates that the first day abnormal return is 12.19944%. The highest and lowest abnormal return is 70% and -38.7% respectively. Overall, the data

has proven that IPO mispricing existed in Korea Exchange in 2010.

The estimated regression result for simple linear regression model is as follows.

$$DUP_i = 0.3693896 - 0.2280762 X_{\text{holding}*i} + 0.0649139 X_{\text{risk}} - 0.0000126$$

$$X_{\text{amount}*i} + 0.0005883 X_{\text{ranking}} - 0.1334298 D_{\text{AGE}}$$

Table 4.2: Regression Analysis of DUP and Independent Variables

dup	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
holding	-0.2280762	0.1179121	-1.93	0.057	-0.4634952	0.0073429
risk	0.0649139	0.0379172	-1.71	0.112	-0.140618	0.0107902
amount	-0.0000126	0.0000279	-4.51	0.021	-0.0000181	-0.0000007
ranking	0.0005883	0.0020082	0.29	0.77	-0.0034212	0.0045979
dage	-0.1334298	0.0725282	-1.84	0.07	-0.278237	0.0113774
_cons	0.3693896	0.0583529	6.33	0.258	0.2528843	0.485895

The above Table 4.2 shows the result of the regression of the dependent variable dup against the independent variables. Based on the results, Hypothesis 1 has been proven, which indicates that the percentage of insider holding stocks has a negative relationship with dup at a 10% significance level. To be more specific, the result has reflected that in Korea Exchange, the higher the percentage of insider holding is, the

better signal the market will get, and the lower abnormal return the issuer needs to offer to attract the investors. Moreover, the results from this table also verified Hypothesis 3, which shows that the total offering amount of one stock has a negative relationship with dup at a 5% significance level. In other words, the IPO stock would be mispriced less when the total offer amount is larger. One more conclusion from this analysis is that it proves that the age of the company and DUP have a negative relationship at a 10% significance level. Issuers with larger ages are considered to be mature firms, and the uncertainty is relatively low. So the older companies need not provide large abnormal returns as risk premiums for the investors. As a result, the older companies prefer to price their IPO shares near their intrinsic value.

On the other hand, from the regression analysis, the results fail to show a relationship between DUP and company risk or underwriters' reputation. In order to make further observations and to analyze the possible reasons for this, the independent regressions for the two variables were run and the results are as follows.

Table 4.3: Regression analysis of risk and DUP

dup	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
risk	0.077507	0.042941	-1.8	0.275	-0.16315	0.008136
_cons	0.179855	0.04166	4.32	0	0.096768	0.262943

To the contrary of Hypothesis 2, Table 4.3 shows that the systematic risk of the firm is

not significant to the DUP in Korea Exchange. The coefficient shows a positive relationship between firm risk and the DUP; however, the conclusion from the regression analysis is that the firm risk does not influence the DUP in Korea Exchange.

Table 4.4: Regression analysis of reputation ranking and DUP

dup	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
ranking	0.001	0.002329	-0.43	0.669	-0.00564	0.003644
_cons	0.138517	0.047091	2.94	0.004	0.044597	0.232437

According to Hypothesis 4, the underwriter's reputation ranking is supposed to have a negative relationship with DUP in Korean Exchange. However, the result from the regression analysis shows differently. The coefficient is 0.001, which indicates that the relationship is positive; moreover, the result shows the dependent variable is not significant to the DUP. So the conclusion for this part is the underwriter's reputation ranking does not influence the DUP in Korea Exchange.

Chapter 5

Conclusion and Limitation

This research paper mainly examines the degree of IPO underpricing in Korea Exchange. There are, in total, 101 firms that issued their IPO stocks in 2010, and 72 firms were selected for the regression analysis. The average degree of underpricing is 12.1994%, and the whole range is from -38.7% to 70%. This shows that the IPOs mispricing existed in Korea Exchange in 2010.

In order to investigate the possible explanations to the degree of IPO underpricing with regression analysis, five independent variables are set for the analytical model, which are insider holding percentage, firms' systematic risk, total issue amount, underwriters' reputation ranking, and IPO age of the issuing firms. Among all these five factors, from the regression result, insider holding percentage, total issue amount, and IPO age of the issuing firms are shown to be statistically significant to the degree of IPO underpricing. To be more specific, the results show that if the insiders of the issuing firms hold more stocks before IPOs, it would send a good signal to the market and the IPO stocks would have less possibility to be underpriced; if the total IPO issue amount is higher, the IPO stocks would have less possibility to be underpriced; if the issuing firm is a mature one, its IPO stocks would have more possibility to be priced correctly. Meanwhile, the results do not prove the significance of firms' systematic risk and underwriters' reputation ranking.

There is research that the issuing firms' systematic risk and underwriters' reputation ranking can affect the degree of IPO underpricing. The possible reasons that the test result does not support the hypotheses of these two variables are that the range of the systematic risk was quite stable in the year 2010, and all the underwriters in Korea did as well as each other, so these two variables did not show statistically significant influence on the degree of IPO underpricing.

In this research paper there are limitations that may affect the test results. First is the missing information. Twenty-nine data was deleted from the sample due to the unavailable information. That data selection might have affected the result of the test; also in this paper there are several costs being ignored, such as issuing fees and the cost to different underwriters. Without considering those costs, the degree of IPO underpricing may be inaccurate. Moreover, there is the possibility of missing relative independent variables, or relationships that the model did not consider, such as the quadratic relationship between dependent variable and independent variables.

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