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DO U.S. FIRMS FLY HIGHER WHEN BYPASSING THE U.S. CAPITAL MARKETS? AN INVESTIGATION OF THE SHORT-TERM PERFORMANCE OF FOREIGN IPOS.

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Abstract: *This paper investigates the performance of U.S. firms that partake in a foreign IPO – bypassing their domestic exchanges and raising their equity in a foreign market. The globalization of equity markets along with the increased regulations to financial markets in the U.S. has potentially led to the U.S. losing its title as the premier listing market. Using a sample of 77 U.S. based firms that totally bypassed the U.S. equity markets in their capital(equity) raising activities we are able to investigate the performance of this unique sample of firms. This investigation contributes to the literature by finding that U.S. firms which bypassed the U.S. market experienced less underpricing compared with U.S. only IPOs. We alsotest the window of opportunity and prestigious underwriter IPO hypotheses on our unique data set and find statistical evidence supporting the former hypothesis yet no statistical evidence confirming the latter hypothesis.*

Keywords: *Initial Public Offerings (IPOs), Underpricing, Globalization, Regulation*

1. INTRODUCTION

This study examines the pricing of foreign IPOs (FIPOs) made by U.S. companies as compared to purely domestic offerings (DIPOs). Doidge, et al. (2013) suggests that IPO activity in the U.S. has fallen compared to the rest of the world and U.S. firms go public less than expected. During the past decade IPOs in the U.S. have not kept up with the economic importance of the U.S. In the 1990s, the yearly average of the number of U.S. IPOs comprised 26.7% of all IPOs issued worldwide while the U.S. accounted for

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27% of world Gross Domestic Product (GDP). Since 2000, the U.S. share of all IPOs has fallen to 11.7% whereas its share of worldwide GDP has averaged 30%. Further, The New York Times reports that 75 firms from the U.S. choose to bypass the U.S. exchanges completely and list in a foreign market between 2000-2009.[1] This is a strikingly upward trend from the previous decade where only 2 U.S. companies choose to bypass U.S. exchanges.

There are three reasons why the study of FIPOs offering by U.S. firms is important. First, as outlined above the globalization of equity markets has transformed the capital raising activities of firms across the globe and it is important to investigate the impact this transformation has had on equity raising activities. Secondly, Gagnon and Karolyi (2010) suggest that most of the literature focuses on foreign firms seeking equity in the U.S. markets. We have seen a significant number of U.S. firms bypassing the U.S. market in the past decade but little research has been done on the performance of these firms. Finally, Kim and Weisbach (2008) along with Caglio, et al. (2011) amongst others have investigated the determinants of firms seeking equity outside of their home country but do not investigate firm performance. This literature contributes to fill such gap.

We follow Wu and Kwok (2003) who examined the short-term pricing of global IPOs made by U.S. companies and found that that global participation can significantly reduce underpricing by about 4%. Our research differs from Wu and Kwok (2003) in several ways. They focus on the performance of global IPOs originating from the U.S. Our study has a unique sample which is comprised of firms that are totally bypassing U.S. markets. Unlike global IPOs, FIPOs are exempt from regulation from the SEC and are strictly regulated by the foreign markets security regulators. FIPOs are also much smaller than the global IPOs which tend to be even bigger than domestic IPOs. Also, we employ a propensity score matching methodology that differs from the traditional matching methodology that was employed by Wu and Kwok, (2003). Finally, our paper uses a sample period from 2000 to 2011 which captures a unique time frame during the globalization of financial markets including new security regulation and the financial crisis of 2007-2008.

Using a sample of FIPOs and purely domestic IPOs made by U.S. firms from 2000 to 2011, we reveal that, FIPOs exhibit approximately 2% less

[1] "U.S. Falls behind in Stock Listings," by Aaron Lucchetti, The New York Times, June 23, 2011, A1.

underpricing than their matched domestic counterparts. Secondly, we are able to find that FIPOs experience less underpricing when the foreign market (U.S.) is experiencing a "hot" market which aligns with the window of opportunity hypothesis. These findingsadd to the evidence of the foreign clientele hypothesissuggested by Wu and Kwok (2003) which proposes that foreign investors may be willing to pay a premium for foreign equity. Lastly, the results do not offer statistical evidence that underwriters prestige ranking impacts the degree of FIPO underpricing.

This research will also be of interest to academics, practitioners, and regulators. As mentioned this research fills the academic research gap by investigating the performance of these U.S. firms seeking equity outside of the regulation of the U.S. markets. Practitioners, such as

potential issuers, venture capitalists, and investment bankers, can use this research to better understand some of the options, complications, and performance of issuing equity outside of the U.S. Lastly, regulators globally can understand the potential impacts new regulations may have on firms seeking to issue equity on their markets and the price performance of such regulations.

The remainder of this paper is as follows. Section 2 will provide a brief overview of the relevant literature on IPO underpricing in a global context and provide the hypotheses we intend to investigate. Section 3 will outline our data sources and Section 4 describes our methodology. Section5 will consist of our results and Section 6 will provide the implications and conclusions of our research on foreign IPOs.

2. LITERATURE REVIEW

2.1 IPO Market

In frictionless markets, the fundamental Modigliani and Miller (1958) theorem implies that neither the type of securities a firm issues nor the location in which these securities are issued are relevant. However market frictions such as, imperfectly integrated markets, taxes and market regulations render the choice of location of stock issuance an important consideration for practitioners. Global financial integration continues to evolve. As more countries further develop their financial markets, firms have more options to raise capital. Further, the global competition among financial exchanges has increased since many exchanges have evolved into

for-profit companies that need to maximize shareholders wealth. In response to the increased competition, some larger and well established exchanges have created new sub-exchanges such as the Alternative Investment Market (AIM) by the London Stock Exchange (LSE) and the Toronto Venture Stock Exchange (TSX-V) by the Toronto Stock Exchange (TSE). These new markets were created to allow younger and smaller firms, which may not yet meet the listing requirements of the major markets (e.g.NYSE, LSE, TSX) to list and to have access to a wider range of investors. These new developments have created a brand new listing environment for corporate equity financing worldwide.

Recent literature suggests that with the globalization of equity markets and increased international competitiveness among exchanges, the United States exchanges such as the NYSE and NASDAQ may be losing their place as the premier listing destination. Globalized competition among exchanges has led to the increased development of "global IPOs". That is firms choosing to initiate an IPO in their domestic market and set aside a fraction of the total shares offered to global investors (global tranche) while the remaining shares are offered simultaneously in the domestic market. Zingales (2007) finds that while in the late 1990s the U.S. capital market was attracting 48% of all the global IPOs, its share has dropped to 6% in mid-2000's. Zingales (2007) also hints at the idea of U.S. based firms totally bypassing the U.S. equity markets in favor of European markets but suggests that it has only been a recent but surprisingly interesting phenomenon.

Although no one single factor has caused this shift in global IPO activity from one market to another, new regulations in the U.S. markets may have played a contributing role. The passing of the Sarbanes-Oxley Act (2002) introduced new stringent disclosure requirements. Many researchers and shareholders suggest that these requirements place undue hardship on firms that are required to report to the Securities Exchange Commission (SEC). Coates (2007) suggests that U.S. regulation might benefit foreign companies, especially from developing countries, as it allows them to bond themselves to better disclosure and practices, but it also implies some costs. His empirical analysis suggests that the costs of the post-2002 changes in the regulatory environment might have exceeded the benefits for U.S. companies.

2.2 IPO Performance - Short-term

On average, the closing market price on the first day of trading of an IPO is higher than the offer price. In every country with a stock market, IPOs are underpriced Ritter (2003).[2]Loughran and Ritter (2004) document the changing pattern of IPO underpricing over the modern era. They indicate that IPO underpricing in the 1980s, as measured by the average first-day return, was 7% which continuously climbed until reaching a peak during the internet bubble where average first-day returns reached 65%. Since then the average first day return has reverted to approximately 12% during the period of 2002-2008.

2.3 Global IPO Performance (Short-and Long-run)

Wu and Kwok (2003) examine the pricing of global initial public offering made by U.S. companies compared to purely domestic (U.S. only) offerings. Using a time frame from 1986 to 1996 they obtain a working sample of 453 global IPOs and 2127 domestic IPOs. They test the foreign clientele hypothesis, which suggests that global offerings will be less underpriced if firms allocate more shares to foreign investors who have high demand and truthfully reveal it. The finding suggests that global participation can significantly reduce underpricing by about four percentage points compared to purely domestic issues which confirm the foreign clientele hypothesis. Further, the degree of underpricing is inversely related to the relative size of the global tranche. They attribute the lower initial returns associated with global IPOs to the existence of a foreign clientele that are willing to pay higher prices in exchange for the benefit and convenience of global diversification provided by these offers. They conclude that global issuing companies are able to take advantage of the window of opportunity that occurs when foreign demand for U.S. shares is high which is measured by the relative strength of the U.S. stock market compared to other major markets. Lastly, the research by Wu and Kwok (2003) suggest that high-rank underwriters are associated with deeper underpricing in global offerings. They are unable to provide an explanation for such result suggesting that it could be attributed to the different IPO methods used in foreign countries (book-building, auction, fixed-price).

Wu and Kwok (2007) follow up their previous empirical investigation of global IPOs with a study that focuses on the long-term performance of global

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[2] See Jay Ritter's website for comprehensive survey of literature; http://bear.warrington.ufl.edu/ritter/

offerings. They test the window of opportunity hypothesis suggesting global issues are more prone to investor over-optimism than purely domestic ones. Foreign investors' interest in U.S. shares is not only affected by the fundamentals of the IPO firm, but also affected by other factors such as the attractiveness of the U.S. stock market relative to their national market, convenience of share ownership, and desire for global diversification. In cross-sectional tests, global IPO firms underperform their purely domestic counterparts in the three years after issuance. Despite the long-run underperformance, global issuers fare relatively better than their domestic match in terms of operating performance during the same time period.

Chan, Wu et al. (2007) study the impact of global offerings on U.S. IPOs offer price using the stochastic frontier approach. Testing the demand inelasticity, certification effect, and investor recognition/participation hypothesis they find that the average valuation efficiency of global offerings firms exceeds that of the domestic offering by 3.1% points. Further, they suggest that global IPO firms are better able to ease the price pressure if a significant portion of total shares is allocated to the global tranche. Less reputable and risky firms benefit more from global offerings, thanks to the certification and investor recognition effects.

Caglio, et al. (2011) examine the increasing trend of firms seeking equity aboard via foreign and global IPOs. They seek to explain the reasons why firms partake in such capital raising activities and suggest three main motivations. First, they suggest that by partaking in a foreign or global IPO firms can reduce information asymmetry problems associated with typical capital raising efforts domestically. Their study suggests that foreign and global IPOs come from countries where information asymmetries are likely high. Second, they find strong evidence that foreign and global IPOs originate from countries whose security market is less developed consistent with the bonding hypothesis developed by Coffee (2002). Both points suggested by Caglio, et al. (20111) seem to neglect the upward trend of U.S. firms bypassing U.S. equity markets in search of capital.

2.4 Hypotheses

We hypothesize that foreign IPOs will experience less underpricing than their domestic counterparts. IPOs have no prior trading history before going public and therefore, the degree of information asymmetry between listing company and investors is likely to be high. As in Wu and Kwok (2003) we suggest that underpricing is reduced when firms seek equity financing from abroaddue to the foreign clientele effect. The foreign clientele hypothesis

suggests foreign clientele are willing to pay higher prices in exchange for the benefit and convenience of global diversification provided by these offerings. Foreign investors are not restricted from purchasing U.S. stocks on the U.S. market but carrying out such a transaction may carry additional transactional costs and deadweight costs such as information acquisition. Further, purchasing a U.S. IPO on the U.S. market by a foreign investor is very difficult due to the underwriter allocation of shares to preferred clientele.

H1: Foreign IPOs will experience no difference in underpricing from domestic IPOs

Wu and Kwok (2003) find that global IPOs (by U.S. firms) can significantly reduce underpricing by about 4 percentage points relative to purely domestic issues and underpricing is found to be a decreasing function of the relative size of the global tranche. They attribute the part of the lower underpricing to what they call "the window of opportunity" hypothesis. This hypothesis follows the Ritter (1991) and Loughran and Ritter (1995) studies which suggests that investors (individual and institutional) are overly optimistic about the earnings potential of the new public company and thus the underwriter sets the offering price relatively high leading to less underpricing.Foreign investor's interest in U.S. shares is not only affected by the fundamentals of the IPO firm, but also affected by other factors such as the attractiveness of the U.S. market. Thus, we hypothesize that U.S. foreign IPOs will experience less underpricing than their domestic counterparts when the U.S. market outperforms the host countries equity market.

H2: Foreign IPOs will experience no difference in underpricing when the U.S. domestic market is "hot".

According to Carter and Manaster (1990) prestigious underwriters are less likely to underwrite risky offering and could be more skilled at pricing their offerings appropriately. Research by Johnston and Miller (1988), Michaely and Shaw (1994) among others find that underpricing is inversely related to the rank of the lead underwriter. Our focus on rank of the lead underwriter centers on how FIPO firms are impacted by the use of prestigious underwriters.

H3: Foreign IPOs that are brought to market by more prestigious underwriters will experience no difference in performance than those brought to market with less prestigious underwriters.

3. DATA

Before we get into the sources of the dataset we should clarify the definitions of what a foreign and domestic IPO are for this study.

Following Caglio, et al. (2011) the following definitions are applicable.

Domestic IPOs (DIPOs) are IPOs that go public in their home country but not in any foreign country.

Foreign IPOs (FIPOs) are IPOs that go public in at least one foreign country but not in their home country.

We use the Securities Data Company's (SDC) New Issue database to collect the complete sample of foreign IPOs (FIPOs) and domestic IPOs (DIPOs) of U.S. firms from 2000 to 2011. The initial sample included 131 FIPO firms and 3954 DIPOs. We exclude issues with unit and right offers, issues made by financial institutions (SIC 60-67), regulated electricity and gas companies (SIC 491-494), closed ended funds, and real estate investment trusts (REITs). To be included in our sample the issuers must be available on the Bloomberg securities database or Centre for Research in Security Prices (CRSP) database on the offering dates. We rely mainly on the SDC database to collect the IPO information. The majority of firms' offering information such as offer price, proceeds, underwriter, etc. is collected from SDC database.

However, it is noted that the SDC database contains substantial errors in firms' number of shares outstanding.[3] To mitigate such data error problem, we cross-reference the Bloomberg database on shares issued and outstanding. First-day trading prices as well as daily and monthly price data for a period of 3 years from the IPO date are obtained via Bloomberg or CRSP. The final FIPO sample contains 77 firms while DIPO sample contains 1041.[4] The number of FIPO offerings has increased over time (see Figure 1A) and has significant growth (via percentage) compared to DIPOs (see Figure 1B). Figure 2 details the FIPOs destination listing market which particularly highlights the London Stock Exchange (LSE) and the Toronto Stock Exchange (TSE) as popular alternatives for U.S. firms seeking to issue equity.

The independent variables include a FIPO dummy variable, Size (measured by market capitalization at the time of the IPO in $M USD), ranking of the lead underwriter, age of the firm at time of the IPO and others that can be seen in Table 2. A distribution of FIPOs and DIPOs via issue year can be seen in Table 3. Summary statistics of the 77 FIPO and 1041 DIPO

[3] The discussion of the data problem contained in the SDC database can be found at, http://pages.stern.nyu.edu/~aljungjv/research.htm

[4] Refer to Table 1 for details on the selection criteria for our sample.

firms are provided in panel of Table 4. We can observe that FIPOs are generally smaller in size and younger when compared to the full sample of DIPOs. Panels B & C of Table 4 further compare the summary statistics of the FIPO sample compared against the portfolio of matched DIPOs via both issue year and size and the propensity score methodology. In both panels we can observe the characteristics of the FIPOs and DIPOs become more similar on several different measures. Size, Age, Rank, and the relevant run-up variables all become much similar amongst the portfolios which will allow for much more robust comparisons in regressions in the next sections.

Table 1

Selecting Criteria	*Number of FIPO Observations*	*Number of Domestic IPO Observations*
1. FIPOs between 2000 and 2011 as recorded via SDC	*143*	*3954*
1, & 2. Exclude issues with unit and right offers, issues by financial institutions (SIC 60-67), regulatory electricity and gas companies (SIC 491-494), closed-ended funds and real estate investments (REITS).	*117*	*3455*
1, 2, & 3. With necessary price data on Bloomberg or CRSP	*93*	*2620*
1, 2, 3 & 4. Available Data obtained via Ritter Website, Thompson One Banker or able to hand-collect. (Underwriter Ranking, VC backing, Age)	*77*	*1041*

Table 2

Independent Variables	*Source and Computation*
Foreign Dummy (FD)	1=FIPO 0=Domestic IPO
Size – Market Cap. (MC)	SDC Database
Rank of Lead Underwriter (RANK)	SDC Database & Jay Ritter Website (Rankings) [5]
Age of Firm (At time of IPO) (AGE)	Via Jay Ritter Website or Hand-Collected via firms website
Venture Capital Backing Dummy (VC)	[6]Log # of Days from Founding Date to Offer Date
Big Board or Venture Exchange Dummy (VEX)	1=Backed by VC 0=Not Backed by VC (Thompson One Banker)
Standard Deviation of first 60 days (STD60)	1=Venture Exchange 0=Main Exchange (SDC)
US Market Run-Up (USMR)	Bloomberg/CRSP Daily Price Data
World Market Run-Up (WRDMR)	CRSP Equal-weighted Index– One Year Run-Up prior to IPO
Market Standard Deviation	MSCI World Market Index - One Year Run-Up prior to IPO
SOX (SOX)	90 day standard deviation MSCI World Market
Millis Ratio (MR)	1=Exempt from SOX 0=Not exempt from SOX[7]
	Via Logit/Heckman Self-Selection Model

5 Rank of the lead underwriter (RANK) is from http://bear.warrington.ufl.edu/ritter/ipodata.htm. The highest rank is 9 while the lowest is 0.

6 The age the firm has been in existence prior to their IPO is obtained via http://bear.warrington.ufl.edu/ritter/ipodata.htm or hand-collected via the firms' website.

7 A firm can be exempt from SOX by either filing or executing an IPO prior to 2003 or via the small firm exemption clause (see SOX section in Chapter 2 for more detail on SOX exemptions).

Dependent Variables	*Source of Data*
Underpricing (UP)	Bloomberg
Logit Regression (LoPro)	Via Results
Additional Data	
CRSP Value and Equal Weighted Index	CRSP

Figure 1A – Number of FIPOs over 2000-2011

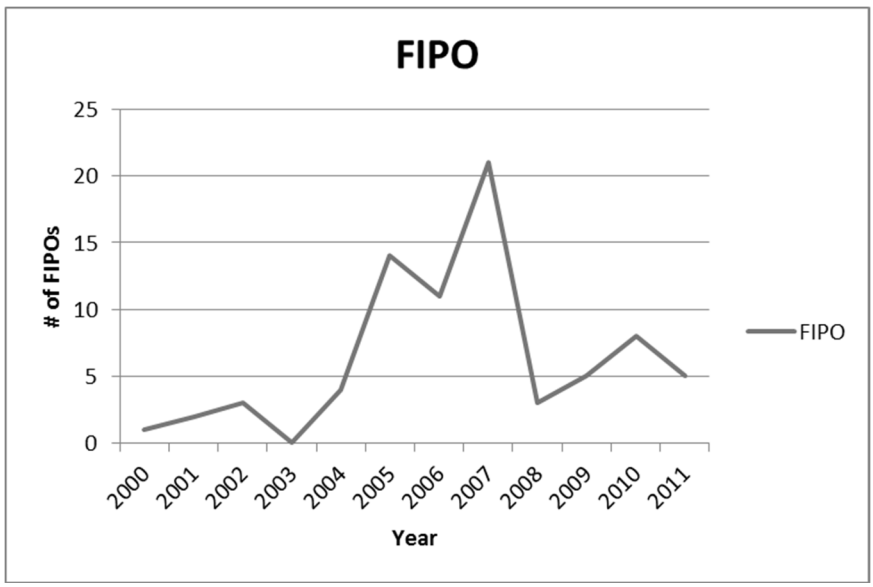

Figure 1B – Number of DIPOs over 2000-2011

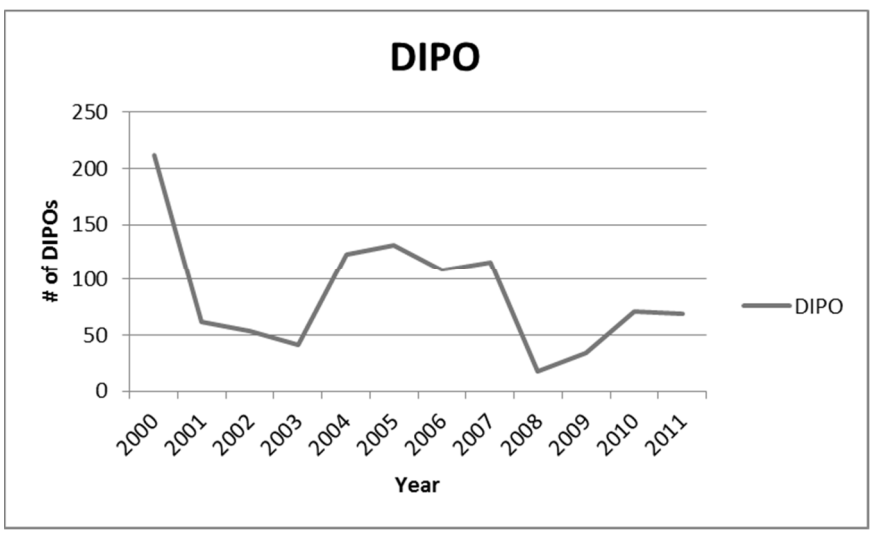

Figure 2. FIPO Listing Destinations

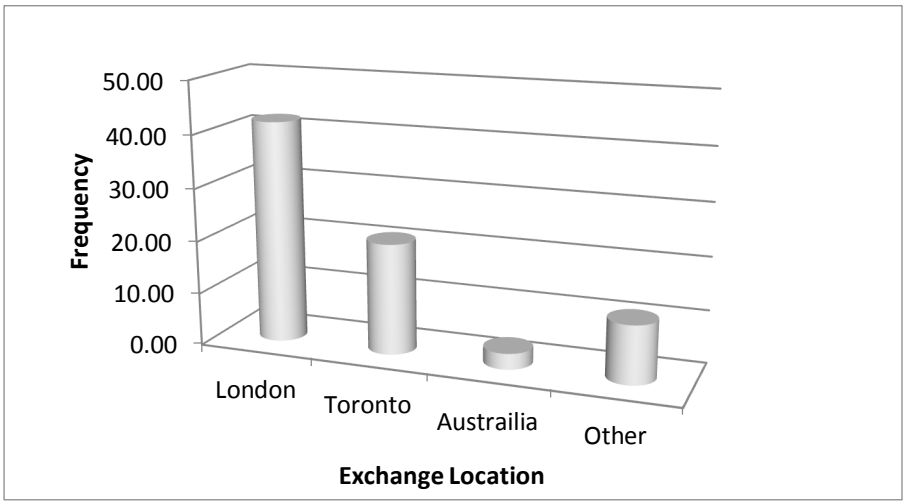

Table 3
Distribution of sample firms by calendar year

Year	*FIPO*	*DIPO*
2000	1	212
2001	2	62
2002	3	54
2003	0	41
2004	4	123
2005	14	132
2006	11	109
2007	21	116
2008	3	18
2009	5	34
2010	8	71
2011	5	69
Total	77	1041

Table 4
Summary Statistics

Panel A: Full Sample

	FIPO				*DIPO*		
	N=77	Mean	STD	Median	N=1041	Mean	STD	Median
SIZE		88.75	61.21	69.52		119.71	103.81	103.41
AGE		7.26	2.56	7.01		8.12	3.85	7.96
RANK		6.45	2.65	6.70		7.17	2.19	7.50
STD60		0.045	0.038	.051		0.039	0.031	0.044
USRUNUP		1.49%	12.45%	1.56%		1.21%	11.71%	1.54%
WRDRUP		0.49%	6.19%	.32%		-0.21%	7.2%	-0.06%
MarketSD		0.019	0.011	.026		0.022	0.012	0.018

Panel B: Matched via Issue Year and Size

	FIPO				*DIPO*		
	N=77	Mean	STD	Median	N=77	Mean	STD	Median
SIZE		88.75	61.21	69.52		95.12	56.34	86.23
AGE		7.26	2.56	7.01		8.33	3.12	7.75
RANK		6.45	2.65	6.75		7.04	2.11	7.14
STD60		0.045	0.038	0.051		0.049	0.042	0.059
USRUNUP		1.49%	12.45%	1.56%		1.13%	10.98%	1.45%
WRDRUP		0.49%	6.19%	.32%		0.21%	6.87%	0.35%
MarketSD		0.019	0.011	0.026		0.014	0.010	0.019%

Panel C: Matched via Propensity Score

	FIPO				*DIPO*		
	N=77	Mean	STD	Median	N=77	Mean	STD	Median
SIZE		88.75	61.21	69.52		101.23	68.97	93.21
AGE		7.26	2.56	7.01		7.89	2.67	7.31
RANK		6.45	2.65	6.75		6.87	2.01	7.01
STD60		0.045	0.038	0.051		0.037	0.031	0.043
USRUNUP		1.49%	12.45%	1.56%		1.31%	11.31%	1.54%
WRDRUP		0.49%	6.19%	.32%		0.43%	6.11%	0.39%
MarketSD		0.019	0.011	0.026		0.013	0.009	0.028

Firm size (SIZE) is the market capitalization ($million) calculated at the offer price. Age of firm (AGE) is the log number of days that the firm has been existence prior to the IPO. Rank of lead underwriter (RANK) is borrowed from Carter et al. (2007) and updated by Loughran and Ritter (2004). Venture Capital (VC) backing is represented by a dummy variable; 1 indicated backing by a VC and 0 if not. VEX is a dummy variable equal to one if the firm is listed on a venture exchange and zero if not. STD60 represents the standard deviation of the first 60 daily returns taken from Bloomberg after the offering. US stock market run-up (USRUNUP) is measured as the cumulative abnormal market return from -365 to -2 relative to the average CRSP equally weighted market return prior to the offer date. Non-US world market run (WRDRUNUP) is defined as the cumulative abnormal return of the Morgan Stanley Capital International EAFE index from -365 to -2 prior to the offer date. Market standard deviation (MarketSD) is the standard deviation of the Morgan Stanley Capital International EAFE index from -90 to -2 prior to the offer date. SOX is a dummy variable equal to 1 if the firm was not exempt of SOX regulations at the time of the IPO and 0 if it was exempt.

3.1 Variable Descriptions

Underwriter Prestige (RANK)

According to Carter and Manaster (1990)prestigious underwriters are less likely to underwrite risky offering and could be more skilled at pricing their offerings appropriately. Research by Johnston and Miller (1988), Michaely and Shaw (1994) among others find that underpricing is inversely related to RANK. Our focus on RANK centers on how FIPO firms are impacted by the use of prestigious underwriters compared to their domestic counterparts. In other words, does choosing to go with a FIPO reduce the importance of the lead underwriter's prestige?

Venture Capital (VC)

Firms that are backed by venture capitalists can benefit from VC expertise or monitoring (Brav and Gompers, 2003). Thus, there should be less uncertainty surrounding the value, which would be reflected in a lower degree of underpricing. Barry, Muscarella et al. (1990) empirically confirms this relation. VC firms although are more likely to pursue investments that offer the potential for high returns, and the demand for shares backed by VC can be stronger, which could cause a more pronounced initial return unless additional shares are issued. Lastly, venture capitalists can relinquish their control over time and could cause downward price pressures in the aftermarket as they cash out (Field and Hanka, 2001).

Size

Larger offerings should be subject to more scrutiny by the market and could exhibit less uncertainty than smaller offerings (Jegadeesh, Weinstein et

al. 1993; Michaely and Shaw 1994). However, larger offerings could create more sentiment and demand on the first day of the offering, which could result in more pronounced initial returns.

Age

There could be more information available for older firms. Additional information decreases uncertainty and subsequently underpricing.

Exchange Type (VEX)

Whether a firm is listed on a venture exchange such as the AIM in London or the TSX Venture in Toronto impacts the level and regulation of the firm's information disclosures. Thus, firms that are listed on the main exchanges (Big Boards) are more likely to have increased information disclosure and thus lead to less underpricing and more stable long run performance than those firms listed on the venture exchanges.

Standard Deviation (STD60)

The standard deviation in the first 60 days of trading is measured to determine the level of trust the market participants have in the price of the offering. Lower levels of STD60 indicate that the price of the offering has stabilized and market participants generally agree on the value of the asset or stock. Thus, we hypothesize that firms' that exhibit lower levels of volatility will typically outperform firms' with higher volatility in the long-run.

Standard Deviation (MarketSD)

A firm's aftermarket risk, when measured by the standard deviation of firm stock returns, may be affected by the general volatility of the market during that time period. We control for the market volatility by calculating the standard deviation of the market. We measure this variable using the standard deviation of the Morgan Stanley Capital International EAFE index from -90 to -1 prior to the offer date.

Run-Up (World and U.S)

When there is much favorable sentiment about market conditions firms tend to chase these markets and typically try to time their offerings (Loughran and Ritter, 2002). Thus, we measure the "hotness" of the world and U.S. market and hypothesize that when the world market is

outperforming the U.S. market more firms tend to look overseas and pursue a FIPO. Further, when the U.S. market is performing well underpricing of FIPOs will be greater as investors overseas will see U.S. firms as more valuable and drive up the initial day one IPO price.

Sarbanes-Oxley Act (SOX)

The SOX was enacted on July 30, 2002. Further, exemptions were put in place for small firms which released them from the full obligations of SOX conformant. We use a dummy variable equal to one if the firm is obligated to conform to the regulations of SOX and 0 otherwise. We predict that firms' would have more interest in pursuing a FIPO if they are obligated to conform to the full regulations of SOX.

4. METHODOLOGY

The main goal of this research is to determine whether foreign IPOs experience different performance over the domestic IPO offering. We aim to capture over (under) performance by comparing the FIPO and DIPO sample via overall sample comparisons, traditional matching, and by propensity score methodology.

4.1 Traditional Matching

To begin matching we will use the traditional matching methodology that typically employs two or three matching dimensions. Following Johnson and Madura (2009) who match U.S. and Canadian IPOs, wewill use issue year and size as our two dimensions for matching my FIPO and non-FIPO firms.[8] To choose a match on issue year and size for an FIPO firm, we first find all the firms that issue equity in the same year. Limiting IPOs to a single year allows for greater homogeneity in issuance conditions. From this set we select the firm that has a market capitalization closest to that of the FIPO issue to be matched. A domestic IPO cannot be selected more than once into the size-matched control sample. The short-term performance results of the portfolio of DIPOs matched on size and issue year are used and reported in both short-term comparisons of performance in the results.

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[8] Matching by industry is not done for several reasons as pointed out in Loughran and Ritter (1995). First, if firms in an industry time their offers to take advantage of industry-wide misevaluations controlling for industry effects this will reduce the ability to identify abnormal performance. Second, there are frequently only a few IPOs in an industry with approximately the same market capitalizations as the issuing firms, resulting in the same DIPO being matched with numerous FIPOs.

4.2 Propensity Score Matching

We follow the methodology of Cheng (2003), Li and Zhao (2006) and others who have previously used propensity score matching in determining performance difference amongst firms who issue equity and those who do not. The matching procedures in prior studies select the control firm based on how close it is to the event firm in terms of two or three dimensions, e.g., industry, size. However, issuing stock is an endogenous choice for the firm. There are potentially important factors, other than industry and size underlying the decision.

The econometric theory behind the propensity score matching is the Propensity Score Theorem established by Rosenbaum and Rubin (1983). Consider a treatment group and a non-treatment control group. Let $P(X)$ be the probability of having been assigned to treatment, with X being a vector of independent variables. $P(X)$ is the so-called propensity score. Rosenbaum and Rubin (1983) observe that when non-treatment outcomes are independent of program participation conditional on X, they are also independent of participation conditional on $P(X)$. That is, a match can be found for the treated unit based on the probability of participation, $P(X)$, instead of X directly. The treatment effect can then be computed as averaging the conditional effect over the propensity score distribution in the treated group. In the context of FIPO firms, it can written as:

$$\Delta \mid_{S=1} = E_{P(X)} \left[\{E(R_{i1,1} \mid P(X_i), S_i=1) - E(R_{i0,1} \mid P(X_{i)}, S_i=0)\} \mid S_i=1\right], \quad (1)$$

Propensity score matching provides a way to greatly reduce the dimensionality of the matching problem. According to the Propensity Score Theorem, finding the match for an FIPO firm based on a vector of characteristics is equivalent to finding the match based on the probability of equity offering conditional on the vector of firm characteristics. Thus, the problem reduces to matching the FIPO and non-FIPO firms along their conditional probability of issuing equities, a scalar variable that can be estimated from an empirical model. Moreover, because we are able to incorporate all the relevant characteristics of the firms in the empirical model, we maximize comparability between the FIPO firm and its match.

In implementing the propensity score matching, an empirical model has to be specified to derive the propensity score. Next subsection discusses the logit model of foreign equity offering decision conditional on the firms' characteristics. Another necessary condition is that for an FIPO firm, there should be positive probability of finding a match from the non-FIPO group based on the propensity score. As we will see there is sufficient overlapping in the propensity score distributions between FIPO and non-FIPO firms, thus the above necessary condition is satisfied.

Consistent with the algorithm developed in the Dehejia and Wahba (1999), the steps of propensity score matching in this paper are as following:

Step1: Choose the controlling variables to maximize correct classification rate and estimate the resulting foreign equity issuance model by logistic regression.

Step 2: Derive the predicted probability of issuing equities for both FIPO and non-FIPO firms, i.e., propensity scores, based on the parameters estimated in Step 1.

Step 3: For any FIPO firm, find the non-FIPO firm in the same year with the closest propensity score as the match. This is the so-called "nearest-neighbor-match". Note that this step matches the firms *with* replacement. To ensure the match's propensity score is close enough for every FIPO firm, the propensity score distribution of the non-FIPO firms needs to have substantial overlapping with that of the FIPO firms, which is indeed the case as discussed later.

In Step 1, we are able to incorporate a large set of potentially relevant firm characteristics which includes all the variables described above in the data section. Compared to the standard two dimension matching, this approach allows one to match the firms on multiple important factors; therefore, more closely matched control firms are provided.

5. RESULTS

5.1 Estimation of the Logit Model

Table 5 presents the results of the logit analysis which models the firm's equity offering decision (Domestic or Foreign), incorporating the independent variables as discussed in previous sections, including, the rank of the lead underwriter (RANK)[9], age of the firm in log days (AGE), market capitalization (SIZE), (VC) dummy variable that equals one if the offering is backed by a venture capitalist and zero if it was not, (WRDRUNUP) measures the run-up in the world market one year prior to the IPO date, (USRUNUP) measures the run-up of the US market one year prior to the IPO date and a SOX dummy variable that indicates one if the firm is subject to SOX regulations or 0 if the firm is not. The dependent variable is 1 if a

[9] Following Wu and Kwok (2003) we measure the underwriter reputation developed by Carter et al. (1998), revised by Ritter (2004) as a proxy for the rank of the lead underwriter (the highest rank is 9 while the lowest is 0).

firmissues equities overseas (FIPO) and 0 otherwise. We estimate the model over thetotal sample between the years 2000 and 2011.

The total observations included in the model were 1118, which included 77 FIPOs and 1041 DIPOs. The model fit statistics such as Likelihood ratio, Score, and Wald tests all indicate that the model does have predicting power. The chi-square results all indicate the rejection of the null hypothesis, in favour of the alternative hypothesis, that at least one of the predictors' regression coefficients is not equal to zero in the model. Further, the Hosmer and Lemeshow goodness-of-fit (GOF) test is a way to assess whether there is evidence of lack of fit in a logistic regression model. With a Chi-square of 8.4521 and a Pr> Chi Square of 0.2358 we are unable to reject the null hypothesis and conclude that this model is acceptable. In other words, the statistically insignificant Chi-square measure suggests no material difference in the distribution of the actual and predicted dependent values which implies good model fit.

Table 5.
Propensity Score Model Coefficient Estimates

Variables	*Estimate*	*Chi-square*	*Pr> Chi Square*	*Odds Ratio*
Constant	0.18	4.1245	0.0154	0.9911
Size	-0.0089	1.2148	0.3214	0.8535
Age	-0.1584	1.5489	0.2091	0.8572*
Rank	-0.154	10.5471	0.0001	1.404*
VC	0.340	8.8952	0.0003	1.179*
USRUNUP	0.165	7.4568	0.0009	1.067*
WRDRUNUP	0.065	4.2341	0.0198	1.147*
SOX	0.138	5.2156	0.0091	
Likelihood Ratio	141.4590 (<.001)			
Score Test	139.8755 (<.001)			
Wald Test	13.5461 (<.001)			
Pseudo R^2	31%			
Homer/Lemeshow GOF		8.4521	0.2358	

Source: Odds ratio represent the increase in the odds (the probability of pursuing a FIPO over the probability of pursuing DIPO) when the dummy variable changes from 0 to 1. Significance is indicated by * if the 95% Wald Confidence Limits do not contain an odds ratio (OR) of 1 which implies an equal probability of an event occurring (pursuing a FIPO) vs. not occurring (probability of pursuing a DIPO instead of a FIPO).

Next we will turn to the predicting variables. Out of the 7 predicting variables we have included in the logistic regression 5 are found to be

significant. Only size and age which show -0.0089 and -0.1584 estimates are not significant. Both of the above mentioned variables have a negative coefficient which suggests that as the size and age of firms may opt towards a DIPO rather than pursuing equity overseas but again these results do not show statistical significance. The five variables that do show statistical significance include RANK, VC, USRUNUP, WRDRUNUP, and SOX. Interestingly, four out of the five variables show positive coefficients. The rank of the lead underwriter shows the only negative coefficient of -0.154 indicating that firms choosing lesser ranked lead underwriters may tend to be more willing to venture overseas to equity markets outside of their own. With an odds ratio of 0.8572this suggests that a one unit increase in the rank of the lead underwriter, the odds for a FIPO is expected to decrease by 14.28 percent, given that all other variables are held constant.

Originally, our hypothesis was that firms that go overseas would tend to obtain higher ranked lead underwriter which would provide them with more experience and operations overseas that may accommodate firms that are venturing outside of the U.S. But the negative and significant coefficient shows that firms venturing overseas obtain lesser ranked lead underwriters. One possible explanation may be that firms going overseas are more economical in their choices of underwriters and prefer lesser ranker, cheaper alternatives. The VC variable that indicates whether the firm has venture capital backing shows a significant and positive coefficient of 0.340. The odds ratio of 1.404 indicates that for venture capitalist backed firms the likelihood of pursuing a FIPO increases by 40.4 percent.

This result has some interesting possible explanations. First, firms that have VC backing could have VCs that exhibit expertise in overseas markets or may have had previous experience in FIPOs which could lead to some firms being more comfortable in pursuing equity overseas. The second interpretation of this finding could be that the firm backed by the VCs may have difficulty going through the U.S. equity market regulations (SOX, etc.) and these VCs may be eager to cash out of these firms for some reason. Hence, the VC push the firm to pursue a FIPO, bypassing the U.S. regulations, leading to a faster more cost effective way allowing VCs to cash in their shares.

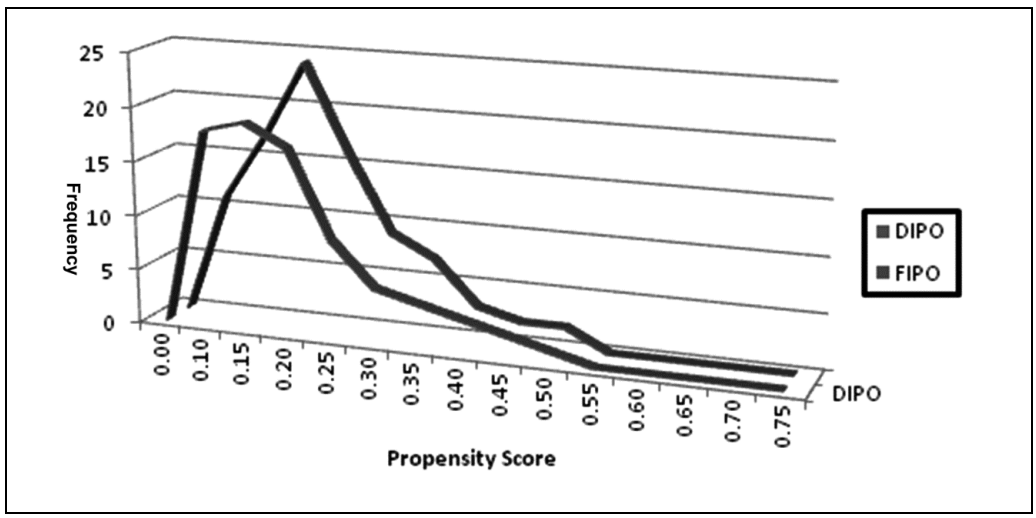
The two measures of stock market run-ups, USRUNUP and WRDRUNUP, both indicate positive and significant coefficients. The U.S. market run-up variable indicates that it has more influence in the decision to pursue a FIPO with a coefficient and odds ratio of 0.165 and 1.179 respectively compared to the world market run-up variable with a coefficient of 0.065 and 1.067. Both variables indicate that as the market (both in the U.S.

and World) heat up firms from the U.S. are more likely to pursue a FIPO. This result is consistent with Wu and Kwok (2003, 2007) which find that firms may pursue global IPOs in periods of positive stock market returns. Additionally this may add some additional support to the popular market timing hypothesis.

Lastly, the SOX variable that indicates whether the firm would be subject to SOX regulations shows a positive and significant estimate of 0.138 and an odds ratio of 1.147 which suggest that firms that are exempt under the small-firm exemption are more likely to pursue a FIPO. This is an interesting result as we first hypothesized that firms that are not subject to SOX and fall under the small-firm exemption are more likely to pursue a domestic IPO as they are not burdened by costly and time consuming SOX regulations. A possible explanation to this result could be that firms that are exempt originally when filing may still fear that new regulations may be imposed on them in the future and hence firms continue to pursue overseas equity via a FIPO.

After the logit model was estimated the propensity score are derived using the estimated parameters. Figure 3 plots the distribution of the propensity scores in both groups. As expected, the FIPO firms tend to have more weight on larger propensity scores than the non-FIPO firms. Still, these two groups have substantial overlapping across the distributions. This provides a good base for matching Heckman, Ichimura et al. (1997): if these two groups' propensity score distributions do not overlap with each other, it will be difficult to find a control firm with similar propensity score for an FIPO firm.

Figure 3 - Propensity score distribution of FIPO and DIPO (non-FIPO) firms



Local optimal algorithms, often called "greedy" algorithms, are methods that make optimal decisions at each step without attempting to make the best overall (global) decision. Both the treatment and control units are first randomly sorted. Then the first treated unit is selected to find its closet control match based on the absolute value of the difference between their propensity scores. The closest control unit is selected as a match. This procedure is repeated for all treated units. Therefore based on this, for any FIPO firm, we find the non-FIPO firm with the closest propensity score as the match. This is the so-called "nearest-neighbor-match". Note that this step matches the firms withreplacement. We are able to match all 77 FIPOs in oursample via the "nearest neighbor" methodology[10].

This graph plots the propensity score distribution of FIPO and non-FIPO (DIPO) firms. The propensity score is derived from the logit model estimation between 2000 and 2011 in Table 5.

5.2 Univariate Methodology and Results

The goal of this study is to investigate whether foreign offerings are priced differently than purely domestic IPOs. Following Wu and Kwok (2003), which investigated the short-run underpricing of global IPOs we define underpricing as,

$$(P_1 - P_0) / P_0 \quad (2)$$

where P_0 is the final offer price and P_1 is the first after-market close price taken from Bloomberg or CRSP. Refer to Table 6 for underpricing of foreign and domestic IPOs.

Table 6 presents the mean underpricing for the entire sample of FIPOs and DIPOs, matched FIPOs and DIPOs based on traditional matching methodology and matched FIPOs based on propensity score matching. FIPOs experience less underpricing compared to domestic IPOs in testing of the entire sample and via both matching methodologies. The full sample of FIPOs are underpriced during the 2000-2011 period by an average of 8.79% as opposed to DIPOs which are underpriced by an average of 11.89%. This difference shows to be significant via both t-test and non-parametric tests. When we implement the traditional matching method of IPOs via offering year and size the underpricing of the DIPO sample does fall to 10.59% but is still significantly higher than the FIPO sample consistent at 8.79%. Finally,

[10] Other methods of matching, e.g. Mahalanobis Metric Matching, Global Optimal Matching, and caliper matching (via local optimal) may provide better matches but significantly reduce the FIPO sample size.

when matching via propensity score the underpricing of the DIPO sample now falls to 10.08% compared to the FIPO sample of 8.79% and shows significance when testing the difference in means. Therefore, via univariate testing we can reject the null hypothesis in H1 and conclude that FIPOs do exhibit less underpricing when compared to DIPOs via full sample and matching methodologies.

Table 6.
First-day returns for FIPO & DIPO sample
Panel A: Full Sample

	FIPO	*DIPO*	*Difference (t-test)*
N	77	1041	
Underpricing %	8.79%	11.89%	3.10% (3.562)**

]Panel B: Matched via offering year and size

	FIPO	*DIPO*	*Difference (t-test)*
N	77	77	
Underpricing %	8.79%	10.59%	1.80% (2.239)**

Panel C: Matched via Propensity Score

	FIPO	*DIPO*	*Difference (t-test)*
N	77	77	
Underpricing %	8.79%	10.98 %	1.89% (2.318)**

* Underpricing is measured as $(P_1 - P_0) / P_0$, where P_0 is the final offer price and P_1 is the first after-market close price taken from Bloomberg or CRSP.

** Indicates significance at the 5% level in the t-test difference of means

This result could potentially be explained via the asymmetric information theory. Since FIPOs enter into a brand new market place outside of their home country these firms may have to provide an abundant amount of information in order for investors to feel comfortable in investing in their shares. With the additional amount of information provided, investors now have information to properly evaluate the assets and cash-flow of the potential FIPO and hence will not overspend on the offering on the initial day of trading. Next, we will present the multivariate investigation of the short-term underpricing to further test the aforementioned hypotheses.

5.3 Multivariate Regressions of Underpricing

We use the following regression to examine the cross-sectional differences in underpricing between the foreign compared to the domestic sample.

$$UP_i = \alpha + \Omega I_i + \beta W_i + \varepsilon_i, \quad (3)$$

Where UP_i is the underpricing defined in (1), I_i is the foreign offering indicator variable that equals one for foreign issues and zero otherwise, and W_i represents a vector of explanatory variables that are related to underpricing. The explanatory variables include the following: Firm size is the log of market capitalization calculated at the offering date. Age as measured by the log of the number of days from founding date to offer date. Rank of the lead underwriter is the rank used developed by Carter, et al. (1998) and later updated and modified by Loughran and Ritter (2004) which assigns integers from 0 (lowest) to 9 (highest). VC Dummy equals one if the firm was backed by a venture capitalist and zero if it was not. A dummy variable which equals one if the firm is listed on a venture exchange and zero if not. STD60 represents the standard deviation of the first 60 daily returns taken from Bloomberg after the offering. Market standard deviation (Market SD) is the standard deviation of the Morgan Stanley Capital International EAFE index from -90 to -2 prior to the offer date. U.S. stock market run-up (USRUNUP) is measured as the cumulative abnormal return of the CRSP equally weighted market from -365 to -2 prior to the offer date. Non-US world market run (WRDRUNUP) is the cumulative abnormal return of the Morgan Stanley Capital International EAFE index from -365 to -2 prior to the offer date.

Table 7 presents the ordinary least squares (OLS) regression results from the above specifications of equation (3). In all regressions, the standard errors for the coefficient estimates are corrected for heteroskedasticity using White (1980) procedure. In the first regression, the independent variables are the log of market capitalization, the log number of days of the firm from founding date to issue date, rank of the lead underwriter, venture capital backed dummy, venture exchange listed dummy, and the first 60 days trading price standard deviation. The foreign dummy variable in the first regression shows a coefficient of -0.034 with a t-value of -1.817, suggesting that FIPOs have significantly lower underpricing (at 10%) than purely domestic offerings. The size variable (measured by market capitalization) shows a positive and significant coefficient of 0.198. This indicates that as the size of the firm increases the underpricing of the IPO increases. This is consistent with previous results and is typically explained by larger offering gaining increased interest (via media) closer to the offer date and market participants driving up the price on day one of trading. The venture exchange dummy (VEX) also indicates that firms listing on venture exchanges experience more underpricing. With a coefficient of 0.058 firms listed on venture exchanges experience 5.8% times more underpricing than firms who list on the main exchange. This result is logical and can be

explained by the asymmetric information theory described earlier. Since firms listing on venture exchanges are not held to the same listing standards as firms listing on the major exchanges, these firms may be riskier and information provided by the listing firm prior to the listing may not be equivalent to that of a firm listing on a major exchange. This could potentially result in venture exchange listed firms pricing their offer price much lower in order to compensate investors for the uncertainty of information and hence the riskier asset resulting in higher first day price movements.

The variable STD60 which refers to the standard deviation of the first 60 days of trading of the issue indicates a positive and significant coefficient of 1.345. Indicating that firms that experience more volatility in the short-term experience more significant underpricing. Finally, age of the firm prior to the issue date (AGE) and main underwriters ranking (RANK) both show negative coefficients indicating that as the firm becomes more mature in age prior to issuing equity and those hiring a well ranked underwriter experience less underpricing. It should be noted that both of these variable do not show statistical significance.

Table 7.
Cross-sectional regressions of IPO underpricing (Dependent Variable is Underpricing)

Independent Variables	(1)	(2)	(3)
Constant	-0.234 [-4.786]***	-0.198 [-4.897]***	-0.281 [-4.678]***
FD	-0.034 [-1.817]*	-0.031 [-1.796]*	-0.029 [-1.762]*
SIZE	0.198 [2.051]**	0.202 [2.102]**	0.208 [2.112]**
AGE	-0.041 [-1.167]	-0.040 [-1.123]	-0.038 [-1.098]
RANK	-0.011 [-0.987]	-0.015 [-1.098]	-0.013 [-1.001]
VC	0.062 [1.456]	0.057 [1.423]	0.043 [1.398]
VEX	0.058 [3.987]***	0.054 [3.883]***	0.052 [3.872]***
STD60	1.345 [2.017]**	1.407 [2.123]**	1.401 [2.112]**
USRUNUP		0.0032 [1.771]*	0.0030 [1.732]*
WRDRUNUP		0.0017 [1.459]	0.0014 [1.234]
MarketSD		0.022 [2.89]**	0.027 [2.92]**
SOX			0.033 [0.678]
ADJ. R^2	0.19	0.16	0.15
F STATISTIC	29.23***	13.67***	9.34***

* Indicates significance at the 10% level, **at the 5% level, *** at the 1% level.

The sample contains 77 foreign IPOs (FIPO) and 1041 Domestic IPOs made by US industrial firms from 2000-2011. FD represents whether the firm is a FIPO and takes a value of 1 if so

and 0 if it is not. Firm size (SIZE) is the market capitalization ($million) calculated at the offer price. Age of firm (AGE) is the log number of days that the firm has been existence prior to the IPO. Venture Capital (VC) backing is represented by a dummy variable; 1 indicated backing by a VC and 0 if not. VEX is a dummy variable equal to one if the firm is listed on a venture exchange and zero if not. STD60 represents the standard deviation of the first 60 daily returns taken from Bloomberg after the offering. Rank of lead underwriter (RANK) is borrowed from Carter et al. (2007) and updated by Loughran and Ritter (2004). US stock market run-up (USRUNUP) is measured as the cumulative abnormal market return from -365 to -2 relative to the average CRSP equally weighted market return prior to the offer date. Non-US world market run (WRDRUNUP) is defined as the cumulative abnormal return of the Morgan Stanley Capital International EAFE index from -365 to -2 prior to the offer date. Market standard deviation (MarketSD) is the standard deviation of the Morgan Stanley Capital International EAFE index from -90 to -2 prior to the offer date. SOX is a dummy variable equal to 1 if the firm was exempt of SOX regulations at the time of the IPO and 0 if it was exempt (small-exclusion).

In regression (2), we add three market run-up variables that describe the general market conditions that might affect the demand for U.S. based firms: (1) US Market Run-Up, (2) World Market Run-up, (3) Standard deviation of the world market prior to the IPO offering. Following Wu and Kwok (2003) we presume that when the U.S. market is hot, foreign demand for a U.S. firm may rise thus providing additional buying pressure on day 1 of trading leading to more significant underpricing. After adding these additional variables the coefficient on the FIPO indicator is -0.031 with a significant t-statistic of -1.796. This result shows that FIPOs still exhibit less underpricing but with diminishing statistical significance. The U.S. run-up measure shows a positive coefficient of 0.0032 which is statistically significant at the 10% level. This result allows us to reject the null hypothesis in H2 and indicates that when the U.S. market exhibits strong performance prior to the IPO date the overall underpricing of IPOs are increased, which is consistent with previous literature.

Finally, in the last regression we add a SOX dummy variable to investigate whether firms that are exempt under the small-firm exemption clause of SOX experience different underpricing as oppose to those firms who have to comply fully with SOX. The coefficient of 0.033 with a t-value of 0.678 indicates that the impact of the small-firm exemption does not affect the underpricing of this sample of firms issuing equity.[11]

Next, to further investigate what influence the FIPO underpricing we run another regression on only the sample of FIPOs. The dependent variable

[11] Additional tests for self-selection bias were conducted and results indicate that the empirical findings that FIPOs are significantly less underpriced cannot be explained by self-selection bias.

in the regression will now be the difference between $FIPO_i$underpricing and its matched DIPO via both the size and issue year criterion and the propensity score matched method. Table 8 presents the regression results of the FIPO sample matched via size and issue year. Table 9 presents the regression results of the FIPO sample matched via propensity score. Using the same set of explanatory variables (minus the foreign dummy) we can observe that some interesting results have populated. First, in both Tables 8 & 9, the size coefficient (SIZE) has turned negative and significant across all models. The coefficient of -0.013 in Table 8 suggests for a one unit change in size the degree of underpricing a FIPO realizes compared to its DIPO match decreases by 1.3%. Therefore, larger FIPOs will experience less underpricing than smaller FIPOs in general. This result could potentially be attributed to larger issuers having more foreign clientele familiar with their already existing firm and less information asymmetries resulting in better initial pricing.

Table 8.
Cross-sectional regressions of FIPO underpricing
(Dependent Variable is $FIPO_{iUP}$ – $DIPO_{matchedUP}$) *Matched via Issue Year and Size

Independent Variables	*(1)*	*(2)*	*(3)*
Constant	-0.132 [-2.973]**	-0.139 [-2.995]**	-0.148 [-3.127]**
SIZE	-0.013 [-2.341]**	-0.011 [-2.217]**	-0.011 [-2.164]**
AGE	0.019 [1.129]	-0.017 [1.018]	-0.016 [1.002]
RANK	-0.007 [-0.893]	-0.008 [-0.783]	-0.007 [-0.721]
VC	-0.011 [-1.893]*	-0.009 [-1.743]	-0.008 [-1.697]
VEX	0.013 [2.672]**	0.012 [2.557]**	0.012 [2.513]**
STD60	0.432 [1.668]	0.390 [1.588]	0.391 [1.603]
USRUNUP		-0.012 -[2.216]**	-0.009 [-1.963]**
WRDRUNUP		-0.008 -[1.658]	-0.006 [-1.321]
MarketSD		0.013 [1.215]	0.011 [1.156]
SOX			-0.019 [-0.765]
ADJ. R2	0.14	0.11	0.09
F STATISTIC	18.39***	14.12***	8.98***

* Indicates significance at the 10% level, **at the 5% level, *** at the 1% level.

The sample contains 77 foreign IPOs (FIPO) made by US industrial firms from 2000-2011. Firm size (SIZE) is the market capitalization ($million) calculated at the offer price. Age of firm (AGE) is the log number of days that the firm has been existence prior to the IPO.

Venture Capital (VC) backing is represented by a dummy variable; 1 indicated backing by a VC and 0 if not. VEX is a dummy variable equal to one if the firm is listed on a venture exchange and zero if not. STD60 represents the standard deviation of the first 60 daily returns taken from Bloomberg after the offering. Rank of lead underwriter (RANK) is borrowed from Carter et al. (2007) and updated by Loughran and Ritter (2004). US stock market run-up (USRUNUP) is measured as the cumulative abnormal market return from -365 to -2 relative to the average CRSP equally weighted market return prior to the offer date. Non-US world market run (WRDRUNUP) is defined as the cumulative abnormal return from -60 to -2 relative to the average market returns of the Morgan Stanley Capital International EAFE index from -365 to -2 prior to the offer date. Market standard deviation (MarketSD) is the standard deviation of the Morgan Stanley Capital International EAFE index from -90 to -2 prior to the offer date. SOX is a dummy variable equal to 1 if the firm was exempt of SOX regulations at the time of the IPO and 0 if it was not exempt (small-exclusion).

Table 9.
Cross-sectional regressions of FIPO underpricing

(Dependent Variable is $FIPO_{iUP}$ – $DIPO_{matchedUP}$) *Matched via Propensity Score

Independent Variables	(1)	(2)	(3)
Constant	-0.121 [-2.339]**	-0.106 [-2.293]**	-0.098 [-2.214]**
SIZE	-0.009 [-1.981]**	-0.006 [-1.916]**	-0.005 [-1.845]*
AGE	0.011 [1.117]	0.010 [1.098]	0.010 [1.012]
RANK	0.004 [0.567]	0.008 [0.679]	0.006 [0.598]
VC	-0.017 [-2.109]**	-0.015 [-2.023]**	-0.014 [-1.932]*
VEX	0.009 [2.012]**	0.008 [1.919]*	0.008 [1.897]*
STD60	0.548 [1.017]	0.498 [0.987]	0.477 [0.872]
USRUNUP		-0.009 [-1.921]*	-0.008 -[1.871]*
WRDRUNUP		0.002 [0.458]	-0.001 [-0.213]
MarketSD		0.006 [0.897]	0.005 [0.843]
SOX			-0.009 [-0.617]
ADJ. R2	0.12	0.09	0.07
F STATISTIC	16.12***	11.78***	7.12***

* Indicates significance at the 10% level, **at the 5% level, *** at the 1% level.

The sample contains 77 foreign IPOs (FIPO). Firm size (SIZE) is the market capitalization ($million) calculated at the offer price. Age of firm (AGE) is the log number of days that the firm has been existence prior to the IPOVenture Capital (VC) backing is represented by a dummy variable; 1 indicated backing by a VC and 0 if not. VEX is a dummy variable equal to one if the firm is listed on a venture exchange and zero if not. STD60 represents the standard deviation of the first 60 daily returns taken from Bloomberg after the offering. Rank of lead underwriter (RANK) is borrowed from Carter et al. (2007) and updated by Loughran and Ritter (2004). US stock market run-up (USRUNUP) is measured as the cumulative abnormal market return from -365 to -2 relative to the average CRSP equally weighted market return prior to the offer date. Non-US world market run (WRDRUNUP) is defined as the cumulative abnormal return from -60 to -2 relative to the

average market returns of the Morgan Stanley Capital International EAFE index from -365 to -2 prior to the offer date. Market standard deviation (MarketSD) is the standard deviation of the Morgan Stanley Capital International EAFE index from -90 to -2 prior to the offer date. SOX is a dummy variable equal to 1 if the firm was exempt of SOX regulations at the time of the IPO and 0 if it was exempt (small-exclusion).

Secondly, FIPO firms that has venture capital backing prior to their IPO experience less underpricing which is suggested by the coefficient of-0.011 in the first regression in Table 8. Venture capitalists may have existing relationships overseas or with underwriters which will provide issuers with the ability to better price their initial offering. Firms that list via venture exchanges seem to experience more underpricing which is consistent with previous results suggesting that firms listed on venture exchanges will have to underprice their issues in order to compensate investors for the riskier more uncertain cash-flows.

Finally, when adding the run-up variables in regressions (2) and (3) the U.S. run-up variables again populates to indicate significance. With coefficients of -0.012 and -0.009 in table 8 and -0.009 and -0.008 in Table 9 this suggests that as the U.S. stock market is "hot", FIPOs will experience less underpricing by approximately a percentage point. This again confirms the foreign clientele hypothesis presented earlier suggesting that when the U.S. market is "hot" foreign investors will be willing to pay more for the issue resulting in proper allocation of shares and less significant underpricing on day 1.

6. CONCLUSION

The goal of this paper was to examine the performance of U.S. based private firms which decide to bypass the U.S. capital markets in search of a public equity issuance overseas. Recent literature suggests that with the globalization of equity markets and increased international competitiveness among exchanges the United States financial exchanges (NYSE and NASDAQ) may be losing its place as the premier destination to list. Globalized competition among exchanges has led to the increased development of global IPOs. Zingales (2007) finds that while in the late 1990s the U.S. capital market was attracting 48% of all the global IPOs, its share has dropped to 6% in 2005. Zingales (2007) also hints at the idea of U.S. based firms totally bypassing the U.S. equity markets in favor of European markets but suggest that it has only been a recently but surprisingly interesting phenomenon.

Zingales (2007) points out the new trend of bypassing U.S. markets are recent and interesting and therefore little research has been conducted on this population of firms. Wu and Kwok (2003, 2007) investigate the performance of U.S firms pursuing global IPOs and Caglio, et al. (2011) investigate the determinants of domestic, global, and foreign IPOs, but the performance of U.S. firms pursuing foreign IPOs has not been researched to this point. Therefore, this research provides additional insight into the overall IPO literature and provides insight into the new globalized market for initial public offerings. Further, this research fills a void pointed out by Gagnon and Karolyi (2010) which suggests much of the past literature focuses its attention on investigating non-U.S. based firms issuing equity on U.S. markets and lack investigations of U.S. firms pursuing capital elsewhere.

We found that the U.S. firms pursuing a foreign IPO experience less underpricing than domestic IPO firms. This finding is robust when comparing the full sample and when using matched portfolios. The foreign dummy (FD) variable indicates a negative coefficient suggesting that FIPOs tend to experience less underpricing. This result complements the finding in Wu and Kwok (2003) that finds global IPOs to be less underpriced than purely domestic offerings.

Secondly, we follow on the Wu and Kwok (2003) finding and test the existence of the foreign clientele effect which suggests that foreign clientele are willing to pay higher prices for U.S. assets when the U.S. market is experiencing "hot" conditions. The coefficient for U.S. run-up in the regression results shows support for the foreign clientele hypothesis suggesting that when the U.S market is "hot" investors seem to bid up the first day price leading to higher first-day returns.

Using rank of the lead underwriter as a control variable in the regressions, we test the popular prestigious underwriters theory which suggests prestigious underwriters are less likely to underwrite risky offerings and could be more skilled at pricing their offerings appropriately.

Research by Johnston and Miller (1988), Michaely and Shaw (1994) among others find that underpricing is inversely related to rank. While the coefficient in the regression results does suggest an inverse relationship, consistent with previous studies, it lacks statistical significance.

To the best of our knowledge this is the first study to investigate the *performance* of U.S. firms bypassing the U.S. capital markets in pursuit of their initial equity offering elsewhere. Previous studies by Caglio, et al. (2011) have investigated why firms decide to pursue such equity issuances but fail to investigate the firms actual performance after issuing equity. This research fills such gap in the literature and is important for both academics and practitioners.

As more firm specific data becomes available a variety of different control variables and theories can be tested on this sub-sample of IPOs. Practitioners can use this information in assessing the quality of such investments in the short-run and firms can utilize such information when determining the different options in issuing initial equity.

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