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The Effects of Industry on Cross-Border and Domestic IPO Underpricing

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THE EFFECTS OF INDUSTRY ON CROSS-BORDER AND DOMESTIC IPO UNDERPRICING

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ABSTRACT

Increasing numbers of foreign firms are holding cross-border IPOs in attempts to raise capital in markets outside of their home nation. Within the United States cross-border IPOs consistently experience greater amounts of underpricing than domestic IPOs. This paper examines the effects of SIC industry classifications on cross-border and domestic IPO underpricing from 2004-2010. Analysis demonstrates that in various industries, SIC classification has a significant impact upon underpricing in comparison to other industries. While in other industries, significance is solely exhibited through the differing impacts of domestic and cross-border IPOs, within the industry itself, upon underpricing. The most significant industry effect is seen in high-technology industries which display a significant impact on underpricing on both the inter-industry and intra-industry level.

I. Introduction

Within the last two decades, international investment opportunities have flourished as an increasing number of countries eliminate or ease restrictive legal barriers for foreign investment. Simultaneously, an increasingly large number of firms have looked outside the borders of their home countries in search of new opportunities to raise capital. This investment is primarily done through initial public offerings (IPOs) held in foreign markets, also known as cross-border IPOs. As cross-border IPOs become more common, severe underpricing of these international IPOs almost always occurs. Researchers and economists have examined this trend and the rationale behind such an occurrence. Many previous studies examined intra-industry effects but no previous studies have expounded on the impact of SIC industry classification, and thus the overarching industry characteristics, upon IPO underpricing (Akhigbe, et al., 2003).

This study examines international firms holding an initial public offering on a US exchange, defining initial public offering to mean that the firm is not listed on any other exchange at the time of the cross-border IPO. IPO underpricing will be measured as the percentage difference between the company's offer price and the price at the end of the first trading day. In addition, the following control variables will be analyzed in attempts to control for possible investor exposure to a individual firm's IPO rather than exposure to an industry as a whole: size of the initial public offering, overhang percentage, number of days since the last domestic IPO within the industry, how many of the top five firms within the industry (as determined by net sales) are based in the US, number of employees within the firm, and net sales of the individual firms.

This paper will proceed as follows: Section II is a review of the academic literature on IPO underpricing and the theories being applied to cross-border IPO underpricing. Section III describes the data and data collection process. Section IV illustrates the methods used to analyze the data. Section V provides and discusses the results of the econometric analysis. Section VI concludes the paper and presents areas for potential future studies.

II. Literature Review

The concept of IPO underpricing has been thoroughly examined with the primary theories of IPO underpricing grouped under four broad categories: asymmetric information, institutional, signaling, and behavioral. The significant difference in foreign and domestic IPO underpricing has led scholars to begin applying the traditional explanations for domestic IPO underpricing to cross-border IPOs. In a study examining foreign and domestic IPOs between 1990-1993, Francis, Hasan, and Li (2001) found that foreign IPOs experienced underpricing of 13.79% compared to underpricing of 8.75% experienced by domestic IPOs. The IPOs were matched based upon SIC Code and issuing year. The disparity between foreign and domestic IPO underpricing has fluctuated throughout the years, but a notable difference still exists between the two today.

Information asymmetry is often pointed to as the source behind much of the cross-border IPO underpricing trend. This theory assumes that one of the parties involved in an IPO transaction, the issuing firm, the underwriting bank, or the potential investors,

knows more than the other parties. However, while various studies have examined differing cultural, financial, and geographical factors impacting both IPO underpricing and IPO aftermarket performance, very little has been done to categorize this information asymmetry on an industry-wide basis. (Grinnblatt and Kloharju, 2001; Bruner et al., 2000; Ejara and Ghosh, 2004). The focus of these previous studies has been to distinguish specific variables affecting the discrepancy in underpricing between domestic IPOs and foreign IPOs. A study performed by Grinnblatt and Keloharju (2001) on Finnish investors shows that stocks originating from countries with geographical proximity to, a common language with, or a shared border with Finland performed better. As most of these studies have concentrated on country-specific or firm-specific variables, my study will contribute to the recent upsurge in literature by examining industry-wide variables which may be affecting cross border IPO underpricing.

IPO underpricing can stem from investors having a different set of information or from the IPO management team having a different set of information. Hurusti and Maula (2007) displayed that pre-ownership and management by foreign investors has a significant impact of the underpricing of a cross-border IPO. Firms with pre-IPO ownership by foreign investors or whose management teams had previous experience with international IPOs displayed less underpricing due to increased international experience and exposure. Thus, familiarity on both sides of the IPO equation diminishes the amount of underpricing experienced during a cross-border IPO.

Institutional factors can also have a significant impact on the quantity of cross-border IPOs occurring within a given country as well as the performance of those cross-

border IPOs with regards to underpricing. Moore, Bell, and Filatotchev's (2010) study demonstrates the importance of investor protection in country of origin and exchange listing requirements in the destination country on IPO underpricing in both the United States and the United Kingdom. A greater level of investor protection as defined by the La Porta's index, which classifies the level of investor protection through the enforcement of regulations and laws, diminishes underpricing. In addition, IPOs occurring on exchanges in the United States with stricter listing requirements showed less underpricing than IPOs occurring on similar exchanges in the United Kingdom. These types of bureaucratic variables can have a significant impact on underpricing of domestic and cross-border IPOs before investor familiarity even becomes a factor.

Another explanation of IPO underpricing is the information signaling hypothesis. Ritter (1991) argues that firms may choose to go public when investors are "irrationally over-optimistic" about the future of certain industries. The subsequent dramatic increase in share price during the IPO would promote a favorable signal for not only the company itself but also for the industry as a whole. Ritter's research has been further expanded in a study by Francis, et al. (2010) to include evidence from foreign IPOs in attempts to examine why companies are willing to leave substantial amounts of money on the table in order to signal high investor expectations. Francis, et al. discovered that signaling theory is primarily important for cross-border IPOs relating to the underpricing of companies originating in segmented financial markets. Firms from segmented financial markets face higher information asymmetry and thus have a greater need to access external capital

markets. The trend among these firms is to issue large amounts of seasoned equity shortly after their initial public offering; therefore, they are willing to leave money on the table in order to signal high investor expectations to the market so that their seasoned equity offerings become a more profitable endeavor.

Regardless of a firms' potential signaling, it is proven that investor behavior, whether rational or irrational, is one of the most significant factors affecting cross-border IPO underpricing. Investors generally do not invest heavily in foreign entities, including cross-border IPOs. Most existing studies reveal that investors primarily invest in local markets due to unfamiliarity with foreign assets, also known as home bias. Kang and Stulz (1997) suggest that home bias leads Japanese investors who do chose to invest in foreign entities to be highly selective in which industries and firms they choose to invest in, rather than selecting a broad market portfolio of investments. In particular, investors over allocate portfolio space to manufacturing industries, large firms, and firms with low leverage and low unsystematic risk. These were industries and qualities that were either familiar to the sample of investors as demonstrated by the prominent industries within Japan, or had been proven to be correlated with high stock performance on the domestic market.

While it is difficult to identify what exact qualities contribute to familiarity, it is known that individual investors will choose to invest in organizations, industries, and firm qualities that they have increased exposure to or are familiar with. Huberman (2001) proved that shareholders of regional bell operating companies tend to live in the area served by the company. Even though other regional bell operating companies were

performing better investors continued to demonstrate a geographic bias due to their familiarity with the company in their region. Likewise, Massa and Simonov (2006) demonstrated that Swedish investors selected stocks closely related with their personal non-financial income. Individuals were using their geographic and professional affiliations as a no cost, efficient source of information regarding investments. These familiarity-based investments were allowing the investors to achieve higher returns than they otherwise would have if they attempted to diversify or hedge their investments through independent information sources.

Akhigbe et al. (2003) examined the effects of an IPO upon rival firms within an industry, but their results were largely inconclusive. They found that the lack of intra-industry reaction was due to the offsetting influences of information effects and competitive effects. Although their results determined the intra-industry effect to be insignificant, their examination of the variables composing what they deemed "informational effects" and "competitive effects" proved that certain factors influencing an industry as a whole can have an impact upon the cumulative average returns of firms within that industry. Significant informational effects including industry regulation and length of time between industry IPOs produced a positive reaction upon rival firms within industries, but their impact was negated by negative competitive effects such as large IPOs in competitive industries or classification as a high-technology industry. Their research posed the question of whether these industry effects may impact IPO underpricing of firms within a specific industry.

There is existing research distinguishing cross-border IPO underpricing and domestic IPO underpricing, but the research on testable explanations for the underpricing is limited because the number of cross-border IPOs was minimal until the early-1990s. Very few of the studies examining this phenomenon incorporate industry classifications and almost none of the studies conduct industry-wide analysis. Identifying patterns in industry underpricing between foreign and domestic IPOs may provide an arbitrage opportunity for investors to take advantage of the discrepancy in IPO underpricing within particular industries. This paper examines how industry-wide characteristics influence the underpricing of cross-border IPOs as opposed to domestic IPOs.

III. Data Collection and Description

This study includes all cross-border IPOs occurring in the United States from 2004-2010, as well as domestic IPOs from comparable US-based companies. Within the context of this study, "comparable" is being defined as identically matching SIC codes within the designated time frame. The IPOs included within this study, both cross-border and domestic, were identified through the Hoovers database as having occurred between 2004-2010 and include listings on the New York Stock Exchange (NYSE), American Stock Exchange (AMEX), and Nasdaq Exchange. All data pertaining to stock pricings, company information, and IPO specifics were acquired through the Center for Research in Security Prices (CRSP) while all information relating to industry statistics or data is from Hoovers.

The data set includes the initial offer price of the IPO and the share price at closing on the first day of trading. From this data I calculated the underpricing percent which will act as the dependent variable for all my regressions. I also calculated the overhang percent as the number of shares issued in the IPO as a percent of total shares outstanding on the date of issuance. In addition, all American depository receipts (ADRs) were eliminated from the data. ADRs enable investors to purchase shares of a foreign company through a depository bank rather than allowing investors direct trading access through a stock exchange. Since many companies issuing ADRs are already listed on an exchange in their home country, they were eliminated from the sample. Penny stocks (IPOs with an issue price of under five dollars) and companies who have gone bankrupt or been privatized since their issue date were also eliminated from the study due to the lack of available data. In addition, any cross-border IPOs without a domestic IPO within the same SIC code were eliminated from the sample set of data.

I also chose to eliminate SIC codes in which the only cross-border IPOs were from companies listing Bermuda, the Bahamas, or the Cayman Islands as their country of origin. Most of these firms have incorporated to these locales for tax purposes alone and are often domestic firms simply using these foreign locales as their IPO country of origin. They are therefore not representative of typical cross-border IPOs and may skew the final results. However, the SIC codes in which the sample of cross-border IPOs included IPOs originating in Bermuda, the Bahamas, or the Cayman Islands in addition to cross-border IPOs from other foreign locales were left in the sample data. As long as other

international firms are also conducting IPOs within a particular industry I cannot assume that the firms listing Bermuda, the Bahamas, or the Cayman Islands as their country of origin are representing firms incorporating for tax purposes alone but may instead be actual firms originating from and operating within the designated country. This is in agreement with many previous studies which have also eliminated these issues for the aforementioned reasons (Moore et al., 2010). After all the data had been cleaned, I was left with a sample of 93 cross-border IPOs and 219 domestic IPOs spanning 42 different industries. It should however be noted that a potential flaw in my data set is that I composed it manually so there is the possibility of human error.

IV. Methodology

We use the following empirical model to analyze the data and explain the effect of the following variables on IPO underpricing. The variables of primary interest are SIC and SIC*Foreign as the intent of this study is to examine the effect of SIC classification upon underpricing; all other variables are utilized as control variables.

$$UNDERP = \beta_0 + \beta_1 OVERH + \beta_2 SALES + \beta_3 EMP + \beta_4 OFFERA + \beta_5 TOP + \beta_6 DAYS + \beta_7 DATE + \beta_8 US + \beta_9 SIC + \beta_{10} SIC*US + \varepsilon \quad (1)$$

where:

UNDERPRICING = the underpricing of a firm's IPO as measured by the difference between the offer price and the trading price at the end of the first day

OVERHANG = the amount of overhang resulting from the IPO, measured as the

number of shares offered in the IPO as a percent of the firm's total shares outstanding at the time the IPO registration was filed with the securities and exchange commission

SALES = the dollar amount in millions of net sales recorded for the most recent year prior to the IPO

EMPLOYEES = the number of employees

OFFER AMOUNT = the size of the IPO in millions of dollars

TOP 5 US = the number of US based firms within the industry's top five companies as measured by sales in millions of dollars

DAYS = the number of days since the most recent US IPO within the industry

DATE = the date of the IPO

FOREIGN = 1 if the IPO firm has filed with an international location as their country of origin, 0 if the firm filed with the US as their country of origin. This variable is not included in the regression itself to avoid multicollinearity in the results due to its presence in the interaction term SIC*FOREIGN

SIC = the four-digit standard industrial classification (SIC) code assigned to the firm followed by four zeros, representing the industry effect of all broad characteristics applying to all firms within the industry as a whole. This is a categorical variable with a level for each individual industry dummy variable

*SIC*FOREIGN* = an interaction term calculated by multiplying the foreign variable by the SIC Variable

V. Results and Analysis

Table III provides a correlation matrix for the regression variables while Table IV provides the summary statistics and correlation analysis for the 312 observations included in the model. The correlations between variables seem to be generally low, suggesting that multicollinearity should not be a significant problem in my regressions.

The results from my regression are displayed in Table VII and show that most control variables are not statistically significant. Out of the control variables, only days since last domestic IPO is significant on the ten percent level and displays a negative relationship with IPO underpricing. This relationship signifies that as the number of days since the last domestic IPO within the industry increases, the underpricing of the IPO will decrease by 0.00002 percent. This may be explained by the fact that when a domestic IPO has not occurred within a particular industry for a significant period of time, investors do more research prior to the IPO due to their lack of recent familiarity with IPOs in that industry. When investors are more informed, some of the information asymmetry between the underwriters and investors is eliminated and thus the IPO is less likely to demonstrate underpricing.

Using the above model, I calculated the impact of the given variables upon IPO underpricing and find that nine out of 42 industries within the variable SIC have an impact upon IPO underpricing which is statistically different from all other industries at the five percent level: Miscellaneous publishing, Commercial printing, Chemical preparations, Computer peripheral equipment, Wireline telecommunications equipment, Telecommunications equipment, Opthalmic goods, Sporting and athletic goods, and

Water utilities. Eight of the nine industries have a positive relationship with underpricing, meaning that the particular industry has greater underpricing than the underpricing experienced by all other industries. In contrast, Chemical preparations is the only industry with a negative relationship with underpricing. The coefficient for this industry is -0.1523634 signifying that the IPOs within the chemical preparations industry are, on average, 15.24 percent less underpriced than IPOs in all other industries. However, six out of the nine industries only contain sample data from one cross-border IPO and one or two corresponding domestic IPOs meaning that the results may not be entirely representative of IPOs within the industries. The other three industries, Computer peripheral equipment, Wireline telecommunications equipment, and Telecommunications equipment, all have more than four observations in their respective samples so their results may be more representatively consistent.

My primary examination will be of the interaction variable SIC*Foreign. I find that for 16 out of the 42 industries within this variable, cross-border IPOs and domestic IPOs have statistically different underpricing. This variable interacts each individual SIC code with the binary variable, foreign, to demonstrate the relationship of IPO underpricing to both cross-border and domestic IPOs within a given industry. The results of my regression denote 16 occurrences, categorized by SIC code, as statistically significant. These occurrences signify that within a particular SIC code, cross-border and domestic IPOs have significantly different impacts on underpricing. Among the significant occurrences, ten have positive coefficients and six have negative coefficients.

A positive coefficient signifies that underpricing for a foreign IPO in that industry is, on average, greater than the underpricing for a domestic IPO in that industry. In contrast, a negative coefficient means that a foreign IPO within that industry will have the less underpricing than a domestic IPO within the industry. The difference in underpricing will be quantified by the numerical amount of the coefficient.

The positive relationship with underpricing demonstrated by ten of the SIC codes is consistent with prior literature regarding foreign IPOs displaying greater underpricing than their domestic counterparts. There is no discernable pattern or grouping to be made among the significant SIC codes as the industries range from information retrieval services to plastic materials and resins. Within this sample of positive relationships, it is also worth noting that the number of observations per SIC varies greatly with a minimum of two and a maximum of eight. There are four SIC codes with only two observations, meaning that only one cross-border IPO and one domestic IPO occurred within that industry during the designated time period of 2004-2010. SIC codes with only two or three observations in the sample data are likely to be a bit biased due to the isolated nature of the data and will not necessarily be an accurate portrayal of the relationship between IPO underpricing and cross-border IPOs.

The negative relationship with underpricing demonstrated by six of the SIC codes is contrary to general statistics regarding cross-border IPO underpricing. However three of the six industries are generally defined as high-tech industries within the broader computer and telecommunications industries, based upon total R&D as a percent of sales, which may explain the negative relationship. Historically the most well known and

successful high-tech computer and telecommunications production and development has been concentrated in Asia or other foreign locales. In addition, technology related firms are more likely to have alliance, business partners, or foreign stake-holders outside of their country of origin. These general trends may cause a reverse home bias with regards to cross-border IPOs in high-tech industries in which the foreign companies exhibit less underpricing than the domestic ones due to investor's high performance expectations for or familiarity with foreign technology related companies.

The other three SIC codes which have a negative relationship with underpricing cannot be classified as technology related industries but may instead simply be unreliable results. All three industries only have two observations, a cross-border IPO and a corresponding domestic IPO within the same industry. As previously stated, this lack of observations in my sample may mean that the significance of the results may not be representing an accurate depiction of the normal relationship between a particular industry's domestic and foreign IPOs and underpricing.

Overall, the most significant impact on underpricing will be exhibited by the industries in which both the SIC variable and the SIC*Foreign variable prove to be statistically significant. In the case that both variables show significance, then the industry as a whole has significantly different underpricing than average underpricing experienced by all other industries and within the industry itself there is a significant difference between domestic and cross-border IPO underpricing. In the case that the SIC variable is significant but the SIC*Foreign variable is not, it suggests that the average industry underpricing is significantly different from all the average underpricing of all

other industries, but within the industry itself the difference between domestic and cross-border IPO underpricing is not statistically significant. The reverse is true in the case that the SIC*Foreign variable is significant but the SIC variable is not. Examination of the results from my primary regression in Table VII yields seven industries with significant SIC and SIC*Foreign variables. However, since this analysis is comparing a compounding effect across two variables, I ran a second regression using only SIC codes with 4 or more observations to ensure more robust results.

The second regression demonstrates that three out of 21 industries have significant results in both the SIC and SIC*Foreign variables: Computer peripheral equipment, Wireline telecommunications equipment, and Telecommunications equipment. Table V compares the results from my base regression (1) and this additional regression (2) which sets a minimum on observations per SIC code. All three of the industries have positive relationships on the industry level but negative relationships on the foreign/domestic level. This signifies that all three industries display greater underpricing compared to the average underpricing of all other industries, yet within the industry itself the foreign IPOs experience less underpricing than the domestic IPOs. All three of these industries are also classified as high-technology related industries implying that they are industries with high potential for growth and high risk to reward metrics. The high growth potential often means that investors have high expectations for the performance of this stock. The high level of investor expectations may increase IPO underpricing by artificially inflating the stock price during the first day of trading.

Therefore, it is not unusual to expect these industries to demonstrate greater underpricing than the average underpricing of all other industries.

Robustness Testing

The events of the financial crisis from late 2007 to early 2009 caused a drastic decline in the number of domestic and cross-border IPOs occurring in the United States as seen in Table II. In addition IPO underpricing and average first day returns during 2008 were significantly lower than the years ex-ante and ex-post financial crisis. Due to this shock in underpricing, I test the robustness of my results by performing a third regression in which IPOs occurring from August 2007-January 2009 are eliminated from the sample data. The deletion of these IPOs resulted in certain industries being omitted from the sample data because the only foreign or domestic IPO for a given industry occurred within the time period surrounding the financial crisis. Also, the control variables DATE (IPO date) and DAYS (Days since last domestic IPO within the industry) were dropped from the regression because of the break in chronological data.

$$UNDERP = \beta_0 + \beta_1 OVERH + \beta_2 SALES + \beta_3 EMP + \beta_4 OFFERA + \beta_5 TOP + \beta_7 US + \beta_8 SIC + \beta_9 SIC*US + \varepsilon \quad (3)$$

Table VI presents the results of this regression compared to the results of our initial regression. The elimination of financial crisis data resulted in the control variable OFFER AMOUNT becoming significant at the ten percent level and the industry Process control instruments within the variable SIC*Foreign becoming significant at the five percent level. Certain variables and industries, such as the control variable DAYS, were

removed from the regression (3) data set and thus could no longer test for significance. However, other than the variables which were removed from the regression all industries within the SIC*Foreign variable continued to be statistically significant once the data relating to the financial crisis was removed from the sample set. The continuity among the data between the two regressions suggests that my initial results are fairly robust and the financial crisis did not significantly skew the significance of my results.

VI. Conclusion

This paper investigates the effect of SIC industry classifications on cross-border and domestic IPO underpricing from 2004-2010. Using control and interaction variables, I performed econometric analysis to determine which industries had a significant impact upon IPO underpricing. This paper finds that various industries, as classified by four-digit SIC codes, have a significant impact on the underpricing of initial public offerings for both domestic and foreign firms within the given industry. In addition, the number of days since the last domestic IPO in a given industry has a negative impact upon IPO underpricing. This indicates that IPOs occurring shortly after a domestic IPO within the same industry are more likely to have significant underpricing than those after a period of dormancy.

While many industries have a significant impact at either the cross industry level or the intra-industry level between domestic and cross-border IPOs, only a few show continuous significance within both areas. Most predominantly, investment in the high-

technology industries of computer peripheral equipment, Wireline telecommunications equipment, and Telecommunications equipment may yield the most profitable results. These industries demonstrate the most significant results on both the cross-industry and intra-industry level. While the exact difference cannot be quantified these industries exhibit greater underpricing on average than all other industries meaning that their end of first day trading price is much greater than their initial offer price. In addition, domestic IPOs display greater underpricing than the cross-border IPOs within these industries. An arbitrage opportunity may exist if investors chose to invest at the initial offer price of domestic IPOs within these high-technology industries.

This paper also opens several other areas for potential study. Obtaining a data set spanning a greater period of time may be advisable in order to provide a more comprehensive study of industry. Due to the rarity of IPOs being issued in certain industries, many industries were excluded from my study because only a domestic or a cross-border IPO occurred within the industry during my defined time period while one of each was required for inclusion in the sample data. It would also be interesting to expand my research to other international markets in order to see if the same conclusions are held when US firms are no longer the domestic IPOs but instead constitute a portion of the cross-border IPOs.

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Appendix

Table I: SIC Codes Included in Data Set & Number of IPOs Observed per SIC Code

SIC Code	Samples	SIC Industry Name	SIC Code	Samples	SIC Industry Name
13820000	3	Oil & gas exploration Services	48120000	3	Radiotelephone communication
20850000	2	Distillers and blended liquors	48130000	6	Telephone communication, except radio
27410000	3	Miscellaneous publishing	48330000	2	Television broadcasting stations
27590000	2	Commercial printing	48990000	7	Communication services
28210000	3	Plastics materials and resins	49410000	2	Water utilities
28340000	44	Pharmaceutical preparations	51710000	3	Petroleum bulk stations and terminals
28360000	15	Biological products, except diagnostic	55410000	2	Gasoline service stations
28990000	2	Chemical preparations	55990000	2	Automotive dealers
35590000	4	Special industry machinery	58120000	9	Eating places
35770000	5	Computer peripheral equipment	59120000	2	Drug stores and proprietary stores
36610000	5	Wireline telecommunications equipment	64110000	3	Insurance agents, brokers, and service
36630000	4	Telecommunications equipment	65310000	5	Real estate agents and managers
36740000	34	Semiconductors and related devices	67260000	5	Investment offices
38230000	2	Process control instruments	70110000	3	Hotels and motels
38410000	12	Surgical and medical instruments	73120000	2	Outdoor advertising services
38450000	13	Electromedical equipment	73710000	9	Custom computer programming services
38510000	2	Opthalmic goods	73720000	38	Prepackaged software
39490000	2	Sporting and athletic goods	73750000	8	Information retrieval services
44120000	21	Deep sea foreign transportation of freight	73890000	11	Business services
45120000	4	Air transportation, scheduled	82990000	4	Schools and educational services
47240000	2	Travel agencies	89990000	2	Services

Table II. Market Share of Foreign Companies among US Listing, 2004-2010

Year	Number of IPOs	Domestic	Foreign	% Foreign
2004	39	33	6	15.38%
2005	41	31	10	24.39%
2006	62	44	18	29.03%
2007	76	53	23	30.26%
2008	8	6	2	25.00%
2009	25	19	6	24.00%
2010	61	33	28	45.90%

Table III: Correlation Matrix for base regression (1)

	OFFERA	SALES	EMP	OVERH	TOP	DAYS	DATE	FOREIGN	SIC
OFFERA	1.0000								
SALES	0.5873	1.0000							
EMP	0.4631	0.5182	1.0000						
OVERH	0.0658	-0.1006	-0.0449	1.0000					
TOP	-0.0998	-0.1018	-0.0746	-0.0560	1.0000				
DAYS	0.0988	0.1018	0.1611	0.0286	-0.0769	1.0000			
DATE	0.0597	-0.0948	0.0336	0.2609	0.0913	-0.0157	1.0000		
FOREIGN	0.0844	-0.0035	0.1456	0.3048	-0.2024	0.1339	0.1820	1.0000	
SIC	0.1741	0.1315	0.2399	0.1696	0.3624	0.1341	0.1513	0.0850	1.0000

Table IV: Summary Statistics of base regression (1)

Variable	**Observations**	**Mean**	**Standard Dev.**	**Min**	**Max**
Underpricing %	312	.1117277	.1982499	-.2954545	1
Offer Amount	312	165.1917	229.3064	4.5	1875.5
Sales	312	530.678	1865.807	0	29321
Employees	312	2261.429	5461.585	3	45000
SIC Code	312	4.78e+07	1.81e+07	1.38e+07	9.00e+07
Overhang %	312	.3374193	.2283975	.0132179	1
Top 5 in Industry US based?	312	1.512821	1.341819	0	4
Days since last industry IPO	312	617.0609	1329.838	0	18940
Date of IPO	312	17351.65	728.4094	16071	18613
Foreign	312	.2980769	.4581483	0	1

Table V: Comparative Descriptive Statistics of Significant Results

(1)				(2) Minimum 4 observations Per SIC Code			
SIC		SIC*Foreign		SIC		SIC*Foreign	
27410000	0.2035**			35590000	0.2396***		
	(0.10193)				(0.0564)		
27590000	0.1278**	27590000 1	0.0955***	35770000	0.3765***	35770000 1	-0.3443***
	(0.12780)		(0.015181)		(0.09414)		(0.121149)
		28210000 1	0.2670***	36610000	0.2882***	36610000 1	-0.4004***
			(0.050187)		(0.08129)		(0.076982)
28990000	-0.1523**			36630000	0.3350***	36630000 1	-0.4066***
	(0.07404)				(0.03398)		(0.022978)
35770000	0.3084***	35770000 1	-0.3341***	36740000	0.1432***		
	(0.11579)		(0.127171)		(0.05537)		
36610000	0.2143**	36610000 1	-0.4042***	38410000	0.1694*		
	(0.10346)		(0.082064)		(0.09379)		
36630000	0.2697***	36630000 1	-0.4026***			48990000 1	0.1845**
	(0.07124)		(0.022021)				(0.079248)
38510000	0.1462**	38510000 1	-0.0605**			58120000 1	0.2496*
	(0.07316)		(0.026025)				(0.144179)
39490000	0.3337***	39490000 1	0.1391***	73720000	0.0964**		
	(0.06704)		(0.023193)		(0.04661)		
		47240000 1	0.9436***			73750000 1	0.6395***
			(0.046182)				(0.122584)
		48330000 1	0.2484***	82990000	0.1816***		
			(0.040432)		(0.04505)		
		48990000 1	0.1871**				
			(0.075458)				
49410000	0.4517***	49410000 1	-0.4634***	Days	-0.00002**		
	(0.06796)		(0.074203)		(0.00002)		
		51710000 1	0.1210*	Constant	0.29431		
			(0.066738)		(0.31313)		
		55410000 1	-0.3043*	Observations	249		
			(0.168932)				
		64110000 1	0.5876***	R^2	0.2611		
			(0.048869)				
		70110000 1	0.2081*				
			(0.118975)				
		73750000 1	0.6575***				
			(0.125901)				
Days	-0.00002*						
	(9.05e-06)						
Constant	0.25584						
	(0.34771)						
Observations	312						
R^2	0.3506						

*** denotes 1% confidence, ** denotes 5% confidence, * denotes 10% confidence
Note: Only results for variables with statistical significance are included in this table although the regression contained other continuous variables and SIC codes.

Table VI: Comparative Descriptive Statistics of Significant Results

Variable	(1)	(3) Without Financial Crisis Data
Offer Amount	0.000103	0.000101*
	(0.000088)	(0.000061)
Days	-0.000016*	--
	(9.05e-06)	
SIC* Foreign		
27590000 1	0.09551***	0.10397***
	(0.015181)	(0.011774)
28210000 1	0.26703***	0.28096***
	(0.050187)	(0.044373)
35770000 1	-0.33417***	-0.32963**
	(0.127171)	(0.133813)
36610000 1	-0.40423***	-0.40140***
	(0.082064)	(0.085712)
36630000 1	-0.40262***	-0.38006***
	(0.022021)	(0.012169)
38230000 1	-0.10844	-0.16633**
	(0.071492)	(0.066592)
38510000 1	-0.06052**	-0.03657*
	(0.026025)	(0.017147)
39490000 1	0.139141***	0.11596***
	(0.023193)	(0.020668)
47240000 1	0.943622***	--
	(0.046182)	
48330000 1	0.248431***	0.23448***
	(0.040432)	(0.025818)
48990000 1	0.187196**	0.18841***
	(0.075458)	(0.072039)
49410000 1	-0.46348***	--
	(0.074203)	
51710000 1	0.121028*	0.15624**
	(0.066738)	(0.071258)
55410000 1	-0.30439*	--
	(0.168932)	
64110000 1	0.587601***	--
	(0.048869)	
70110000 1	0.208112*	0.28714**
	(0.118975)	(0.145733)
73750000 1	0.657553***	0.59132***
	(0.125901)	(0.113971)
Constant	0.255845	0.08463
	(0.347710)	(0.106305)
Observations	312	256
R^2	0.3506	0.3377

*** denotes 1% confidence, ** denotes 5% confidence, * denotes 10% confidence
Note: Only results for variables with statistical significance are included in this table although the regression contained other continuous variables and SIC codes.

Table VII: Descriptive Statistics, Regression (1)

Variable	(1)		
	0.000103		
OFFERA	(8.76E-05)	SIC (Continued)	
	5.14E-06		0.112387
SALES	(2.92E-05)	73890000	(0.15433)
	2.77E-06		0.115064
EMP	(6.58E-06)	82990000	(0.076396)
	-0.05742		
OVERH	(0.079576)	SIC*FOREIGN	
	0.016669		-0.0772
TOP	(0.018223)	13820000 1	(0.061394)
	-1.2E-05		-0.01101
DAYS	(2.01E-05)	20850000 1	(0.029602)
	-1.6E-05*		-0.16183
DATE	(9.05E-06)	27410000 1	(0.100177)
			0.095507***
SIC		27590000 1	(0.015181)
	0.001736		0.267028***
20850000	(0.070427)	28210000 1	(0.050187)
	0.20356**		-0.03675
27410000	(0.101931)	28340000 1	(0.047598)
	0.127807***		0.012679
27590000	(0.062415)	28360000 1	(0.041104)
	-0.003		0.142857
28210000	(0.077112)	28990000 1	(0.090419)
	-0.05848		0.143784
28340000	(0.075096)	35590000 1	(0.235603)
	-0.03645		-0.33417***
28360000	(0.079903)	35770000 1	(0.127171)
	-0.15236**		-0.40423***
28990000	(0.074041)	36610000 1	(0.082064)
	0.000792		-0.40262***
35590000	(0.148034)	36630000 1	(0.022021)
	0.308496***		-0.00798
35770000	(0.115796)	36740000 1	(0.083239)
	0.214353**		-0.10844
36610000	(0.103462)	38230000 1	(0.071492)
	0.269779***		0.060355
36630000	(0.071245)	38410000 1	(0.090922)
	0.068055		-0.00084
36740000	(0.07332)	38450000 1	(0.161486)
	-0.00794		-0.06052**
38230000	(0.088529)	38510000 1	(0.026025)
	0.078765		0.139141***
38410000	(0.113568	39490000 1	(0.023193)
	-0.00872		0.022369
38450000	(0.08474)	44120000 1	(0.036864)
	0.146217**		0.05249
38510000	(0.073161)	45120000 1	(0.129312)
	0.333772***		0.943622***
39490000	(0.067048)	47240000 1	(0.046182)

	-0.0401		-0.03957
44120000	(0.075379)	48120000 1	(0.060167)
	0.089895		-0.0523
45120000	(0.140074)	48130000 1	(0.118872)
	-0.09322		0.248431***
47240000	(0.067825)	48330000 1	(0.040432)
	-0.04919		0.187196**
48120000	(0.074077)	48990000 1	(0.075458)
	-0.00641		-0.46348***
48130000	(0.134156)	49410000 1	(0.074203)
	-0.11018		0.121028*
48330000	(0.075745)	51710000 1	(0.066738)
	-0.02509		-0.30439*
48990000	(0.097292)	55410000 1	(0.168932)
	0.451759***		0.028531
49410000	(0.067968)	55990000 1	(0.077906)
	-0.02279		0.131658
51710000	(0.06757)	58120000 1	(0.20644)
	0.028797		-0.06072
55410000	(0.072913)	59120000 1	(0.091203)
	-0.00985		0.587601***
55990000	(0.101103)	64110000 1	(0.048869)
	0.138174		0.101166
58120000	(0.126044)	65310000 1	(0.226836)
	-0.00212		0.126185
59120000	(0.08897)	67260000 1	(0.177884)
	-0.05731		0.208112*
ok64110000	(0.081969)	70110000 1	(0.118975)
	-0.00217		0.027294
65310000	(0.199725)	73120000 1	(0.068749)
	0.015016		0.180385
67260000	(0.078933)	73710000 1	(0.166595)
	-0.11564		-0.02667
70110000	(0.172699)	73720000 1	(0.171288)
	-0.10087		0.657553***
73120000	(0.076719)	73750000 1	(0.125901)
	0.016401		0.029441
73710000	(0.090693)	73890000 1	(0.258206)
	0.045364		0.043318
73720000	(0.098739)	82990000 1	(0.154813)
	0.024912		0.41346
73750000	(0.150573)	89990000 1	(0.757381)
			0.255845
(Results continued again at top)		CONSTANT	(0.347711)

*** denotes 1% confidence, ** denotes 5% confidence, * denotes 10% confidence