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**THE IMPACT OF INTERNATIONALIZATION ON THE IPO PERFORMANCE
OF SERVICE FIRMS: EXAMINATION OF INITIAL RETURNS, LONG-RUN
PERFORMANCE AND SURVIVABILITY**

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ABSTRACT

This dissertation examines the role of internationalization on the IPO performance service companies particularly scrutinizing initial returns, long-term return and operating performance and post-IPO survivability. The dissertation hypothesizes that internationalization may help reduce uncertainty about issuing firms by creating additional source of trust and credibility; improve long-term return and operating performance of international companies versus domestic companies; and lastly increase the survival rate in the aftermarket with significant advantages brought by internationalization. Possible negative effects of the internationalization are also discussed on the performance indicators. Several data sources are used to test the hypotheses. SDC new issue database, Compustat and CRSP annual files, and IPO prospectuses are the major data sources. The sample includes 1,822 IPO issues from 1980 to 2010. Evidence presented in this dissertation is consistent with the findings of previous studies that found positive effects of internationalization on the traditional performance measures. Specifically, the dissertation reveals that international service firms leave less money on the table in their initial public offerings. In other words, international firms experience lower underpricing in their first public days. Furthermore, international service firms are found to perform better in the long-run both in return performance and operating performance compared to domestic firms. Additionally, international service firms are shown to survive longer in post-IPO life.

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CHAPTER 1

INTRODUCTION

Initial Public Offering

Initial public offering (IPO) is perhaps one of the most significant corporate events that a private company experiences in its entire lifecycle. An initial public offering is a process of selling equity of a private company to outside investors for the first time since the inception of that company. A firm might have issued several prior primary offerings before an IPO (Wu, 2000), but can only have one IPO. A primary offering can be geared towards the employees of the company, affiliates, or customers, but not to the public. An IPO, on the other hand, is the event where company shares are offered to any parties including public investors. An IPO might appear to be a natural stage in the growth of a company (Pagano, Panetta & Zingales, 1998). Yet Pagano et al.'s empirical findings indicate that it is a choice rather than a stage in a company's lifecycle. There is significant evidence that many large and successful companies prefer to stay private despite the fact that they achieve a considerable level of growth for a successful IPO (Pagano et al., 1998).

Companies might have a wide array of motivations for taking their companies public. For companies that go through a growth cycle, an IPO can raise equity capital to fund investments for future growth (Pagano et al., 1998). On the other hand, some companies that have already gone through a growth period can use IPO proceeds to balance their accounts. For new venture firms, an IPO increases market awareness for newly public firms by producing higher publicity (Maksimovic & Pichler, 2000). IPO

may also serve to widen the ownership base of companies and generate a greater control mechanism on the businesses of companies (Chemmanur & Fulghieri, 1999).

Perhaps one of the most important concerns of issuing an IPO is the first day return anomaly in the stock prices of newly public firms (short-term price performance). For reasons mainly due to uncertainty of investors about issuing firms, IPO firms experience substantial underpricing in the first trading day of their stocks. Unequal information between issuers and investors induce investors to form conservative expectations about issuing firms (Ritter, 1987). Being aware of this common phenomenon, issuers tend to underprice their offer price to boost demand for their initial offerings. Numerous studies document that IPO underpricing is substantially high (Ritter, 1987; Reilly, 1977; Carter, Dark & Singh, 1998) and varies significantly over the years (Ritter & Welch, 2002). Ritter and Welch document an average underpricing of 7.4% in the 1980s, 11.2% in the early 1990s, 18.1% in the mid-1990s, 65% in the period from 1999 to 2000, and 14%t after the “internet bubble” period of 1999-2000.

The long-term performance of IPO companies has also been an ongoing concern for practitioners and researchers, and has been extensively researched. The emerging finding is that IPO firms perform poorly over the long-run compared to their non-issuing counterparts (Ritter & Welch, 2002; Loughran & Ritter, 1995). Loughran and Ritter showed that newly public firms’ stock performance lags behind those of non-issuing firms about 7.4% per year over a three-year holding period and 7% per year over a five-year holding period. In addition to poor return performance, operating performance of IPO companies has been shown to decay subsequent to their IPOs and lag behind industry competitors (Jain & Kini, 1994).

Observing high initial returns and long-run underperformance of IPO companies, researchers have proposed some mechanisms that can signal the true quality of IPO companies to the investment market. The idea behind these mechanisms is that their association with issuing firms provides incremental information to the investment market and reduces uncertainty about issuing firms, which enhances their return performance both in the short- and long-run. Underwriter prestige, venture capital (VC) backing, and auditor quality are three of these important certification mechanisms that have been extensively investigated. As said above, their role in IPO pricing is to signal the quality of the issuing firm and assist investors in rationally pricing the issues. Firms that are brought to market by prestigious underwriters are expected to experience lower underpricing because their uncertainty to the market is alleviated by being underwritten by a prestigious underwriter (Carter & Manaster, 1990; Johnson & Miller, 1988; Beatty & Ritter, 1986) with the assumption that prestigious (high quality) underwriters manage IPOs of high quality firms. In the same vein, VCs usually invest in value promising firms in which they can gain significant returns over their investments (Megginson & Weiss, 1991). Their involvement in the IPO company is considered to be a quality of the IPO company and so alleviates hesitations of investors about the issuing company resulting in a more positive valuation for the issuing company and a lower initial return. Moreover, auditor quality has been shown as a good quality of issuing firms, and firms with a better auditor have been shown to experience lower initial returns and better long-run performance (Balvers, McDonald, & Miller, 1988; Michaely & Shaw, 1994; Carter et al., 1998; Jain & Kini, 1995; Jain & Martin, 2005). Being audited by a prestigious audit

company is expected to signal investors' accuracy and thoroughness of company reports and registration filings, and increase trust in issuing companies.

As can be derived from the previous discussion about the certification effect of prestigious underwriters, venture capital backing, and quality auditors on the IPO performance of issuing companies, IPO investors are interested in value that they expect to yield in their investments and minimize their risk by knowing as much as possible about firms in which they consider investing. This dissertation, therefore, proposes that firm internationalization may help alleviate uncertainty about issuing firms and provide an extra piece of information for investors to evaluate the firm and shape their investment behavior. Internationalization enhances firm value and profitability of a company, and if it is so, investors are expected to value this information. In the next section, these issues are discussed in greater detail.

Internationalization

As important as the decision to go public, another important corporate event in the lifecycle of a company is the decision to expand in international markets. While there is not a clear cut definition of the concept of internationalization it is implicitly stated in the research focus of internationalization studies (Stanton & Stanton, 2011). In its simplest form, internationalization can be defined as a process involving firms shifting their focus from domestic markets to international markets (Stanton & Stanton, 2011) or, in other words, it is the process of increasing involvement in operations across borders (Welch & Luostarinen, 1988). The concept of business internationalization may come in different

forms depending on the research context and the research question under investigation. A firm's international business involvement can be limited to certain forms of exporting activities alone as discussed by Cavusgil (1984) and Jones (1999). This form of international activity only necessitates delivering services and products without direct investment (FDI) in foreign markets. This being one extreme, the other extreme of the internationalization scale requires direct investment and a commercial presence in foreign markets to supply products and services (Bhagwati, 1984).

Previous research on internationalization points out that internationalization enhances firm value (Dunning, 1980, Hymer, 1976, Johanson & Vahlne, 1977). There is a large body of research that has investigated the relationship between degree of internationality and firm performance, and the underlying assumption of international business studies is that internationalization is good for a firm's performance (Contractor, Kundu & Hsu, 2003). Dunning's (1980) eclectic theory and Hymer's (1976) foreign direct investment theory articulate on the assumption that international firms benefit from reaching and utilizing monopolistic advantages of foreign markets such as labor and capital, location-based advantages, and ownership-specific advantages of foreign markets. Furthermore, internalization theory posits that internationalization enhances a firm's market value if the firm has firm specific intangible assets such as patents, marketing abilities, and managerial skills (Saudagaran, 2002). Moreover, the imperfect capital market theory posits that internationalization provides a means for investors to diversify their portfolios internationally that could not be otherwise be possible due to capital market imperfections such as restrictions on cross-border capital flows, information asymmetries, and high transaction costs (Saudagaran, 2002).

In this dissertation it is proposed that those advantages of internationalization factor into the valuation of IPO firms, influence IPO firms' first day return performance, long-run returns and operating performance, and firms' survival rate in the post-IPO life. IPO literature has evidence that IPO firms benefit from being taken public by a prestigious underwriter, having venture capital backing, being audited by a prestigious audit company both in the short- and long-term. Following this stream of research, the study hypothesizes that internationalization provides substantial benefits to IPO issuing firms.

Purpose of the Study

The literature on both the initial public offerings and internationalization of businesses is extensive. This dissertation attempts to connect internationalization studies to IPO literature by testing the impact of international involvement on the IPO performance of service firms. Previous studies have exemplified various advantages of international expansion, and pointed to a positive link between internationalization and traditional firm performance measures. Yet, there is little knowledge about the role of international involvement on companies' IPO performance. Therefore, this dissertation plays a significant role in shedding some light on this matter, and adds to the literature both on internationalization and firm performance.

One can intuitively expect that having international operations increases the publicity and visibility of a company. This expectation is quite instinctive because internationalization either requires having a presence in foreign markets or doing

business with customers/businesses in foreign markets with no direct investments. In both cases, firms raise their visibility in international markets and get a chance to increase their customer base as well as develop strong brand name recognition. Linking this reasoning with the uncertainty hypothesis of IPO underpricing, one can argue that internationalization acts as a means to reduce uncertainty about a firm going public just like hiring a prestigious underwriter or being backed by a venture capitalist does. If internationalization reduces uncertainty about international firms and gives them an edge over their domestic counterparts, then it can be intuitively assumed that international firms experience lower underpricing than do domestic firms at their IPOs. However, a counter argument exists that international activity could be detrimental to firms at the time of their IPOs. Since international firms make business in several countries, they may be subject to varying operating and reporting rules and regulations, legal compliances, and market competition, which altogether increase the complexity and uncertainty of these firms' operations. Moreover, internationalization can exacerbate the information asymmetry between investors and issuers because of geographically extended operations (LiPuma, 2011). Hence, investor uncertainty may indeed increase about the issuing firms with international operations. Taken together, these factors can add to uncertainty about the company and, consequently, may lead to a negative valuation for firms going public. With these being said, this dissertation studies whether internationalization is advantageous for or detrimental to the underpricing of IPO companies. Moreover, long-run return and operating performance of IPO issuing international firms are explored and compared to the performances of domestic IPO firms. Ritter (1991) documents that newly public firms' long-run performance is significantly lower than that of non-issuing

firms. If internationalization enhances firm value, then international firms should experience an improvement in their long-run performance and perform better in the long-run than do domestic firms. From an investor's perspective hoping to earn returns over the long-run, this extra piece of information should also be valued. The last interest in this dissertation is whether having international involvement increases the likelihood of survival for the newly public firms. Past research has well documented that there is a significant underpricing for issuing firms, and newly public firms suffer from long-run underperformance. Taken together, these firms face a great risk of failure.

Internationalization provides firms with several opportunities to increase their experience and knowledge base so that they can aggressively utilize this to maintain a solid business. Domestic firms, on the other hand, lack these opportunities. Hence, it is expected that internationalization increases the survival time for the newly public firms.

More specifically this dissertation is concerned with answering the following three questions:

1. Does international involvement of IPO companies help alleviate the adverse effects of information asymmetry between issuers and investors by providing an extra source of certification to the investment market? Does internationalization impact the underpricing of issuing firms?
2. Does internationalization increase the long-run return performance of IPO companies? Is long-run performance of international firms different from that of domestic companies subsequent to their IPOs?
3. Does internationalization increase the survival time for newly listed public firms?

Context of the Study

The dissertation examines these questions particularly related to service firms and, therefore, concentrates on the U.S. service sector. The internationalization phenomenon by itself creates a valuable context for the researcher to do this research in the service sector. Furthermore, foreign market entry choices of service companies provide a strong argument to the researcher to examine the valuation effect of internationalization on the IPO performance of service companies. Majority of the previous studies in the internationalization literature focused on the manufacturing and extractive firms (Boddewyn, Halbrich & Perry, 1986; Enderwick, 1989; Habib & Victor, 1991; Li & Guisinger, 1992) despite the growing significance of the service sector in the world economy. In fact, one of the most significant international business trends is the increasing share of services trade in international business. For example, Wirjanto (1997) documents that over 50% of foreign direct investment in the 1990s was conducted by services firms. Despite its dominance in the world economy, research conducted in service internationalization lags behind manufacturing internationalization. Yet, there is still a significant amount of research that has investigated the characteristics of international services firms (Cho, 1987; Balabanis, 2000), motives for foreign expansion (Li & Guisinger, 1992), and determinants of performance (Katrishen & Scordis, 1998). However, there is little known about IPO performance of services firms. Moreover, international services firms provide a particularly strong context for the purpose of this study. As we recall, this study is primarily interested in whether internationalization enhances IPO performance. The concept of internationalization can come in different forms. Many scholars argue that internationalization strategies of firms engaged in

delivery of services differ from those of manufacturing firms due to the unique characteristics of services industries (Habib & Victor, 1991; Li, 1994; Aharoni, 1996; Capar & Kotabe, 2003). These unique characteristics have been largely discussed in the services research (Boddewyn et al., 1986; Enderwick, 1989; Hirsch, 1993); and they can be grouped under four categories: 1. Intangibility of service outcomes, 2. Simultaneous production and consumption, 3. Heterogeneity- consumer-tailored production, and 4. Perishability- services cannot be stored for future consumption. These particular characteristics limit entry mode choices of services firms into foreign markets and make the foreign direct investment the most viable entry mode for them (Goerzen & Makino, 2007). In fact, Enderwick (1989) reports that creating a local presence in a given host country is much more common for service firms than for manufacturing firms. FDI is more common for services firms mainly because of the simultaneous production and consumption of services products. Moreover, non-equity arrangements are not very efficient for services firms (Goerzen & Makino, 2007) because most often services skills are intangible; it is difficult to transfer to third parties without significant transactions costs. The dissertation makes claims about the effect of internationalization on firm value and subsequent IPO performance, and expects this alleged valuation effect to be more profound when international firms have a direct presence in foreign markets where they are able to exploit their intangible assets to gain competitive advantages. Hence, having strong physical presence in foreign markets, service companies offer a valuable setting to examine the research questions of the study in the service sector.

Significance of the Study

The primary purpose of this study is to reveal the role of internationalization on IPO performance of newly public firms. It has been extensively shown that internationalization boosts firm performance, and IPO companies suffer substantial initial day losses as well as poor long-run performance. Hence, taken together, these two widely observed phenomena provide a nice setting for investigating whether the internationalization of issuing firms helps reduce uncertainty about them in the IPO investment market and leads to a lower underpricing and improved long-run performance. This finding could be of great interest to investors as well as issuing firms. Investors can exploit this extra source of information about issuers to shape their investment decisions and price the issues more rationally. Issuers on the other hand can use the internationalization as a certification tool to reveal their true value to the market.

Equally important is the long-run performance of issuing firms. Investors that invest in IPO stocks for potential long-run returns may use this extra source of information about issuing firms in their judgment about investing in those stocks. With the same logic, if internationalization is shown to increase survival time for IPO firms, it can provide significant information to investors, creditors, and other stakeholders to contour a rational bond with these newly public firms.

This dissertation tries to connect a significant corporate event with another significant corporate event by setting a case where internationalization is expected to provide significant information about the true value of issuing firms and so decreases the level of information asymmetry between issuers and investors. In that regard, the findings

of this study will provide certain contributions to the IPO literature. In addition, findings of this study will also provide significant information to the large body of knowledge that is concerned with the relationship between internationalization and firm performance by making use of specific performance measures (underpricing, long-run performance, survivability) for a select group of companies (IPO companies).

Organization of the Study

Chapter 2 reviews the IPO literature giving special attention to IPO underpricing, long-run performance, and survival of IPO companies and examines the internationalization literature with special attention to the impact of internationalization on firm value. Chapter 3 develops and introduces hypotheses to be tested, data sources, and statistical methods to be employed to test hypotheses. Chapter 4 presents the results of the study, and Chapter 5 summarizes and concludes.

CHAPTER 2

LITERATURE REVIEW

Introduction

Initial public offerings have garnered extensive coverage in finance and management literature for the last few decades. The large interest in IPO research can partly be attributed to underpricing phenomenon, a major return anomaly in the first trading day of issuing stocks. Moreover, it has been consistently shown that IPO stocks perform poorly in the long-run, and researchers have tried to find out reasons behind poor long-run performance of equity issuing firms. Given the long-run poor performance of IPO companies, some researchers have investigated whether newly public firms can survive or face a failure following their IPOs. The first part of the literature review introduces and discusses past work in IPO literature particularly related to underpricing, long-run performance, and survivability of newly public firms. The second part reviews the studies that examine the link between internationalization and firm performance.

Background- Initial Public Offerings

In order to understand IPO literature and related research questions in this research domain, one should understand the IPO phenomenon, its importance for an issuing company, and factors encouraging private firms to undertake such a significant corporate decision. An initial public offering is the process of selling equity of a private company to outside investors for the first time since the inception of the company. A firm

might have issued several prior primary offerings before an IPO (Wu, 2000), but can only have one IPO. A primary offering can be geared towards employees of the company, affiliates, or customers, but not to the public. An IPO is the event where company shares are offered to any parties including public investors.

Benefits of Going Public

Firms have several reasons to go public such as raising external equity to finance future growth and/or rebalance accounts after a period high growth (Pagano et al., 1998), create a public market for existing shareholders (Zingales, 1995; Mello & Parsons, 2000), increase publicity or reputation of the firm (Maksimovic & Pichler, 2001), broaden the ownership base of the firm (Chemmanur & Fulghieri, 1999), and prepare a market for potential takeover in the future (Zingales, 1995).

As Pagano et al. (1998) argue IPO could provide a significant amount of proceeds to finance future growth projects or rebalance accounts after a high growth period. This effect of IPO has been extensively observed in the “internet bubble” period of 1999-2000. In this period, the IPO market has witnessed a proliferation of small to mid-size internet companies trying to raise capital via IPOs. The demand for public capital was so high that average underpricing in this period hit the unprecedented levels of 67% deviating largely from the long-term average of 18.8% since the 1960s (Loughran & Ritter, 2004).

An initial public offering provides an opportunity for its owners to cash out their stake on the firm and exit out. This is particularly important for venture capitalists that provide significant funding for the formation of VC-backed companies. Since IPOs are on average underpriced, owners find a way to profit from their inside holdings by selling

out in the aftermarket. Zingales (1995) and Mello and Parsons (2000) demonstrate that owners opportunistically sell their shares in the aftermarket and make a profit while exiting out.

Firms may consider IPO as an initial step to take over other firms and grow or get acquired by other companies (Zingales, 1995). Before going public, private firms are not known to the market, and no rational valuation is possible about their true values. Yet, by making a price for the stock of the company in the IPO market, potential acquirers can easily determine the true value of the company by using established market price (Brau, Francis & Kohers, 2003).

Maksimovic and Pichler (2001) argue that IPO can increase the publicity or reputation of firms going public. Although most large private firms might be known by the investment and credit markets, little is usually known about their financial health and stability to a reliable degree. Therefore, no easy judgment can be made about their true values. Hence, an IPO provides a venue for private firms to introduce themselves to respective audiences. Additionally, once companies go public, analyst following starts for them after a quiet period (a period where analysts are forbidden to reveal recommendations about issuing firms subsequent to the IPO date). A favorable analysis which leads to a recommendation can quickly boost the value of a firm.

Firms gain significant bargaining power in their borrowing rates when they become public. Especially, for firms with a strong certification, such as those underwritten by a reputable underwriter and/or being backed by a venture capitalist, lending institutions might develop positive expectations about these firms. This then can

lead to subsequent decreases in the borrowing rates of these newly public firms. Pitman and Fortin (2004) empirically showed that interest rates of newly public firms tend to decline within the first nine years of their public operations.

All of these factors may have a significant impact on the decision to go public but Pagano et al. (1998) showed that the primary factor affecting the probability of going public is the market-to-book ratio for firms in the same industry trade. They documented that a one standard deviation increase in the industry market-to-book ratio leads to a 25% increase in the likelihood of a private company going public. This finding is indicative that firms are opportunistic and want to exploit public equity during high investment periods in high growth industries. In the same study, the second most significant determinant of IPO decision was found to be the size of an issuing company. This finding reflects that larger firms have more resources and can manage an IPO easier than can smaller firms.

Costs of Going Public

There are direct and indirect costs of issuing an IPO (Ritter, 1987). The direct costs of going public as Ritter discusses include underwriter fees; administrative expenses such as legal, printing and auditing; and other costs that are not related to the price of an issue. Ritter reports that the direct cost of going public is equal to \$250,000 plus 7% of gross proceeds in a sample of 1,028 firms that were taken public by investment bankers in the United States from 1977 to 1982. Indirect cost, on the other hand, is the underpricing cost (also known as “money left on the table”). Using 664 firm commitment offers in the same sample, Ritter reports a 14.80% average underpricing for

issuing firms. A potential third cost for issuing companies is loss of confidentiality. In private domain, firms are not required to disclose their inside information to outside parties, and they are not exposed to close scrutiny from tax authorities. Taking their private business to a public space, they sacrifice these benefits. Campbell (1979) and Yosha (1995) argue that maintaining confidentiality, especially for firms with sensitive inside information, can be a deterrent factor from listing their stocks in the public equity markets.

In this section, a brief introduction of initial public offerings is provided along with benefits and costs of taking a firm from a private to public domain. The next three sections discuss three fundamental research areas associated with IPOs. The first section, IPO underpricing, gives a detailed discussion of first day price anomaly along with principal theories and empirical findings. The second section discusses the long-run performance of IPO stocks and outlines past research in this field. The last section investigates the IPO firms' ability to survive following their IPOs and discusses previous research in this area.

IPO Underpricing

Underpricing of IPOs has been well documented in IPO literature since the first studies dating back to the 1970s (Stoll & Curley, 1970; Reilly, 1973; Ibbotson, 1975). These pioneering studies as well as subsequent studies have shown that first day closing price of an average IPO stock substantially exceeds offer price leading to a high initial

return or underpricing.¹ The magnitude of underpricing has fluctuated over the years being affected from “hot” and “cold” markets, yet it has consistently been shown to be above normal market returns. For instance, Ibbotson, Sindelar, and Ritter (1988) document an average underpricing of 16.37% for a sample of 8,668 IPO firms that went public between 1960 and 1987. On the other hand, more recently Ritter and Welch (2002) report an average underpricing of 18.8% for their sample of 6,249 firms that issued IPO during the years 1980 to 2001. Underpricing does not occur only for U.S. IPOs, but rather it is a widespread phenomenon across countries (Ritter & Welch, 2002). In a comprehensive study, Loughran, Ritter, and Rydqvist (1994) analyzed IPO initial returns in 25 countries including Australia, Belgium, Brazil, Canada, Chile, Finland, France, Greece, Germany, Honk Kong, Italy, Japan, Korea, Malaysia, Mexico, the Netherlands, New Zealand, Portugal, Singapore, Spain, Sweden, Taiwan, Thailand, the United Kingdom, and the United States; and they reported consistent positive initial returns in these countries from the late 1970s to the early 1990s.

Several explanations have been proposed for the first day underpricing of IPO stocks. Brau and Fawcett (2003) group these explanations under eight categories. First is the information asymmetry between underwriter and issuers. The second explanation is the asymmetric information between issuers and investors as discussed by Beatty and Ritter (1986). Beatty and Ritter discuss that investor uncertainty about issuing firms complicates the estimation of the issuing firm’s true value and, consequently, leads to a higher underpricing to compensate potential investors. The third explanation for

¹ Initial return and underpricing have been used interchangeably in the literature. The same convention is followed throughout this dissertation.

underpricing is the asymmetric information between informed and uninformed investors. Rock (1986) argues that uninformed investors must be compensated with underpricing to keep them investing in IPO stocks. Rock's model will be discussed in detail later in this section. The fourth explanation is concerned with the litigation risk with which IPOs are associated. Tinic (1988) and Hughes and Thakor (1992) discuss that underpricing serves as a protection for potential future lawsuits against issuing firms for reasons such as mispricing in the IPO pricing. The fifth explanation for underpricing is related to the marketing effect of going public on the issuing stock. Going public firms may enjoy a great publicity at the time of their IPOs (Demers & Lewellen, 2003) as well as in their after-market lives (Maksimovic & Pichler, 2000). The sixth explanation is that underpricing broadens the ownership base of an IPO firm. The seventh explanation suggested for underpricing is that underpricing permits spinning (Maynard, 2002). The final explanation suggested by Loughran and Ritter (2002) is the behavioral bias of the issuers which they are pleased with the amount of fund they raise in their IPOs and, therefore, are not concerned with money left on the table.

The significance of the above explanations for underpricing may be related to the company issuing an IPO or to the time when an IPO is issued. Therefore, some of these explanations may lose their relevance over some periods or for some companies. However, most explanations maintain their significance regardless of time and company specific factors. This dissertation is particularly interested in the information asymmetry hypothesis between issuers and investors; and whether prior international involvement of issuing companies provides extra information for investors to rationally make decisions for issuing firms. Therefore, emphasis will be given to literature investigating the

information asymmetry hypothesis. Consistent with the information asymmetry hypothesis of underpricing, internationalization of the firms could reveal potentially important information to the investment market about the quality of the firm. Hence, this section of the dissertation will also include a review of studies investigating signaling hypothesis in IPO underpricing.

Asymmetric Information Models

The Winner's Curse

Rock (1986) discusses that there are two types of investors in the IPO market: informed and uninformed investors, both of which desire to have an equal fraction of IPO shares. When this happens, demand for shares of the IPO issuing firm is so strong that underwriters need to ration shares among investors. Rock argues that informed investors will only subscribe for underpriced IPOs, whereas uninformed investors will subscribe for any IPO since they have no *ex ante* knowledge about the underpricing of issuing firms. Hence, uninformed investors do get only a small fraction of the most desirable IPOs, and they get all of the least desirable new issues. Thus, the return uninformed investors earn conditional on receiving an allocation is below the simple average underpricing return. Rock argues that struggling with this adverse selection cost, uninformed investors will subscribe to IPO stocks only when underpricing is large enough for them to at least break even. This explanation has been known as Rock's "winner's curse" explanation in IPO literature to justify the high initial returns of IPO stocks.

There are several empirical studies that confirm Rock's winner's curse hypothesis. For instance, Keloharju (1993) examined the Finnish IPO market using a sample of 80 IPOs from 1984 to 1989. He showed that average underpricing was 8.7% without correcting the bias in allocation of shares. Once he adjusted for allocation bias in IPO share distribution, the average underpricing for those 80 issuing companies falls into the range of -5.3% to 5.1%. One of the earliest studies testing Rock's model is Koh and Walter's (1989) study conducted in the Singapore IPO market. They used 66 oversubscribed IPOs during the 1970s and 1980s, where shares are allocated by random ballot. Hence, each investor bidding for IPO shares has an equal chance of getting the same number of shares. Their findings suggest that likelihood of receiving an allocation is negatively related to the degree of underpricing, and average underpricing drops significantly from 27% to 1% when adjusted for rationing. In a similar study conducted in the U.K., Lewis (1990) examines adverse selection cost for mid-size and small allocations using a sample of 123 IPOs. He finds that rationing substantially reduces underpricing for uninformed investors, but not to zero. The unconditional average underpricing for 123 IPOs declines from 8.6% to 5.14%.

Consistent with Rock's winner's curse hypothesis, Beatty and Ritter (1986) argue that uninformed investors face a greater *ex ante* uncertainty in the IPO market, and they will only submit purchase orders if IPOs are, on average, underpriced. Therefore, the *ex ante* uncertainty is expected to be the degree of underpricing in their model. Uncertainty is not observable, so they use two proxies to measure *ex ante* uncertainty. The first proxy is log of one plus number of uses of proceeds listed in the prospectuses, and the second

proxy is the inverse of the gross proceeds.² They tested the hypothesis that “the greater is the *ex ante* uncertainty about the value of an issue, the greater is the expected underpricing” with their two proxies for uncertainty and they found that *ex ante* uncertainty increases expected underpricing. In line with this research, Benveniste and Spindt (1989) and Spatt and Srivastava (1991) argue that informed investors are rewarded by higher underpricing for unveiling accurate information during the book building process.

Information Asymmetry between Issuers and Investors

Welch (1992) argues that investors, on aggregate, possess more information about the true value of an issuing firm’s share price than does the issuer. Therefore, the issuer does not have a clear estimation about the demand for its IPO during the book building process. To be conservative, issuers deliberately underprice their offer price to assure adequate demand to their IPOs. Welch discusses an informational cascade effect in the IPO book building process. He argues that investors learn from each other about the value of issuing firms. Later, investors learn from early investors, and a negative valuation by the early investors is appreciated by later investors resulting in a cascade effect on the valuation of the issuing firm. Given this effect, there will be an unlimited demand for underpriced IPOs and no demand for overpriced IPOs. Thus, underpricing

² For a detailed discussion of these uncertainty proxies see Beatty and Ritter (1986). Security Exchange Commission (SEC) mandated that IPO firms disclose a detailed section in their registration files that outlines the uses of proceeds to be generated from the initial public offering. The use of proceeds gives the investors an idea about the future plans of the firms and the risks associated with those plans. The second proxy, inverse of the gross proceeds is basically concerned with capturing the empirical regularity that smaller offerings are more speculative, on average, than are larger offerings.

helps issuers guarantee demand for their offerings. Benveniste, Busaba, and Wilhelm (2002) show that a cascade effect is present in the pricing of IPO shares.

In the process of book building, underwriters attempt to determine an accurate estimation for the demand of issuing firms' shares (Benveniste & Wilhelm, 1990; Spatt & Srivastava, 1991). This process, in which underwriter and issuer introduce the issuing firm to potential investors and try to obtain a sense of interest in the issuing firm, is called "road show". The underwriters' intention is to collect as much information as possible during the road show and set the highest offer price depending on estimated demand by the investors. Yet, being aware of underwriters' intentions, informed investors avoid divulging their true demand and valuation of the issuing firm in order to keep the offering price at a minimum. Faced with this information revelation problem, underwriters choose underpricing and allocating a significant number of shares to informed investors to induce them reveal their true demand and valuation for the issuing firm's shares. In that regard, underpricing is used as a tool to reward informed investors to unveil their true valuation. Ljungqvist (2006) argues that issuers benefit from price revisions in their IPO price during the book building process despite their loss caused by underpricing. He claims that issuers get to acquire more information from informed investors during the book building process and, therefore, get to raise their offer price. This argument has found significant support over the years. Sherman and Titman (2002) report that underpricing is a reward for investors to unveil their true valuation. Similarly, Ljungqvist and Wilhelm (2002) examine the IPO underpricing from an international perspective. They report that underpricing is significantly less if informed institutional investors are allocated more shares in an IPO offering, a finding that is consistent across countries

studied in their sample. Hanley and Wilhelm (1995) provide similar findings to those of Ljungqvist and Wilhelm. They examine a sample of 38 IPOs underwritten by a major investment bank over the period of 1983 to 1988. Their findings suggest that institutional investors receive 66.8% of the total shares from an average IPO. Moreover, they report that positive price revisions occur following positive information revelation by informed investors, a finding that is consistent with Benveniste and Spindt's (1989) information revelation hypothesis. From these findings, it is imperative that issuers/underwriters need to develop incentive mechanisms during the book building process to induce informed investors to reveal accurate information about issuing firms and, in return, reward them with larger share allocations and a significant underpricing.

The Role of Underpricing in Signaling Firm Quality

Information asymmetry hypotheses discussed in the previous section assume that investors are more informed than issuers and are, therefore, better off in determining the price of an equity issue. Ibbotson (1975) suggests a counter argument to these hypotheses and argues that issuers might have superior information about true value of their firms and deliberately underprice their issues to signal a high value to the IPO market. The reasoning underlying the signaling hypothesis lies in the potential future benefits issuing firms can harvest in equity markets. Signaling their true quality in their IPOs, these firms may produce higher proceeds when they come to equity market to raise future funds via seasoned equities.

Signaling is a process for high-quality IPOs to convey their true value to investors, and signaling theory still continues to be an important component of IPO

research (Brau & Fawcett, 2006). By deliberately underpricing their offer price, high quality issuers signal the IPO market that they contemplate to reap future benefits in their seasoned equity offerings. Low-quality firms, on the other hand, may try to mimic the high quality firms and underprice their offering just as high quality firms do to signal a high quality to the market. Yet, as Ljungqvist (2006) discusses, a firm's true type becomes known to the market before the IPO. Therefore, low quality issuers face a risk that any cheating on their part will be detected before they enjoy any benefits from imitating the signal from high quality issuers. Knowing that this detection will hurt the demand for their shares and proceeds, low quality issuers avoid mimicking high quality issuers' signal. With this signaling mechanism in place, high quality issuers can recoup the money left on the table in their IPOs via future equity offerings.

Consistent with the signaling hypothesis of underpricing, Welch (1989) finds significant evidence that high quality firms deliberately lower their IPO price and then recoup this loss through secondary offering. Out of 1,028 IPO issues from 1977 to 1982, one third offered seasoned offerings by 1987. This finding demonstrates that firms going through secondary offerings deliberately reduce their offer price in their IPOs and offer only a fraction of their shares through their IPOs leaving the remaining shares for secondary offerings through which they are able to collect higher proceeds. Jegadeesh, Weinstein, and Welch (1993) report supportive findings to those of Welch. In a sample of 1,985 IPOs between 1980 and 1986, they reveal that underpriced firms are more likely to raise future funds through seasoned equity offerings.

Mechanisms Reducing Information Asymmetry between Issuers and Investors

Underwriter Quality (Prestige)

Beatty and Ritter's (1986) seminal paper is one of the first studies that look into the relationship between underpricing and underwriter quality. In this seminal paper, they examine whether underwriters cheat in the offer price setting during the book building process. They argue that underwriters develop a reputation stake through their transactions and businesses with IPO companies as well as with non-issuing firms. Underwriters with this reputation stake would not have any incentive to cheat on an IPO offer price since a detection of this fraud would entail the loss of potential future business with its customers. Therefore, Beatty and Ritter claim that underwriters act as a certifying mechanism during the book building process and reflect the true value of the issuing firm to the investment market. With this theory, they test whether the market penalizes investment bankers that misprice IPO offers (either too high or too little) using a set of 49 investment bankers from 1977 to 1982. They find a significant drop in market share of those investment banks that are found to misprice IPO shares. This finding indicates that investors value the presence of a prestigious underwriter in the IPO process.

Carter and Manaster (1990) study underwriter prestige similar to Beatty and Ritter (1986). They hypothesize that selecting a prestigious underwriter helps low risk firms reveal their low risk profile to the market. Using underwriters' relative replacement in stock offering "tombstone" advertisements, they generate a scale from 9 to 0 to measure underwriter quality. They find significant results for their underwriter prestige hypothesis, which states that low risk firms select high quality underwriters to reveal their

low risk characteristics to the IPO market. Their findings show that IPOs underwritten by high quality underwriters experience lower underpricing than IPOs underwritten by low quality underwriters. This finding finds support from other researchers as well. Michaely and Shaw (1994) also provide evidence for the certification role of underwriter quality and report that IPOs associated with prestigious underwriters experience 4.5% lower underpricing than IPOs associated with less prestigious underwriters. At a further extension, Carter, Dark and Singh (1998) compare three measures of underpricing quality- Johnson and Miller's (1988) scale, Megginson and Weiss' (1991) scale and Carter and Manaster's (1990) scale. They find that all three measures are negatively related to IPO underpricing leading to a conclusion that having a prestigious underwriter involved in the IPO process creates a positive impact on the valuation of IPO companies by potential investors, and so investors require a lower underpricing (discount) on these equity issues.

Venture Capital Backing

The studies discussed above show that underwriters acting as a third party certification can help mitigate the adverse selection cost for investors. Being aware that a prestigious underwriter does not engage in an offering with high risk potential, informed investors value their association with issuing firms to establish their own valuation. A similar mechanism to underwriter quality is venture capital backing as suggested by Megginson and Weiss (1991). Megginson and Weiss, and Barry, Muscarella, Peavy and Vetsuypens (1990) argue that venture capitalists' expertise and experience in monitoring investments can send important signals to investors at the time of an IPO. Barry et al.

(1990) discuss that VCs tend to bind themselves to the value of a new issue by retaining their ownership beyond the IPO. Taking this as a positive signal, investors recognize the quality of VC-backing monitoring services by requiring lower underpricing for the issues associated with venture capitalists. There is also the reputational stake of venture capitalists as in the case of underwriters. Venture capitalists have significant intentions to establish a prestigious name so that they can continually attract market share in the IPO market. With this reputation developed, Megginson and Weiss (1991) argue that VC backing plays a significant role to reduce information asymmetry in the offering process. They argue that firms that experience high uncertainty and informational asymmetry may improve these disadvantages by obtaining venture capital backing because venture capitalists are more established and experienced. Thus, the presence of VC-backing signals a positive valuation to the market. To test their certification hypothesis for VC-backing, Megginson and Weiss (1991) identify 320 VC-backed IPOs during the period between 1983 and 1987; then they match them with 320 non VC-backed IPOs by size and industry. Consistent with their hypothesis, they find that issues associated with a VC-backing have a lower underpricing than issues with non VC-backing (7.1% vs. 11.9%). This finding shows that investors value the presence of venture capital backing in IPO firms and require a lower underpricing accordingly. Moreover, Barry et al. (1990) find that underwriters also value the presence of a venture capitalist in IPO firms. Their findings illustrate that IPO issues are more likely to be underwritten by higher-quality underwriters when IPO issues are backed by a venture capitalist.

Long-run Performance of IPOs

Previous studies have consistently documented that post-IPO returns of IPO issuing firms are lower than those of non-issuing firms over some holding periods (Ritter, 1991; Loughran & Ritter, 1995, Eckbo & Norli, 2005). Moreover, the operating performance of issuing firms also appears to underperform that of non-issuing firms in the long-run (Chi & Padgett, 2006; Jain & Kini, 1994).

Loughran and Ritter (1995) document the long-run return performance of initial public offerings and seasoned equity offerings (SEO) during the period of 1970-1990. They report 5% and 7% five-year average annual returns for IPOs and SEOs, respectively. Likewise, Keloharju (1993) examines the long-run underperformance phenomenon in the Finnish stock market (Helsinki Stock Exchange) and reports that investing in a value-weighted index brings about 21% more return than investing in a Finnish IPO at the closing of the first trading day and holding it for three years. Furthermore, Jain and Kini (1994) report that the operating performance of issuing firms also suffer in the post-IPO period relative to operating performance one year before the IPO date. Using several operating performance measures such as return on assets, operating cash flows, and sales, they consistently show that these operating performance measures are lower than they were before the IPO, and the IPO firms' operating performance underperforms that of non-issuing industry competitors.

The poor long-run performance of IPO stocks has garnered significant attention from academics. Ritter and Welch (2002), for instance, argued that the long-run price anomaly in IPO investments may partly be due to investment periods. They report

significant differences in long-run IPO returns among three time periods. The average style-adjusted three-year buy-and-hold returns of IPOs during the periods of 1980-1989, 1990-1994 and 1995-1998 have been reported as 6.9%, -12.7%, and 11.6%, respectively.

Teoh, Welch, and Wong (1998) explore the link between earnings management and long-run performance of IPO firms. They show that managers of IPO firms tend to report unusually high earnings by using discretionary accounting accrual adjustments, which is purported to create an over optimism about the offer price of issuing firms. They further report that discretionary current accruals help accurately predict subsequent three-year stock return performance in a wide variety of specifications (Teoh et al., 1998). Their results show that firms that manage their earnings most at the time of their IPOs experience a cumulative abnormal return of approximately 20 to 30% less than the cumulative abnormal return of IPO firms that manage their earnings less.

Another explanation suggested for poor long-run performance of IPO firms is the underwriter quality. The underlying premise of this research stream is that prestigious underwriters help improve long-run performance of issuing firms similar to its certification role in the IPO underpricing. Michaely and Shaw (1994), Carter, Dark, and Singh (1998) provide supportive results for this hypothesis. Both studies show that firms taken public by highly ranked underwriters experience a lower long-run underperformance than firms associated with less prestigious underwriters.

Survival of Newly Public Firms

Survival of IPO firms subsequent to going public is another important but largely ignored area of IPO research given the evidence that almost one third of IPO issuing firms fail in their first five years of operations subsequent to their IPOs (Field & Ciccotello, 2001). As discussed thus far, going public is a significant transformation that substantially alters current internal and external orientation of a company and its competitive position with other firms in its industry (Jain & Kini, 2000). Jain and Kini state that firms go through fundamental changes in their strategies, structures, personnel, control processes, and standard operating procedures once they go public. They further argue that managers of IPO firms become exposed to more intense scrutiny and monitoring from influential capital market participants. Given these substantial effects on the firms' structure and the managers' responsibilities, Jain and Kini (2000, pp. 1141) argue that "these dramatic shifts can be destabilizing to the firm and threaten its very survival unless suitable adaptation takes place."

A few studies examined the survival of firms subsequent to their IPOs. Hensler, Rutherford and Springer (1997), for instance, investigate the effect of firm-specific characteristics on the survival of IPO firms using an accelerated failure time (AFT) model. They used seven firm characteristics as the determinants of the probability of survival: size, age, initial return, market level at the offering date, quarterly IPO activity level, number of risk factors, and percentage of insider ownership. Consistent with their expectations, they found that survival time for IPOs increases with size, age, initial return, IPO activity level, and percentage of insider ownership; and decreases with an increasing number of risk characteristics and market level at the offering date.

Using a sample of 877 IPOs from 1977 to 1990, Jain and Kini (2000) examine whether the presence of venture capital backing at the time of the IPO increases the probability of survival for IPO firms. They argue that VCs have the ability to influence managers on strategic resource allocation decisions and help maintain a competitive advantage that is expected to affect the post-IPO survival time. Their results indicate that VC involvement improves the survival profile of IPO firms.

Hsu, Reed and Rocholl (2010) investigate the competitive effects of IPO issues and how competing firms in the public markets respond to the introduction of a large IPO in a given industry. They further study the probability of survival of competing firms following large IPOs in their respective industries. Their findings indicate that competing firms associated with prestigious underwriters and venture capitalists at the time of their own IPOs have a higher likelihood of survival subsequent to the introduction of a large IPO in their respective industries.

Internationalization

Although there is not one clear definition of internationalization, it is simply the process of expanding domestic businesses to international markets (Stanton & Stanton, 2011). Internationalization is an important stage for firms especially in their growth cycle (Peng & Delios, 2006). Growing firms find it optimal to compete for the resources and market share by expanding through geographic dispersion, mostly crossing national borders (Barkema, Baum & Mannix, 2002). The degree of international involvement in foreign markets follows a stage model as theorized by Johanson and Wiedersheim-Paul

(1975). They argue four different modes and involvement to enter into foreign markets, where successive stages correspond to a higher degree of international involvement. The states are as follows: 1) no regular export activities, 2) export via independent representatives, 3) establishment of an overseas sales subsidiary, 4) overseas production/manufacturing. Each of these internationalization stages from the lowest to the top requires a higher degree of resource allocation, experiential knowledge, and commitment. Johnson and Wiedersheim-Paul call this sequence of stages the establishment chain.

Research on the internationalization of firms concentrated on the performance of well-established, large firms and their operating and stock performance. Among many of these international studies, Vernon (1971) reports that the degree of internationalization is related to a firm's return on investment (ROI) and return on sales (ROS), and Kogut (1985) documents that internationalization allows firms to achieve economies of scale. Another stream of research specifically investigates the market entry choice of multinational firms (Dev, Brown & Zhou, 2007). This line of research specifically investigated the effectiveness of different modes of market entry in foreign markets, how companies are adapting to and coping with differences and challenges in new international markets, and what performance consequences these different modes of market entry result in for the companies.

Expanding into international markets requires both general knowledge and market-specific knowledge (Andersen, 1993). Andersen suggests that firms gain the market-specific knowledge through their experiences in foreign markets, whereas they transfer the general knowledge of operations from home country to foreign markets.

Internationalization is a risky business decision. Nevertheless, benefits associated with internationalizing businesses have been encouraging for firms with some growth potential. An important advantage firms hope to achieve through international expansion is to enhance firm value. Doukas and Travlos (1988) and Mikhail and Shawky (1979) posit that international firms acquire the ability to offer a more diversified portfolio to their shareholders resulting in an improvement in firm value, a claim that is consistent with imperfect capital market theory. From this perspective, internationalization is a value adding strategy.

Internationalization and Firm Performance

A significant number of studies show that internationalization improves a firm's performance. The relationship between internationalization and firm performance has been investigated in numerous settings, and a number of different patterns have been observed for this hypothesized relationship. Hitt, Hoskisson, and Kim (1997) and Gomes and Ramaswamy (1999) mention that the relationship is curvilinear and has an inverted U-shape. The inverted U-shape represents that in the early stages of internationalization, firm performance is positively related to the degree of internationalization. On other hand there is a significant amount of support for the claim that the relationship between internationalization and firm performance is linear (Grant, 1987; Morck & Yeung, 1991). Regardless of the shape of the relationship between internationalization and firm performance, there is a generally agreed consensus that internationalization enhances firm value. The fundamental theories of internationalization- Uppsala model (Johanson &

Vahlne, 1977), Hymer's (1976) foreign direct investment model (FDI) model, Dunning's Eclectic Paradigm (Dunning, 1980)- all suggest that internationalization improves firm value and corporate performance because multinational firms become able to exploit the monopolistic advantages in the foreign markets as well as make use of their intangible assets such as extensive business network and R&D know-how to gain a competitive advantage in cross-border markets (Kogut, 1985; Morck & Yeung, 1991).

Chapter Summary

The first part of chapter 2 reviews the IPO research literature with particular attention to IPO underpricing, IPO long-run performance, and survival of IPO firms. The second part reviews the internationalization literature and relationship between internationalization and firm performance. Chapter 3 includes hypotheses development, sample and data sources, and statistical methods to test the hypotheses of the study.

CHAPTER 3

METHODOLOGY

Introduction

The purpose of this chapter is to develop the specific research hypotheses to be tested in this dissertation, to outline statistical methods to be employed to test the hypotheses, and to discuss data sources and data collection methods as well as sample firm characteristics.

Hypotheses

Internationalization can be a valuable selling point for IPO firms. If investors believe that internationalization improves a firm's value, then they may incorporate this information into their valuation for pricing IPO issues. Both *internalization theory* and *imperfect capital market theory* suggest that international firms offer stockholders value (Morck & Yeung, 1991; Saudagaran, 2002). *Internalization theory* conjectures that foreign investment increases a firm's market value if the firm has firm-specific intangible assets such as superior production skills, patents, marketing abilities, managerial skills, or consumer goodwill (Saudagaran, 2002; Morck & Yeung, 1991). If an international firm has these assets, its market value is automatically enhanced because the firm can exploit advantages of these assets by gaining market share in foreign markets. An alternative to *internalization theory*, *imperfect capital markets theory* posits that international firms offer stockholders an opportunity to diversify their investments internationally that may

not otherwise be directly available to investors due to capital market imperfections (Saudagaran, 2002). These imperfections can be such things as restrictions on cross-border capital flows, information asymmetries, high transactions costs, or other reasons that deter investors from diversifying their investments internationally. This theory suggests that international firms have substantial tax advantages over domestic firms as well as such other advantages as reaching low-cost labor and raw materials in the markets they exist. Therefore, through these means, international firms are able to improve the value of company for their shareholders. When this is achieved, enhanced firm value would then result in investors valuing international firms at a premium compared to domestic firms.

Along with these theories, international firms develop extensive experiential knowledge, maintain routines to manage complexity, and institute specialized coordination mechanism that are not easily attainable by domestic firms (LiPuma, 2011). Furthermore, firms with international involvement build up wide networks that can positively affect their performance. Internationalization can also provide firms with more growth opportunities and innovations that are not equally available to domestic firms (Zahra, Ireland & Hitt, 2000). At the time of their IPOs, international firms can then incorporate these benefits into their offerings in order to signal the market their true value. In fact, that would not be a naïve expectation for international firms because investors have uncertainty about an IPO firm, and internationalization can reduce this uncertainty. With a better evaluation of issuing firms, investors are then likely to develop more rational and optimistic estimations about issuing firms and so require a lower initial

return (lower discount/underpricing) on their investments in the IPOs of international firms.

The other side of the internationalization coin points to the agency costs of internationalization. When there are discrepancies between objectives of agents (managers) and those of owners (shareholders), an agency problem occurs (Jensen & Meckling, 1976). Akin to this agency-owner relationship, increased international intensity exacerbates the information asymmetry between investors and issuers. An apparent problem with increased international involvement appears to be monitoring ineffectiveness. Investors prefer to remain close to the firms in which they have an investment (Sapienza & Gupta, 1994) for an effective control on their investments. When investors' monitoring on managers weakens, then agency problem worsens. In the IPO context, this would inevitably send a negative signal about issuing firm to the investment market. As closely related to agency cost, international firms become exposed to a greater complexity as their degree of internationalization increases (Weick & Van Orden, 1990). The complexities an international firm faces can be grouped under two categories. First, when a firm expands internationally it will need to encompass a greater diversity of cultures (Hofstede, 1980, as cited in Sanders & Carpenter, 1998), customers, competitors and regulations (Brahm, 1994). Second, there are substantial competitive pressures for international firms to compete successfully in foreign markets in which they operate (Roth & O'Donnell, 1996). Taken together, these complexities put international firms at a disadvantageous position over their domestic counterparts in the IPO context. Since investors are primarily concerned with protecting their investments, they are likely to consider this high complexity to which international firms are exposed to as harmful for

their investments. If this turns out to be the case, then it is very likely that investors value IPOs of domestic firms more favorably than the IPOs of the international firms. Thus, a higher underpricing would be expected for issues of international firms.

Given these two opposing arguments about the impact of internationalization on first day performance of IPO firms, the first hypothesis is formed as follows:

Hypothesis 1: There is a significant difference in the magnitude of IPO underpricing between the international service firms and domestic service firms.

The second focus of this dissertation is to examine whether IPO firms' international involvement helps them boost up their long-term return and operating performances. Long-term underperformance of IPO firms has been evident in many studies including but not limited to those of Ritter (1991), and Loughran and Ritter (1995). For instance, Ritter (1991) unveils that investing in IPO firms brings about 34.47% average return for a 3 year holding period, whereas in the same time period, an investor would have earned 61.86% average return by investing in a portfolio of non-issuing firms that are matched to IPO firms by industry and market value. Similarly, IPO firms underperform the market in the operating performance as well. Jain and Kini (1994) document that operating performance of IPO firms (operating return on assets and operating cash flows deflated by assets) declines significantly in the post-IPO period relative their own pre-IPO performance.

Despite consistent evidence of poor long-run performance of IPO stocks, continual investments in the IPO stocks remain a puzzling issue. It is in fact difficult to

explain why IPO firms underperform in the long-run. Ritter (1991) argues the underperformance could be due to bad luck, risk mismeasurement, and fads or over optimism. A particular observation from Ritter's study is that underperformance is concentrated among relatively young growth companies. This observation is persistent across measurements techniques used to handle mismeasurement concerns, or uses of cross-sectional and time-series methods to distinguish between bad luck explanation, fads and over optimism explanation. As discussed before, internationalization is a stage in a firm's growth cycle and follows a growth period in which firms find it optimal to expand through foreign markets. Therefore, the observation from Ritter's study may imply that international firms may not experience long-run underperformance subsequent to their IPOs to the same degree as the domestic firms do. This is mainly because international firms have already gone through a substantial growth in their life cycles that results in their internationalization and are less likely to deal with growth issues following their IPOs. Therefore, they might be expected to have strong business operations and better performance following their IPOs compared to purely domestic firms. Additionally, international firms possess a large degree of experiential knowledge (Johanson & Wiedersheim-Paul, 1975) accumulated via their existence in international markets which may easily factor into coping with the new difficulties they face in their new publicly operating space. Therefore, their ability to manage the post-IPO firm performance can be expected to be better than that of their domestic counterparts. However, on the other hand, there are some concerns raised by the agency theory that internationalization increases the distance between owners and managers leading to a potential monitoring problem (Jensen & Meckling, 1976). With the loosened control emanating from the

higher internationalization, managers can start behaving opportunistically in their own advantage sacrificing value-maximizing projects for owners. Furthermore, for smaller and newly international companies, inabilities to adapt to post-IPO operating period can cause long-run performance declines as well. Given the advantages of internationalization to firm performance, and potential difficulties they may experience in their post-IPO period, the second hypothesis is formulated as a two-sided hypothesis despite the researcher's strong expectation that international firms will outperform their domestic counterparts in their long-run stock return in the post-IPO period.

Hypothesis 2: *There is a significant difference in the post-IPO long-run return performance between international service firms and domestic service firms.*

Along with the stock returns in the long-run, Jain and Kini (1994) showed that firms going public experience a substantial decline in their post-issue operating performance. With the same reasoning, if the internationalization enhances firm performance, we would expect international firms to yield a better operating performance than do domestic firms subsequent to their IPOs. However, as discussed for return performance hypothesis, there is an increasing monitoring problem, and post-IPO period complexities that international firms might experience to some degree, which then can result in performance decline for international firms. Given that, the third hypothesis of the study is formed as follows:

Hypothesis 3: *There is a significant difference in the post-IPO operating performance between international service firms and domestic service firms.*

The last hypothesis of this dissertation is concerned with whether the presence of international involvement affects survival time of issuing firms subsequent to their IPOs. As it is discussed for hypothesis 2, the long-run underperformance of IPO firms is well documented. A subsequent event for issuing firms might be failure and going out of business. Jain and Kini (1999) point out that approximately one third of IPO issuing firms fail or are acquired by another company within the five years after their IPOs. The research in this area is somewhat limited but exhibited some preliminary findings. Hensler et al. (1997) show that survival time for IPO firms increases with size, age, initial return, IPO size and the percentage of insider ownership; and decreases with an increasing number of risk characteristics and market level at offering date. Moreover, being underwritten by a prestigious investment bank (Hsu et al., 2010) and having venture capital backing (Jain & Kini, 2000) have also been reported as significant qualities of IPO firms for post-IPO survival. In addition to these findings, the dissertation further hypothesizes that international firms are more likely to survive longer than purely domestic firms. The underlying idea behind this proposition is that as the second hypothesis suggests, international firms are more apt and experienced to deal with the complexities they can face once they become public and, therefore, can operate more successfully than domestic firms. In addition to experiential knowledge, international firms have the flexibility to access cheap labor and capital sources, and tax advantages (Saudagaran, 2002), which are likely to give them an edge over domestic firms at times when things go badly. However, in accordance with the discussion made for underpricing and long-run hypotheses, internationalization does increase the monitoring cost on the management team and therefore could loosen the owner control on the

management team. Furthermore, increased environmental uncertainty and complexities may be detrimental to performance of international firms. Although, it is expected that advantages of internationalization should outweigh the potential negative effects and lead to longer survival time for international IPO firms, forming a one-sided hypothesis is avoided to account for the potential negative effects of internationalization. Hence, the fourth hypothesis is formed as follows:

Hypothesis 4: *There is a significant difference in the survival time between international service firms and domestic service firms subsequent to their initial public offerings.*

Types and Sources of Data

The sample firms for this study are taken from a database provided by Prof. Jay Ritter on his website.³ This database contains a list 9,262 firm commitment offers conducted between 1975 and 2011. The data set includes company names, PermNo (issue specific identifier), offer date, and founding dates of companies. From this database, all firms that are in service related industries, based on the Department of Labor's standard industrial classification (SIC) codes, are selected to be included in the sample of the current study. With this classification, firms belonging to SIC codes 4000-4799, 5200-5999, and 7000-8999 are included in the sample. These SIC codes belong to 1) all types of transportation services, 2) retail trade, and 3) services divisions as described in the

³ This dataset includes the CRSP permanent id (permno), the first trading date on CRSP, the founding dates and the company names for 9,262 IPOs that went public in the U.S. during the period of 1975-2011. The database is available in the following address as an excel file:
<http://bear.warrington.ufl.edu/ritter/ipodata.htm>

Department of Labor SIC classification. Table 1 shows the list of industry sub-groups that are listed under the major industry groups.⁴ For IPO deal information including offer prices, number of shares offered, offer date, venture capital backing, and underwriter names, Securities Database Corporation (SDC) Platinum database and IPO prospectuses are consulted. SDC Platinum is maintained by Thomson Reuters, and IPO prospectuses are available from the Security and Exchange Commission's EDGAR online database. Accounting data are taken from Compustat, and stock returns are retrieved from the Center for Research in Security Prices (CRSP). Underwriter quality measure (CM scale) is available on Dr. Ritter's website in excel spreadsheet format.⁵

Models and Variables

Underpricing Tests

A preliminary difference (t-test) test is run to reveal whether there is a significant difference in the underpricing of international services firms compared to domestic services firms. The purpose of this test is to provide an initial understanding of the underpricing in the two separate groups of IPO companies.

The primary analysis to investigate the impact of internationalization on IPO underpricing is ordinary least square regression consistent with previous research that has

⁴ Major industry group Transportation Services is listed along with Communication, Electric, Gas, and Sanitary Services in the SIC classification. However, except the transportation services other industries in this major industry group are regulated industries and therefore they are excluded from the sample.

⁵ Carter and Manaster scale updated by Prof. Ritter can be reached at the following address: <http://bear.warrington.ufl.edu/ritter/ipodata.htm>. It is stored as an excel file under the heading of "IPO Underwriter Reputation Rankings (1980 - 2009)."

examined the factors explaining the initial returns of IPO firms (Carter et al., 1998; Megginson & Weiss, 1991).

In order to test hypothesis 1, following cross-sectional regression model is estimated via ordinary least square regression.

$$UP_i = x_0 + x_1INT_i + x_2UWQ_i + x_3VC_i + x_4AUQ_i + x_5LN SIZE_i + x_6LN GRP_i + x_7LN AGE_i + x_8INDUSTRY_i + \varepsilon$$

Eq. 1

The dependent variable, underpricing (UP_i) is formulated as follows:

$$UP_i = \frac{(P_{c,i} - P_{o,i})}{P_{o,i}}$$

where,

UP_i is underpricing (initial return) of firm i ,

$P_{c,i}$ is the closing stock price of firm i at the end of the first trading day,

$P_{o,i}$ is the offer price per share of the IPO issuing firm i .

The main independent variable of interest in this test is the internationalization of IPO firms at the time of issuing. Recalling from the previous discussion, expectation is that investment market values initial equity offerings of companies with some degree of international involvement differently from purely domestic firms. Below is how the internationalization is operationalized in this analysis:

INT is a dummy variable and operationalized as follows⁶:

$$INT = \begin{cases} 1 & \text{if } * \text{ firm } i \text{ has pre – tax foreign income at the time of issuing IPO} \\ & * \text{ firm } i \text{ has no pre – tax foreign income at the time of IPO} \\ & \text{but some indication of intent for expanding internationally} \\ & \text{over the next 3 years in its IPO prospectus and realized} \\ & \text{pre – tax foreign income during these years.} \\ 0 & \text{if } * \text{ firm } i \text{ has no pre – tax foreign income at the time of IPO and} \\ & \text{no mention of international expansion over the next 3 years} \\ & \text{in its IPO prospectus.} \end{cases}$$

UWQ represents underwriter prestige variable. This study uses Carter and Manaster (CM) (1990) underwriter prestige scale (0-9). CM scale uses tombstone announcements to rank the investment banks. A typical tombstone announcement includes lead underwriter, co-lead underwriter, and all other underwriters included in the syndicate. Lead and co-lead underwriters are placed on the top of the list followed by others in a sequential order. Underwriters listed immediately under lead and co-lead underwriters are assigned the rank of nine (for the most prestigious); underwriters following them are assigned eight, etc...⁷. This classification generates a measure of underwriter prestige on a scale from zero (least prestigious) to nine (most prestigious).

VC represents venture capital backing. If a firm has venture capital backing it takes on a value of 1, otherwise 0. Venture capital backing is defined as having at least one venture capitalist involvement in an IPO issuing firm at the time of going public.

AUQ represents auditor quality at the time of IPO. It is a dummy variable taking a value of 1 if the IPO firm is audited by a Big-4 auditor at the time of IPO, and 0 otherwise. Over the years the number of prestigious auditors has decreased due to mergers and corporate failures. For the period prior to 1987, there were Big-8 auditors: Arthur Andersen, Arthur Young & CO, Coopers & Lybrand, Ernst & Whinney, Deloitte Haskins & Sells, Peat Marwick Mitchell, Price Waterhouse and Touche Ross. In 1989, Ernst & Whinney merged with Arthur Young and formed Ernst & Young, and Deloitte Haskins & Sells merged with Touche Ross and formed Deloitte & Touche creating Big-6. After 2002, following mergers and failures, the number of big audit companies was reduced to 4, which have become known as Big-4: Deloitte & Touche, Pricewaterhouse Coopers, Ernst & Young, and KPMG. For conventional reasons, any issue that is audited by one of these audit companies in their respective time period is regarded as Big-4, and it takes on a value of 1, 0 otherwise.

⁶ In the sensitivity tests, I also put a threshold for a firm being considered as an international firm. Structurally a firm that has some form of international business can be considered international, but the extent of international involvement can vary. I run a series of sensitivity tests by using a set of thresholds for degree of internationalization. I try 5%, 10% and 15% thresholds for the degree of international involvement and test whether the results vary in these sub-groups.

⁷ For a detailed discussion of CM prestigious measure, see Carter and Manaster (1990).

LNSIZE is the natural logarithm of total assets and accounts for the effect of firm size.

LNGRP is the natural logarithm of gross proceeds at IPO issuing and is included to account for any systematic influence due to offering size.

LNAGE is age of the firm since its incorporation. Operationalization of age is the natural logarithm of one plus age of the firm at the IPO date.

INDUSTRY is included to account for the industry effects for various services companies included in the study. 2-digit SIC codes are used as the proxy for industry representation.

Previous research has documented that underwriter quality (UWQ) (Carter & Manaster, 1990; Beatty & Ritter, 1986; Titman & Trueman, 1986), and venture capital backing (Megginson & Weiss, 1991) are significant factors in explaining the variation in the IPO underpricing. Both of these variables act as external certification mechanisms to reduce the uncertainty about the issuing firms consistent with the information asymmetry hypothesis. The presence of a prestigious underwriter and venture capital backing in the IPO firm, therefore, alleviate uncertainty about the issuing firm resulting in a lower IPO underpricing. Hence, both of these variables are expected to be negatively associated with underpricing producing a negative sign on their respective coefficients. Likewise, one would also expect a negative association between auditor quality and underpricing with the belief that large, prestigious companies attract high quality audit firms. In return, highly prestigious audit firms conduct a thorough audit for issuing firms creating trust in the investment market for these issuing firms. With this reasoning, the coefficient on the auditor quality is also expected to be negative.

Consistent with Ritter (1984) and Megginson and Weiss (1991), this study also controls for the firm size. Both of these studies show that larger firms experience a lower underpricing. Furthermore, firm age is also included as a control measure. Firms with a

longer operating history are more known to the market, which reduces the uncertainty about them. Thus, it is expected that older firms experience a lower underpricing at their IPOs. Industry fixed effect is included to account for the industry level changes in the IPO market.

Long-run Analysis Test

Long-run Return Performance

Previous studies on the long-run performance point out two major measures of performance: cumulative average abnormal returns (CAAR) and buy-and-hold-returns (BAH). Teoh et al. (1998) state that many of these studies adhere to BAH returns because they are most relevant for an investor. In their discussion about the problematic use of BAH returns in long-run performance studies, they refer to concerns raised by Fama (1998). Fama argues that BAH returns have skewed distributions, small initial differences inflated through a compounding process, and cross-correlation problems caused by time period overlaps. Given these arguments, in this study both BAH returns and CAARs are employed to test hypothesis 2.

Starting with Ritter's (1991) influential study, many studies used CAARs in long-run performance studies either the same as used in Ritter (1991) or some modification of the model he uses. This dissertation adheres to Ritter's long-run performance measure as he operationalized it in his seminal paper. This computation requires driving benchmark-adjusted monthly returns. To do that, consistent with Ritter, benchmark-adjusted returns are calculated by subtracting monthly benchmark return for the corresponding event month from the monthly raw returns. Ritter uses only value weighted index as the

benchmark for market adjustment. Instead, this dissertation makes use of two benchmarks: 1) the CRSP value-weighted NASDAQ/ Amex-NYSE index, and 2) the CRSP equal-weighted NASDAQ/Amex-NYSE index. Benchmark adjusted return i in event month t is defined as:

$$AR_{it} = R_{it} - R_{mt}$$

where, R_{it} the monthly return for firm i in event month t , R_{mt} is the return on the CRSP value-weighted NASDAQ/ Amex-NYSE index or the CRSP equal-weighted NASDAQ/ Amex-NYSE index in event month t . After deriving the benchmark-adjusted abnormal return for each firm i , portfolio returns are calculated for both international firms and domestic firms. It is done by averaging the benchmark-adjusted returns of n firms for the event month t in both portfolios. Below is the computation:

$$AR_t = \frac{1}{n} \sum_{i=1}^n AR_{it}$$

Finally, the cumulative benchmark-adjusted aftermarket performance from event month q to event month s is the summation of the average benchmark-adjusted monthly returns:

$$CAAR_{q,s} = \sum_{t=q}^s AR_t$$

Consistent with Ritter, when a firm from any one of the portfolios is delisted from the CRSP database, the portfolio return for next month is an equally-weighted average of remaining firms in the portfolio. The aftermarket period in this study is defined as 36

months following the IPO issue date. This aftermarket time period has been used in previous studies (Ritter, 1991; Loughran & Ritter, 1995). 3-year CAARs for international firms and for domestic firms are calculated. Regular t-test (Student's t) is conducted to find out whether there is a difference in the CAARs of competing portfolios. Moreover, Johnson's (1978) skewness adjusted t-statistic is reported to account for positive skewness in the return data as suggested by Fama (1998).

The second long-run performance measure included in this study is the 3-year buy-and-hold returns. Below is how 3-year buy-and-hold return as used in Loughran and Ritter (1995) are computed.

$$R_{iT} = \left[\prod_{t=start}^{\min[T, delist]} (1 + r_{it}) - 1 \right] * 100\%$$

where start is the date of the first post-issue CRSP listed closing price, min[T, delist] is the earliest of three year anniversary following issuing date or the delisting date from the CRSP, r_{it} is the CRSP value-weighted or equal-weighted index adjusted return for firm i in event month t . BAH returns are calculated for each of the international and domestic firms. Then, a series of t-test is conducted to examine whether holding period returns over 12, 24 and 36 months differ across international and domestic IPO firms. In order to account for size factor between international and domestic firms, size-matched portfolios are constructed and difference tests are re-run on the size-matched samples. The expectation is that in both long-run measures, internationalized firms outperform the domestic firms in the long-run.

Cross-Sectional Explanation of IPO Long-run Performance- The Effect of Internationalization

In this section, a cross-sectional regression is modeled to investigate whether the presence of international activity leads to long-run performance improvement in the going public firms. Equation 2 is estimated via OLS. The dependent variable of the regression estimation is long-run returns. Long-run returns in the study are operationalized in two ways as previously discussed: cumulative abnormal returns and buy-and-hold returns. For this analysis, cumulative abnormal returns and buy-and-hold returns for each firm i is computed for a 3-year period and used as the dependent variable. Both long-run return measures are repeated for value-weighted and equal-weighted market adjustments leading to four separate estimations.

$$\begin{aligned} Return_i = & x_0 + x_1INT_i + x_2UWQ_i + x_3VC_i + x_4AUQ_i + x_5LNSIZE_i \\ & + x_6LNGRP_i + x_7LNAGE_i + x_8UP_i + x_9INDUSTRY_i + \varepsilon \end{aligned}$$

Eq. 2

where,

Return is cumulative 3-year cumulative abnormal returns (CAR) for each firm i and 3 year Buy-and-Hold return for each firm i .

INT is a binary variable taking on a value of 1 if the firm i is international, 0 otherwise. A firm is classified as international if the firm has any pre-tax foreign income in the year preceding its IPO.

UWQ is the underwriter quality. Carter and Manaster underwriter quality scale (0-9) is used to proxy for the underwriter quality.

VC represents the venture capital backing. If a firm has venture capital backing it takes on a value of 1, otherwise 0.

AUQ represents the auditor quality at the time of IPO. A binary variable is used for AUQ taking a value of 1 if the IPO firm uses a Big-4 auditor, and 0 otherwise.

LNSIZE is the natural logarithm of total assets and accounts for the effect of firm size

LNGRP is the natural logarithm of gross proceeds at IPO issuing and is included to account for any systematic influence due to offering size.

LNAGE is the natural logarithm of one plus age of the firm at the IPO date. Firm age is defined as the difference between IPO date and incorporation date.

UP is the underpricing (initial return) and calculated as first day closing stock price of IPO firm i minus offer price divided by the offer price.

INDUSTRY is included to account for the industry affects for various services companies included in the study. 2-digit SIC codes are used as the proxy for industry representation.

Previous evidence on the long-run return studies suggests a lower return performance for IPO issuing firms. With the arguments developed in this dissertation, internationalization is proposed to affect the long-run performance of the issuing firms. If this is observed, then the coefficient on the INT variable should produce a positive sign suggesting higher returns for international firms.

Long-run Operating Performance

To test hypothesis 3, the dissertation follows the methodology used in Jain and Kini (1994). They examine operating performance of going public firms in the next 3 years following their IPOs. Jain and Kini document that going public firms exhibit a decline in their post-issue operating performance, measured by operating return on assets and operating cash flows deflated by assets, relative to their own pre-IPO performance. These findings are consistent across two specifications in the operating performance measure. Following this study's methodology, the dissertation uses change in operating return on assets and change in operating cash flows. The change in operating performance measures are calculated for both portfolios relative to *year-1*, which is the

year prior to a firm goes public. Following Jain and Kini, performance changes in operating performance of two portfolios are observed in the following 3 years subsequent to the IPO year (for years 0, +1, +2, and +3 relative to year -1; year 0 is the IPO year). Figure 1 exhibits measurement points in the year continuum.

Consistent with Jain and Kini, operating return on assets is calculated as follows:

$$\text{Operating Return on Assets} = \frac{\text{Operating income before depreciation}}{\text{Total assets}} * 100$$

and operating cash flow is computed as:

$$\text{Operating Cash Flow} = \frac{\text{Operating income} - \text{capital expenditures}}{\text{Total assets}}$$

As Jain and Kini discuss, return on assets is a widely used measure of operating performance and captures the efficient utilization of assets. Moreover, operating cash flows deflated by total assets provides a useful measure to value the performance of a company since this measure is a significant component of the net present value (NPV) calculations. They use the median change in levels (the median value of {operating performance_i(t) – operating performance_i(-1)}), where i represents the firm, -1 represents year prior to the IPO, and t represents the years following the IPO. Consistent with their methodology, the median change in levels is used in this study. Once the level changes are obtained in the operating performance measures for both groups of firms (international and domestic firms) for years 0, +1, +2, and +3 relative to year-1, a difference test for each year between international firms and domestic firms is conducted. Jain and Kini documented a significant drop, compared to their industry peers, in operating return on assets and operating cash flows of issuing firms in the year following

their IPOs relative to the year prior to their IPOs. The expectation in this dissertation is that the magnitude of the decline in the operating performance will be alleviated by the presence of international operations, and international firms will face less significant decline in their operating performances compared to domestic firms in the next three years following their IPOs.

Survival Analysis

To investigate the effect of firm internationalization on the survivability of IPO firms, survival methodology is employed. Survival analysis examines the time it takes for an event to occur. In bio-medical research, this methodology has been widely used to examine time to death. Recently, survival methodology has found significant applications in other research areas. For instance, business researchers have used the method to investigate company bankruptcy or failure, or employee turnover (Lane, Looney & Wansley, 1986; Somers, 1986). The advantage of survival analysis over the comparable cross-sectional models such as discriminant analysis or logistic regression is that survival analysis is capable of predicting when the event will occur. Unlike survival analysis, logit and discriminant models only predict whether an event will occur or not, and ignore time to event (Jain & Kini, 2000). This analysis allows the researcher to assess conditional probability of failure given that a firm has survived up to the present time. Consequently, this method is capable of dealing with the censored data, in which the response variable has not yet occurred. Furthermore, survival analysis handles the complexities with the time-series data with different time horizons. As Jain and Kini (2000) discuss, those

concerns are of important significance in the IPO studies. They argue that IPO data is right-censored because at any point in time, there are companies that continue their operations, and we do not observe final outcome for them. Moreover, the duration of observation to event time is different for each company depending on when it went public. For example, sample firms in this study are tracked until 2010. If a firm had an IPO in 1990, that firm is said to be tracked for 20 years; whereas a firm that went public in 2000, is tracked for only 10 years.

In this study, the survival in the aftermarket is defined as continuation of listing in the CRSP database, and failure as delisting of the stocks from CRSP database for reasons other than movement to another exchange or mergers/acquisitions. These operationalizations are consistent with those of Hensler et al. (1997) and Jain and Kini (2000). The same decision criterion is taken to classify the failure firms as used in these two studies. CRSP delisting codes for negative reasons include insufficient capital, insufficient float, liquidation, bankruptcy, nonpayment of fees or delinquent in filings, failure to meet financial guidelines to list, insufficient number of market makers, price falling below acceptable levels, and insufficient number of shareholders. Per this guideline, any firm that is delisted from CRPS for at least one of these reasons is classified as a failing company, and all other firms that continue to be listed as surviving companies.

One of the mostly used survival methodology is the Cox (1972) hazard model to explain what factors significantly influence survival time of IPO firms. The Cox hazard model assumes a time variable T that represents survival time. We assume that T is a random variable with a cumulative distribution function $F(t) = \Pr(T \leq t)$ and

probability density function $f(t) = \frac{F(t)}{dt}$. The hazard function $h(t)$ can be defined as the conditional failure rate defined as the probability of failure during a very small time interval assuming the firm has survived to the beginning of the interval. In terms of the probability density function and cumulative distribution function, the hazard function is illustrated as:

$$h(t; X) = f(t; X)/(1 - F(t; X))$$

where $F(t; X)$ is the probability that the IPO firm with characteristics X has failed before time t and $f(t; X)$ is the probability density function. Depending on the hazard rate and the covariates, the hazard model can take several forms (Jain & Kini, 2000). The general form of the hazard model is:

$$h(t; X) = h_0(t)\exp(X\beta)$$

In this model, $h_0(t)$ is the baseline hazard function, and the β is the vector of model parameters. The baseline hazard function presents the hazard probability distribution under average conditions (Hensler et al., 1997). The hazard model can take several forms depending on the assumptions regarding the shape of the hazard functions (Kalbfleisch & Prentice, 1980).

In line with Hensler et al. (1997) and Jain and Kini (2000), the accelerated failure time (AFT) model is utilized in the current study. This model provides a significant advantage in the context of IPO firm delisting because the effect of changes in the independent variables on the hazard probability at any time t can vary according to the length of the post-IPO trading period (Hensler et al., 1997). For example, we could

expect that the effect of international involvement on survival could be more profound for IPO firms that have had a recent offering than for the IPO firms that have had longer public operations.

Consistent with Jain and Kini (2000), log-logistic baseline hazard function is relied upon since the failure distribution of IPO firms is likely to be non-monotonic (Jain & Kini, 2000). The dependent variable of this analysis is the number of months an IPO firm's stocks trade between time of IPO date and delisting date or the end of 2010. Both Jain and Kini (2000) and Hensler et al. (1997) include an additional binary variable to indicate censored data for IPO firms that are still listed and traded after the end of 2010. The dissertation also includes this binary variable (CONT) in the model to account for censored data. Model parameters are estimated via maximum likelihood method. Positive coefficients suggest an increase in the trading period and so results in an increase in the probability of survival. Hence, variables with positive coefficients are factors that increase the likelihood of survival for IPO firms.

The main independent variable of the survival analysis is the internationalization (INT) of IPO companies. IPO firms with international involvement at the time of offering are coded as 1 and domestic firms as 0. Underwriter prestige (UWQ), venture capital backing (VC), and auditor quality (AUDITOR) variables are also included in the AFT model. Based on the discussion developed so far, these variables signal quality of the firms; therefore, it would be expected that firms being underwritten by a high ranked underwriter, having venture capital backing, and audited by a Big-4 auditor perform better and continue their operations. Firm size (LNSIZE) is also included as a control variable. Ritter (1991) shows that smaller firms have worse aftermarket performance than

do larger firms; and Schultz (1993) reports smaller firms are more likely to be delisted than larger firms. Therefore, we expect larger firms after IPO survive longer than do smaller firms. Another control variable is the age (AGE) of the firm at the time of IPO. Hensler et al. (1997) argue that young firms lack experience at the time of IPO and, therefore, are more speculative. Young firm having a short history of operations are more unknown to the market and, therefore, the risk associated with these companies is higher. Ritter (1991) shows that this argument holds and older firms perform better in the aftermarket than do the younger firms. Furthermore, Schultz (1993) documented a positive relationship between age and survivability after IPO. Schultz (1993) reports that the probability of survival in the first year following the IPO is positively related to initial return. However, the same effect is not observed in the second and third years in his study. Consistent with his year two and year three findings, Ritter (1991) reports no significant association between initial returns and three-year total returns. Despite the mixed findings, initial return (UP) is included as a control variable consistent with Hensler et al. (1997). Hensler et al. (1997) reports a negative relationship between survival time and market level (MARKET) at the time of offering. This finding is consistent with their argument that when the economic conditions are good, the IPO activity increases because smaller, lesser quality firms find it attractive to issue IPO to benefit from the available capital in the market. However, when the economic cycle reverses, and firms enter a tough period issuing firms with lesser quality and unstable earnings performance face a potential failure. Therefore, the positive economic outlook at the offering time might be deceiving for companies that are not indeed ready for offering IPO. A risk variable to account for *ex ante* uncertainty is also included as a control

variable in the AFT model. Previous studies show that riskier IPOs experience a deeper underpricing, and riskier firms have higher probabilities of having negative operational outcomes (Hensler et al., 1997). With this argument, Hensler et al. document a negative relationship between associated with the IPO firm and survivability. To account for risk, number of use of proceeds as the proxy for uncertainty and associated risk is included in the model as suggested by Beatty and Ritter (1986). The following log-logistic model is estimated via maximum likelihood method.

$$\ln t = x_0 + x_1INT_i + x_2UWQ_i + x_3VC_i + x_4AUQ_i + x_5LNSIZE_i + x_6LNGRP_i + x_7LNAGE_i + x_8UP_i + x_9USEPROC_i + x_{10}MARKET_t + x_{11}CONT_i + \varepsilon$$

Eq. 3

where,

$\ln t$ is the time to failure measured in number of months between listing start date and delisting date for negative reasons from stock exchanges.

INT is a binary variable taking on a value of 1 if the firm I is international, 0 otherwise. A firm is classified as international if the firm has any pre-tax foreign income in the year prior to it goes public.

UWQ is the underwriter quality. Carter and Manaster underwriter quality scale (0-9) is used to proxy for the underwriter quality.

VC represents the venture capital backing. If a firm has venture capital backing it takes on a value of 1, otherwise 0.

AUQ represents the auditor quality at the time of IPO. I use a binary variable taking a value of 1 if the IPO firm uses a Big-4 auditor and 0 otherwise.

LNSIZE is the natural logarithm of total assets and accounts for the effect of firm size

LNGRP is the natural logarithm of gross proceeds at IPO issuing and is included to account for any systematic influence due to offering size.

LNAGE is the natural logarithm of one plus age of the firm at the IPO date. Firm age is defined as the difference between IPO date and incorporation date.

UP is the underpricing (initial return) and calculated as first day closing stock price of IPO firm i minus offer price divided by the offer price.

USEPROC is the number of use of proceeds reported in the IPO prospectuses and included to account for IPO risk.

MARKET is the market return from S&P 500 common stock index at the time of issuing firms.

CONT is the censoring variable taking a value of 1 if firm i stocks continue to be listed in CRSP after Dec 31, 2010, 0 otherwise.

CHAPTER 4

RESULTS

Introduction

Chapter 4 presents the descriptive statistics and empirical findings of the research hypotheses tested in this dissertation. Four hypotheses of the study lend themselves to separate statistical analyses. Therefore, findings of each hypothesis are presented in four separate sections: Underpricing test, long-run return test, long-run operating performance test and survivability analysis. The chapter concludes with a brief summary of the general findings of the four hypotheses tested.

Findings of Underpricing Hypothesis

Descriptive Statistics

Underpricing hypothesis (H1) tests whether the internationalization of firms at the time of IPO affects the level of underpricing for service firms. Table 2 shows the distribution of 1,822 IPO issues within the observation years, as well as their international/domestic classifications. Initial number of IPO companies obtained from Prof. Jay Ritter's website includes 9,262 firm commitment offers conducted between 1975 and 2011. However, only 8,748 of these firms were followed by the Compustat files. After eliminating firms which are out of the scope of this study (non-service oriented firms), based on the four-digit SIC codes, the potential sample size declined to 3,197 firm commitment IPO offers. This dataset was then merged with SDC dataset to

obtain IPO information, and further merged with underwriting prestige dataset along with Prof. Ritter's founding years dataset. After applying a listwise deletion to exclude cases with missing observation for at least one variable included in the regression models, the usable sample size goes down to 1,822. Table 2 shows that there is a clustering in the IPO issues between 1993 and 2000 period, in addition to a significant spike in 1999.

Panel A of Table 3 shows the descriptive statistics for 1,822 services firms used in various analyses in this dissertation study. Average underpricing in the complete IPO sample, presented in panel A, is 22.74%. Panel A suggests that some issues experience significant underpricing in the first day reaching a top of 533.33% for the sample firms. 5% of the IPO issues realize an underpricing over 100%. On the other hand, approximately 14% of the issues are overpriced, tapping a bottom of 99.61% negative return in the very first day. Average total assets of the IPO companies amount to \$208 million. Average proceeds from an IPO issue is about \$59 million and firms had been in business for approximately 14 years before they were taken public. Panel B of Table 3 exhibits the summaries of the same variables for the sample included in the OLS estimation of the Box-Cox transformed dependent variable. Initial returns (underpricing) used in the second OLS estimation for Equation 1 are transformed via Box-Cox (1964) transformation procedure to fix the skewness presented in the return variable (Fama, 1998).⁸ The number of observations drops to 1,303 after this transformation. Due to drop outs from the main sample, some variables exhibit slight variations in their descriptive statistics. Yet, mean values of continues variables tend to remain qualitatively similar.

⁸ Logarithmic transformation did not fix the skewness presented in the return data. In order to obtain normal distribution on the residuals, I then transformed dependent variable via Box-Cox zero-skewness transformation.

Looking at two dummy variables in Table 3 for auditor quality and underwriter quality, it can be concluded that majority of the IPO issues were taken public by a prestigious underwriter (mean score of 7.21 out of 9), and had been audited by a high quality auditor when they were taken public (mean score of 0.9). The mean score for venture capital backing variable (VC) suggests that about one third of the IPO issuing companies had a venture capital backing at the time of IPO.

Panel C of Table 3 reports the findings of a preliminary difference test of underpricing for international and domestic services firms. This preliminary test shows that average underpricing is 17.15% for international firms and 23.47% for domestic firms, suggesting that on average, international firms experience lower underpricing in the first day. Although this difference is economically significant, statistical difference is not significant at the 5% level. Following regression analysis further investigates how internationalization is related to initial returns.

Correlation Analysis

Table 4 provides the correlations among the variables used in the study. Internationalization variable is correlated with underpricing at the $p < 0.05$ level with a negative coefficient, signaling lower underpricing for international firms. Neither underwriter quality nor auditor quality is found to be correlated with underpricing. Age of the firm is negatively correlated with underpricing and this suggests a decrease in the underpricing as firms realize their IPOs at later years following their foundation. Gross proceeds are positively related to underpricing. The positive coefficient suggests a higher underpricing for firms that generate larger proceeds from their IPOs. Internationalization

is significantly related to underwriter quality, auditor quality, venture capital backing, size, gross proceeds and age. From this, it is evident that international firms attract higher quality underwriters and auditors, and bring venture capital funds into their capital structure when they go public. Besides, international firms generate larger proceeds from their issues and had been in business longer than domestic firms when they go public. Another relevant observation is that firms that have a high quality underwriter are also associated with a prestigious auditor, as well.

Empirical Findings

Equation 1 is estimated via OLS regression and Table 5 provides the results of the estimation. The main independent variable of the study is the internationalization dummy. As it was discussed in chapter 3, internationalization is operationalized as follows: an IPO issuing firm is considered to be international if it discloses any amount of pre-tax foreign income in the year prior to going public or if it had declared some intentions to expand internationally in its IPO prospectus and discloses pre-tax foreign income within the next three years following its IPO. Number of firms in the latter group is significantly low amounting to 37 companies. Consequently, Equation 1 is estimated in two ways. First, those firms that are expected-to-become international (latter group in the operationalization) are excluded from the international group, and Equation 1 is estimated using only those firms in the former group (already international firms) and domestic firms. In the second estimation, expected-to-become international firms are treated as if they were already international at their IPOs and are included in the model as international firms. However, these firms might be structurally different from already international firms. Therefore, a dummy variable is added for those firms in the

estimation by adjusting Equation 1 slightly. Panel A of Table 5 reports the findings of two estimations.

On the left hand side of Panel A are provided the OLS results of the regression of raw initial returns on the internationalization and other control variables. INT variable is significant at $p < 0.05$ and the coefficient of 11.5 suggests 11.5 points (in the percent scale) lower underpricing for international firms at the end of their first public day. UWQ is not significant, whereas VC is significant but in the inverse direction, which is a contradicting finding compared to those presented in previous studies. Auditor quality (AUQ) has a significant coefficient at $p < 0.05$ and indicates approximately 10% lower initial return for firms audited by a prestigious audit company at the time of their IPOs. Age of the firm does also significantly reduce the underpricing. Size, on the other hand, is not found to be affecting the level of underpricing. Although these results provide strong evidence for the role of internationalization on reducing the IPO underpricing, the dependent variable, initial return, exhibits strong non-normality, and imposes a non-normal distribution for the regression residuals. Observed non-normality in the initial returns is no surprise though, given that issuing firms experience high levels of underpricing (positive returns) in the first day and numbers of overpriced issues are significantly low. With that happening, distribution of initial returns exhibits high positive skewness. To account for this non-normality, initial returns are transformed via Box-Cox transformation to ensure normality in the residuals. Equation 1 is re-estimated with this new variable and results are provided on the right hand side of Panel A of Table 5. Coefficients in parentheses are back-transformed values. Internationalization variable (INT) is significant ($p = 0.02$) at the conventional significance level of $p < 0.05$, and it has a

negative coefficient suggesting about 4.26 points (in the percent scale) lower underpricing for international service companies at the end of their first public day. Underwriter prestige variable (UWQ) is significant ($p=0.003$) with a negative coefficient of -1.2371, suggesting a lower underpricing for issues that have been promoted and taken public by a prestigious underwriter. This finding is consistent with those of Carter and Manaster (1990), Carter, Dark and Singh (1998) and Beatty and Ritter (1986). As with the underwriter quality variable, auditor quality variable (AUQ) yields a significant coefficient of -9.4026 providing that being audited by a prestigious auditor at the time of IPO significantly reduces the level of underpricing consistent with the findings of previous studies (Balvers, McDonald, & Miller, 1988; Michaely & Shaw, 1994; Carter et al., 1998; Jain & Kini, 1994; Jain & Martin, 2005). Two findings confirm the certification and signaling role of high quality investment banks and audit firms in the IPO process. However, it is difficult to make the same conclusion for the venture capital backing for IPO issues. Venture capital dummy (VC) has a significant but positive coefficient. This finding is in contrast to the findings of Megginson and Weiss (1991) and Barry, Muscarella, Peavy, and Vetsuypens (1990), who have shown substantial reduction in the IPO underpricing for firms that are backed by a venture capitalist at the time of their IPOs. Firm size is not significant ($p=.99$) in determining the IPO underpricing level. An insignificant coefficient for firm size is intriguing given the findings of previous studies, which suggest that firm size reduces the level of underpricing at IPO issues (Ritter, 1984; Megginson & Weiss, 1991). Size of the gross proceeds from issuing an IPO is significant and positive. Age of the firms has been proposed to be included in the model as a control for the market's awareness about the firm. Consistent with the expectation, firms with a

longer operating history (LNAGE) are shown to experience a lower underpricing for the sample of the current study (coefficient=-3.6002, $p=0.0000$). Panel B of Table 5 reports the findings of the same OLS estimation when the expected-to-become international firms are treated as international firms. For this estimation, expected-to-become international firms are coded as 1 in the INT variable and this new variable is named INT_ALL. The new variable therefore has a value of 1 if the firm is international at the time of IPO or expected-to-become international within 3 years following its IPO, 0 otherwise. To control whether expected-to-become international firms are different from already international firms, INT variable is also included in the model. A significant coefficient on the INT variable indicates that already international and expected-to-become international firms are different. The combined effect of internationalization on underpricing is the sum of the coefficients on INT and INT_ALL. With that given, Equation 1 is re-run with the addition of INT_ALL variable using both raw initial returns and BC-transformed initial returns. Results are presented in Panel B of Table 5.

Examining the results for raw returns, both INT and INT_ALL variables are significant suggesting a difference between already international firms and expected-to-become international firms. The positive coefficient on the INT_ALL variable requires attention. Even though the total internationalization effect (about 10%) is significant; the expected-to-become internationalization firms invert the coefficient to a positive value. This finding implies that expected-to-become international firms do not result in the same positive valuation effect for IPO issues in the investment market. INT_ALL variable is not even significant in the regression of BC-transformed initial returns. Therefore, it is difficult to make a clear discussion with regards to effect of expected-to-become

international firms. However, the significant coefficient on the INT variable still identifies a difference between already international firms and expected-to-become international firms. To summarize the effect of expected-to-become international firms, the intention of expanding internationally does not produce as much trust in the investment market as the level of trust exerted on the already international firms, which is reflected in the lower underpricing for the already international firms. In other words, information about the intent to expand into international markets in the upcoming years following an IPO is not regarded as a source of positive market valuation.

Findings of Long-run Return Hypothesis

This section starts with the preliminary tests of difference in CAARs and BAH returns of international and domestic IPO firms in the aftermarket. The market adjusted (value-weighted and equal-weighted) returns of both series are followed and the results of difference tests are presented along with the graphical representations. The second part of this section reports the findings of the cross-sectional regression analysis (Eq. 2) that investigates whether international involvement helps explain the difference in the long-run return performance of IPO companies.

Cumulative Average Abnormal Returns (CAARs)

Average abnormal returns are computed using two benchmarks as discussed in the previous sections. First benchmark is the CRSP value-weighted index and the second is the CRSP equal-weighted index. To construct ARs, IPO firms' returns as of their first monthly return are tracked consequent to IPO issue date. If the first CRSP listed monthly

return is not reported within two months from the IPO date, the firm is excluded from the sample.

Value-weighted Adjusted Returns

Figure 2 exhibits the change in CAARs across 36-months for the entire sample, international portfolio and domestic portfolio. As it is shown in Figure 2, cumulative average abnormal return on aggregate sample steadily decreases following the first quarter after the IPO date. Returns of domestic IPO portfolio follow a similar pathway as the aggregate sample returns, and the cumulative return on this portfolio falls below zero over 36-months. The CAAR on this portfolio appears to be around -15% at the end of the third year. On the other hand, the international IPO portfolio experiences continuous increase within the first 15 months and then maintains a positive cumulative return over 20% for the rest of the observation period and sees a high of 27% at the end of the 36th month. Figure 2 displays the large gap in the CAARs of international and domestic portfolios over 36 months. Firm size is not controlled in this comparison. International firms are usually larger organizations than most domestic firms and therefore it might be the large size of the international firms which drives the large gap in the returns of two portfolios. To account for the size factor, a size-matched domestic comparison group is constructed based on total assets (size proxy) of the companies. Initial sample includes 337 international firms. Out of 337 firms, 326 are matched with a domestic company that has the closest total assets to the firm of interest, and 11 international firms did not have a close match and are therefore excluded from the matched sample. Resulting sample includes 326 matched pairs. The number of paired groups gradually declines over the months as some of the companies are delisted from their respective stock exchanges. In

order to maintain the paired groups in balance, firms which match the delisted firms are also excluded from the sample, resulting in a lower number of matching groups for the later event months relative to IPO month.

Table 6 presents the CAARs of the matched groups over 36-month subsequent to their IPOs. Third and fourth columns on the left hand side of Table 6 show the ARs of both groups. Fifth column displays the difference in AR between international and domestic firms. The first 17 months following the IPO, average return on an international firm exceeds the average return on a domestic firm. However, the difference is significant only for four months. Starting with month 18, returns from a domestic IPO company appear to exceed the returns from an international IPO company in some of the event months. Yet, the difference is significant only for a few event months. Columns 6 through 9 contain the Student's t-test and Johnson's (1978) skewness adjusted t-statistic and corresponding p-values. Student's t-test and Johnson's skewness adjusted t-statistic are consistent across most observations. The right panel of Table 6 provides the change in CAARs for international and domestic IPO firms for the subsequent 36 months after their IPOs. The difference in the cumulative abnormal returns for two portfolio groups is not significant in the first 3 months following the IPO, however, starting with the fourth event month, cumulative returns from the international portfolio outweigh the cumulative returns from domestic portfolio. Magnitude of the difference gets larger until the 17th month and reaches a high of 45%, and starts to diminish thereafter, settling down at 29% at the end of 36th month. It is evident in Table 6 that investing in a portfolio of international IPO companies brings about 45% cumulative return over a 3-year holding period, whereas a similar investment returns only 16% from a purely domestic IPO

portfolio. The difference in the CAARs between international and domestic portfolios is consistently significant after the third month following IPOs. The significant difference in the CAARS of both groups is indicative that international firms enjoy a substantial return performance compared to domestic firms. The continuous decline in the return performance of domestic IPO firms is consistent with Ritter's (1991) finding that IPO firms tend to perform poorly in the long-run. Yet, the difference tests show that international involvement of IPO companies yields significant advantages in producing positive returns in the post-IPO period, and this difference is robust to firm-size adjustment. Figure 3 and 4 exhibit the graphical representation of the difference in value-weighted ARs and CAARs of international and domestic firms. As can be observed in Figure 3, the average return from international firms is higher than that from domestic firms. Domestic firms experience significant negative returns in the first 15 months following their IPOs. The continuous negative returns in this period might be the reason for the large variance in CAARs in later periods. International firms enjoy consistent positive returns in this period. After the 15th month, domestic IPO firms' abnormal returns catch up with those of international IPO firms and exceed in several months. However, the cumulative returns of international IPO returns are far above the cumulative returns of domestic IPO firms. Figure 4 suggests a visual representation of this finding. While cumulative returns on international IPO firms steadily increase from offering month to the end of the 36th month, returns of domestic IPO firms are down for about a year right after offering and then pick up slowly. Although the size adjustment in the sample seems to remove the enormous gap between international firms and domestic firms, still the average international firm's CAR far exceeds that of a domestic firm.

However, it is important to note that in the size-adjusted sample we see that there is a substantial improvement in the return performance of domestic firms.

Equal-weighted Adjusted CAARs

As the second market adjustment for cumulative returns, the same analysis is repeated for equally-weighted adjusted CAARs. Figure 5 depicts a similar growth pattern for the cumulative returns of international IPO firms in the 36-month period subsequent to their IPOs. CAAR increases steadily from the first month to the end of the 15th month and then goes down slowly until the 30th month. In the remaining months, it climbs over the 20% level at the end of the 36th month after the IPO date. As is with the value-weighted adjustment case, CAARs of domestic firms stays far behind the international firms, fall below negative 10% for most of the observation months.

Apparent from Figure 5, average international firm's return performance subsequent to its IPO is much better than that of a domestic firm. However, again this graphical representation compares any size of international firm to any size of domestic firm, and so the large gap could be the consequence of unaccounted size factor. As was in the value-weighted adjusted returns, a size-matched sample is constructed to account for the size factor in testing the difference in the long-run returns of international and domestic firms following their IPOs. Number of paired groups starts with 326 and goes down to 190 because of delistings from stock exchanges.

Table 7 presents ARs and CAARs series of international and domestic groups over 36 months using CRSP equal-weighted adjusted monthly returns. To compute ARs, each firm i's monthly raw return is adjusted by simply deducting CRSP equal-weighted

index return in event month t from the firm i 's raw return in event month t . The pattern in distribution of ARs and CAARs are almost identical to the case of value-weighted adjusted returns. International IPO firms outperform domestic IPO firms until the end of 17th month and then domestic firms starts to pick up and catch up with the international firms. Domestic firms' returns exceed those of international firms in several months after month 17. The significant difference in the CAARs is consistent throughout the observation period despite the strong coming-back in domestic firms' returns toward the end of the second year anniversary. At the end of the third year, CAAR of international firms reaches about 38% whereas CAAR of domestic firms stays far behind, at 13%. Figure 6 and 7 exhibit the change in ARs and CAARs when market adjustment is equal-weighted index.

Results of value-weighted adjusted and equal-weighted adjusted returns are qualitatively different, yet in both market adjustment cases international IPO firms' 3-year CAARs far exceed those of domestic IPO firms. This findings offer preliminary support for the expectation of this study that international firms do have a better long-run return performance than domestic firms subsequent to their IPOs.

3-Year Buy-and-Hold Returns (BAH)

Findings presented in the previous section support the positive effect of internationalization on the firms' long-run abnormal returns following their IPOs. This finding seems to be consistent across value-weighted adjustment and equal-weighted adjustment. In both market adjustments, a portfolio of international IPO firms brings higher cumulative returns over a 3-year trading period subsequent to their IPOs in

comparison to a portfolio of domestic IPO firms. In this section, it is further examined whether the BAH returns of the two portfolios differ in a 3-year holding period. The same market adjustments are applied in the monthly returns of IPO firms for the subsequent 36 months after their IPOs.

Table 8 reports the BAH returns of 1,316 IPO firms for international and domestic portfolios over 12, 24 and 36 months. As is with the CAARs, the returns are value-weighted and equal-weighted adjusted and results are provided separately. Regardless of the adjustment scheme, BAH returns of international portfolio are much greater than domestic portfolio over a holding period of 12, 24 and 36 months. The difference is both statistically and economically significant. The statistical difference stays at $p < 0.1$ for 24-month holding period, and for other years it is significant at less than $p < 0.05$ level. As it shows in Table 8, BAH returns of international firms reach at 21% at the end of first year following the IPO date, and then slightly goes down to 18-19% for the second year, and rises up to 21% and 28% levels at the end of the third year for value-weighted and equal-weighted adjusted portfolios respectively. Domestic IPO firms, on the other hand, yield negative returns for all three years when the adjustment is value-weighted. When the adjustment is equally-weighted index, BAH returns of domestic IPOs are again negative for year 1 and year 3 and positive for year 2. For a 36-month holding period BAH returns of domestic portfolio are -7% and -5% for value-weighted and equal-weighted index adjustments. This is a consistent finding with that of CAARs. Long-run returns from a portfolio of IPO firms that are international at the time of IPO are greater than returns from a portfolio of IPO firms that are domestic at the time of IPO. Nevertheless, this

significant difference could be driven because of the size factor between two groups of firms.

On a size-matched sample, the analysis is repeated. Results are presented in Table 9. On the size matched sample, for the first and second years returns on the international portfolio remain to be much higher than the returns on the domestic portfolio, and the difference is statistically significant for both years at $p < 0.05$ and $p < 0.10$ levels respectively. For the third year, despite the economic difference between BAH returns of international and of domestic portfolios, the difference is not statistically significant. From Table 9, it is observed that if one buys a share of an international IPO firm and holds it for 3 years, at the end of the third year, average returns are 22.28% and 35.3% for value-weighted and equal-weighted adjusted returns respectively. On the other hand, if the share is of a domestic IPO firm, then, returns are -1.23% and 5.67% for value-weighted and equal-weighted adjustments, respectively.

Examination of CAARs and BAH returns of international and domestic firms after three years subsequent to IPO date reveals a noticeable advantage of investing in a portfolio of international IPO companies vs. domestic IPO companies. The significant excess return on a portfolio of international IPO companies over domestic IPO companies is validated with a size-adjusted sample.

Cross-sectional Regression of Long-run Returns

To further examine the role of internationalization on the long-run performance of IPO firms, Equation 2 is estimated via OLS regression using two measures of long-run performance. In Table 10, findings from the estimation of Equation 2 using CAR as the

dependent variable are reported for both value-weighted CARs and equally-weighted CARs. The analyses include 1,128 and 1,134 firms respectively after eliminating missing data and outliers greater than 3. The left hand-side of Table 10 presents the findings when the value-weighted CARs are used as the dependent variable. As expected, internationalization variable (INT) is significant and positive with a coefficient of 0.1584. This corresponds to an approximately 16% higher long-run return from an average international IPO firm compared to an average domestic IPO firm. Along with the difference tests shown in the previous section, this finding is confirmative that international firms appear to yield higher returns for their shareholders in the aftermarket following their IPOs. As previously discussed in the hypothesis development section, international IPO firms are better known to the market and they are way ahead in managing complexities in the fierce competition. Besides, they enjoy the easy access to greater resources, human capital and technical expertise. Benefiting from these advantages, it is not surprising for these firms to be much appreciated in the aftermarket and enjoy consistent positive return in this period. Findings are consistent across value-weighted and equal-weighted return adjustments for CARs. When the dependent variable is equally-weighted CAR, the economic value of the coefficient is slightly higher (0.1661) and maintains its statistical significance ($p=0.03$). Furthermore, we observe that underpricing appears to be a significant factor in the long-run return performance of IPO companies. Higher underpricing seems to lower the long-run returns. This finding is quite intriguing because, one would normally expect that larger, more established firms underprice their IPOs at a greater extent to signal their true quality to the market in order to reap off higher returns in the future via their subsequent equity offerings. Hence, one

would expect that firms aggressively underpricing their IPOs produce higher returns in the long-run. However, the opposite of this expectation is evident for the sample of this dissertation. Although the underpricing does not support this proposition, the size of the firm (LNSIZE) appears to confirm this expectation. Larger firms seem to promise higher return for their shareholder over a 3-year period. One unit increase in the size of the firm leads to about 16% (VW) and 9% (EW) increase in the long-run returns of IPO companies. Consistent with previous research, underwriter quality variable is significant and positive. It is surprising that coefficient on venture capital (VC) variable is negative for both adjustments. This tells that firms that had been backed by a venture capital at the time of IPO have lower long-run returns. This finding is in contrast to the managerial belief that venture capitalists invest in firms that have the potential to succeed and bring higher returns in the long-run as suggested by Jain and Kini (1994). Moreover, the auditor quality (AUQ) and age (LNAGE) variables are not significant in either adjustment.

Equation 2 is also estimated using 3-year BAH returns as the measure of long-run return performance (dependent variable), and findings are provided in Table 11. Because the BAH returns are highly skewed to the right and deviate extremely from normal distribution, the error terms are severely non-normal. Hence, estimating BAH returns via OLS regression would estimate the basic assumption of linear regression.⁹ To handle this complexity, Equation 2 for BAH returns is estimated via bootstrap iterations of linear regression, which reports bootstrap standard errors and p-values based on the normal

⁹ Both logarithmic and Box-Cox transformation on the BAH returns were attempted; however, none of the transformation methods help fix the non-normality in the residuals. For that reason, the analysis adheres to bootstrapped regression to estimate Equation 2 for BAH returns. Bootstrapped regression alleviates the normality assumption on residuals.

approximation and bootstrap standard errors. Bootstrap method is offered as an alternative estimation method in cases where the underlying distribution of the data deviates from normality, or is computationally difficult to estimate (Boos, 2003). Bootstrap method produces reliable standard errors, confidence intervals and p-values for hypothesis testing.

Based on the results reported in Table 11, internationalization of firms is not related to the value-weighted and equal-weighted BAH returns over a 3-year holding period. In both panels of the Table 11, it is seen that INT variable is insignificant at the conventional levels. Despite the insignificant coefficient, the economic significance of the coefficient is extremely high and in the assumed direction.

The insignificant coefficient on INT implies that results are sensitive to the measure of long-run performance proxy used given that CAR estimation produces a significant coefficient for INT. In the light of this further finding, the conclusion for hypothesis 2 would differ based on the long-run performance measure used in particular regression estimation. Nevertheless, from a practical point of view, difference tests of returns of international and domestic IPO firms suggest a greater return on the international portfolio when we use all the IPO firms as the sample and even in a size-matched portfolio except for BAH returns for a 3-year holding period. Furthermore, CAAR regression suggests a higher return for international IPO firms, as well. Overall, the sample used in this study provides strong findings that are quite confirmative of the positive effect of internationalization on the long-run IPO returns.

Findings of Long-run Operating Performance Hypothesis

Hypothesis 3 is formulated to show that operating performance of international firms may differ from the operating performance of domestic firms following their IPOs. Previous research has shown that IPO firms tend to experience a decline in their operating performance after their IPOs, relative to year prior to IPO (Jain & Kini, 1994). Harvesting the advantages of international experience, aptness to managing complexities and uncertainties, international IPO firms can be expected to perform better in the aftermarket and attain higher operating returns. In order to test whether this expectation holds, a series of difference tests are run comparing ROA and CFL of both groups in years 0, +1, +2, and +3 relative to year -1. The change in operating performance in the post-IPO period for both groups is reported in Table 12. The median ROA for the international firms seems to be increasing in the year of IPO completion (year 0) relative to year -1, but it then continuously declines over the next 3 years. Similarly, the median ROA of domestic firms is consistently lower in the post-IPO period relative to year -1, and so these firms suffer a decline in their operating performance in the post-IPO period. The decline in the operating performance of both groups is consistent with the findings of Jain and Kini (1994). The third column of each panel in Table 12 reports the difference in the levels of median ROA change between international and domestic IPO firms. The decline in the median ROA in the post-IPO years is more severe for domestic firms in years 0, +1, and +3 and the difference is significant at $p < 0.05$ in years 0 and +1. For instance, international IPO firms show a median change of 0.16% in operating return on assets in comparison to a median change of -0.60% for the domestic IPO firms from year

-1 to year 0. In year +2, the decline in median ROA is slightly higher for international firms.

Other operating performance measure, operating cash flows, shows similar patterns to return on operating assets. International IPO firms have a median change of 0.005% in their operating cash flows compared to a median change of -0.005% for the domestic firms from year 0 to year -1, with the difference being significant at $p < 0.001$. Starting from year +1, both groups report negative changes in their operating cash flows compared to year -1. In all years the magnitude of decline in operating cash flows is higher for domestic firms and the difference is significant in years +1 and +2. For example, for year +1 relative to year -1, international IPO firms experience a median change of -0.009 in their operating cash flows in comparison to a median change of -0.04% for the domestic firms, the difference being significant at $p < 0.001$. Year +2 relative to year -1 shows a similar difference in favor of international firms, and likewise the difference is significant at $p < 0.001$. A lesser decline in the median operating cash flow of international firms in year +3 relative to year -1 than domestic IPO firms is still observed; however, the difference is not significant.

The results presented in Table 12 suggest a superior operating performance for the international IPO firms in the years following their IPOs relative to their domestic counterparts. The persistent negative change in the median return on operating performance and operating cash flows in the subsequent years, except year 0, is a consistent pattern observed in Jain and Kini (1994) study.

Findings of Survivability Hypothesis

In Table 13, results of the estimating AFT model for Equation 3 are provided. Positive (negative) coefficients indicate factors that increase (decrease) the trading period, which then decrease (increase) the delisting rate or failure probability. From a quick look at Table 13, survival time appears to be increasing with internationalization, being underwritten by a prestigious investment bank, amount of the proceeds from the offering and age of the firm; and decreasing with venture capital involvement and level of underpricing at the IPO.

AFT Analysis

The main interest of the model is to reveal whether the internationalization of IPO firms increases the survival time in the aftermarket. A positive coefficient of 0.41 on the internationalization variable (INT) suggests that survival time increases at a rate of 41% for IPO firms that have international operations at the time of their IPO in comparison to purely domestic firms. In other words, the failure rate is approximately 41% lower for international IPO firms versus domestic IPO firms. The coefficient is significant at the $p < 0.05$ level. Economically and statistically significant coefficient on the INT variable is in accord with the findings presented in previous sections. As is evident in long-run return performance and operating performance hypotheses, international structure of an issuing firm seems to contribute to the performance of the IPO firms and extend their survivability in the aftermarket. Survival profile of an IPO issuing service firm also increases with the quality of the underwriter managing the IPO process. One unit increase in the underwriter quality scale increases survival rate about 7%. Venture capital

association, on the other hand, decreases the survival rate for IPO firms. Auditor quality is found not to affect survival rate. Age of the firm at the time of IPO is a positive contributor to the survival rate of IPO firms. As expected, lower underpricing at the time of IPO is found to increase the time to failure for service firms. Size is not found to affect the survival time subsequent to IPO. Furthermore, risk and market condition at the time of IPO are insignificant.

Figure 8 exhibits the survival rates of international and domestic firms in the aftermarket. As it shows in Figure 8, the survival rate is significantly higher for international firms in the months following IPO, and the rate of survivability declines much severely for domestic firm than international firms. In the ten year anniversary approximately 75% of the international firms are active and listed in the stock exchanges while this percentage is around 50% for domestic firms. In the 20 year anniversary, survival rate declines to about 65-70% range for international firms and 40-45% range for domestic firms. The persistent pattern is survivability rate is constantly higher for international firms compared to domestic firms in the post-IPO period.

Sensitivity Tests

Degree of Internationality

In order to further understand the role of internationalization on IPO performance, this study investigates whether the degree of internationalization (DOI) at the time of IPO impacts first day returns, as well as the long-run return and operating performance and firms' survivability. So far, the study examined whether firms having international

activity enjoy a performance improvement in their IPOs compared to domestic firms. This further analysis instead examines whether DOI impacts IPO performance of internationalized companies. Previous research in the internationalization literature provides some evidence of a positive correlation between the degree of a firm's internationalization and its performance (Vernon, 1971; Dunning, 1980; Grant, 1987; Geringer, Beamish & daCosta, 1989). For instance, taking the sample firms from Fortune 500 firms, Vernon (1971) documents that DOI is positively associated with return on assets and return on sales. Grant (1987), on the other hand, shows that higher level of international involvement improves sales growth, return on assets, and return on equity of international firms using a sample of 304 British firms. Given this performance improvement evidence, this additional analysis investigates whether DOI improves IPO performance.

Based on the research question and context of the study, researchers have used different proxies for DOI. Some of these proxies are foreign subsidiaries' sales as a percentage of total sales (Stopford & Dunning, 1983), foreign assets as a percentage of total assets (Danniels & Bracker, 1989), number of foreign subsidiaries (Stopford & Wells, 1972), and ratio between pre-tax foreign earnings and the sum of pre-tax foreign earnings and pre-tax domestic earnings (Hua & Upneja, 2011). DOI is operationalized as it is used in Hua and Upneja, primarily for two reasons: 1. They use a sample of homogenous service industry (restaurant industry) and find that DOI positively impacts the firm value, 2. Data availability- pre-tax earnings and pre-tax domestic earnings are readily available for publicly traded companies in Compustat annual files. Equation 1 is re-estimated with replacing INT variable with DOI. Since this estimation only includes

international firms, the sample size is significantly low (N=157). Estimation produces highly insignificant coefficient for DOI variable that can conclude no significant relationship between degree of internationalization and underpricing. However, this finding could be very sensitive to the significantly small sample size, and one should exert caution in assessing this finding. Further analysis with a larger sample size would be beneficial in driving more reliable interpretation for the role of companies' degree of internationalization on their first day underpricing. The same procedure is repeated for the long-term return hypothesis by replacing INT variable with DOI in Equation 2. Both CARs and BAH returns are found not to be related to DOI, but both analyses are run on a sample of 165 firms. The small sample size is a significant constraint on the reliability of these additional tests. However, the consistent insignificant findings from underpricing and long-term analyses observed in the sensitivity tests are in contrast to significant findings in the mains tests, which could suggest that investors are not interested in the degree of internationalization but rather values firms' international presence. Yet, this argument contradicts with as firms' international involvement expands, they can utilize their resource advantages, increased brand awareness, knowledge transfer at a greater extent, which in turn could result in higher valuations for these firms.

Adjustment in the Sample Firms

As a further adjustment in the sample, tests of the study are re-run for a set of sub-groups that are formed based on the degree of internationalization. 5%, 10% and 15% internationalization thresholds are used for being included in the international group to test whether the results vary across these specifications. To be included in the international firm sample, for instance for the 5% group, a firm must have at least 5% of

its total pre-tax earnings from international earnings. The results for the underpricing hypothesis (H1) strongly hold and are consistent with those from the main analysis. The coefficient on the INT variable is qualitatively similar to the one in the main analysis indicating lower underpricing for international firms. For the long-term return hypothesis, the sub-samples did not yield significant results for INT variable in most of the sample adjustments (equal-weighted and value weighted sub-groups) when the dependent variable is the CAAR. This can be due to the small sample size in the international group. For instance the number of international companies in the 15% international group is fewer than 70. Using the BAH returns would not change the original findings from the main analysis. BAH returns are still not significantly related to internationalization in three sub-groups. The small sample size is still a big issue for this particular robustness test, as well. For survival analysis, Equation 3 is re-estimated for three subsamples that are formed based on 5%, 10% and 15% internationalization threshold. Results from the main analysis strongly hold for 5% and 15% groups, and internationalization is positive and significant at $p < 0.05$. For the 15% group, the internationalization still seems to contribute to the longer life expectancy of the service IPO firms, however, it is only significant at $p < 0.10$. With these findings, survival analysis presents that for a service company, having international operations at the time of issuing an IPO increases the life expectancy in the aftermarket.

CHAPTER 5

SUMMARY AND CONCLUSION

Main Findings and Implications

It is evident from the management and strategy literature that internationalization provides significant advantages to firms such as access to diverse resources, improved managerial expertise, knowledge transfer, and improved brand recognition (Grant, 1987; Porter, 1986; Kogut, 1985). With those alleged advantages, and previously observed positive effects of internationalization on traditional performance measures (i.e. return on assets...), this dissertation discusses whether firms benefit from their internationalization at the time of their IPOs and in the post-IPO period. If the investors view internationalization as a value-adding and risk-reducing strategy (Morck & Yeung, 1991), and factor this view into their pricing, their return expectation will be different for these firms in comparison to purely domestic firms. Besides, investing in international firms offers investors a gateway to diversify their portfolios internationally and reduce their portfolio risk, which in turn can lead to a motivation for investors to further lower their return expectation for these firms. In addition, international firms may utilize their previously gained operational experiences in international markets, and resource advantages to combat increased uncertainty and complexity in the new public arena. With that being said, they can generate better stock returns and operating results for their investors. With all these recalled, the purpose of this dissertation was to inspect and uncover the role of internationalization of companies on their IPO performance with performance being operationalized as first day return performance, long-term return and

operating performance and survivability in the post-IPO period. These propositions are examined in the context of service firms. By the nature of service firms' operations, strong local presence in foreign markets is far more important for them than it is for manufacturing firms (Enderwick, 1989). Therefore, FDI and establishing local subsidiaries are the most feasible internationalization modes for these firms. Having said that, this dissertation assumed that service firms are more likely to yield the advantages of internationalization to a greater extent than manufacturing firms because of their intense internationalization modes, and therefore they present an appropriate research context to explore whether internationalization does really contribute to IPO performance.

Regressing initial returns on the main explanatory variable of internationalization (INT) along with control variables reveals that internationalization reduces the level of initial returns compared to domestic services firms about 11%. The lower underpricing for the international services firms suggests that investors perceive the issues of international service firms less risky than the issues of domestic service firms. This particular observation is consistent with Beatty and Ritter's (1986) uncertainty proposition about the IPO offering firms. Their results indicate that when IPO firms face a lower ex ante uncertainty, their first day underpricing is lower because of the investor trust on their issues. Lower underpricing for international IPO firms is further suggestive that risk perception associated with international firms, because of their diverse, multinational operations, and increased agency cost, is perceived less significant in determining return expectation than the perceived advantages of internationalization for a firm to succeed. In case the latter view was superior for investors, the market would

incorporate these into the pricing decisions and form higher first day return expectations from international firms. From the standpoint of issuing firms, being international at the time of IPO is a value adding strategy. ‘Money left on the table’ in the first day is significantly lower for international firms, and so they establish a more accurate market price in the aftermarket in comparison to domestic firms. Moreover, lower underpricing in the first day benefits their long-run return performance as well. Evident from the long-run return analysis that firms that are closing the first trading day with a price closer to offer price (lower underpricing) tend to reward their investors with higher long-run returns. From the companies’ perspective, this implies higher valuation for their shares in the long-run.

Long-run return performance of international service firms is superior to domestic service firms across several specifications in the return measure. Two long-run performance measures are employed: cumulative abnormal returns and buy-and-hold returns. Both return measures are market-adjusted using CRSP value-weighted index and equal-value index. 3-year CAARs and 3-year BAH returns from investing on a portfolio of international service firms exceed the returns from a portfolio of purely domestic firms for both VW-adjusted returns and EW-adjusted returns. Results are mostly consistent for a size-matched group, except for the BAH returns in the third year. In addition, cross-sectional regression of long-run returns on internationalization and control variables suggest varying results for the effect of internationalization on long-run returns. When the long-run return is proxied as the CAAR, internationalization can be said to be positively affecting long-run returns of international services firms. Table 10 suggests 16% (VW) and 17% (EW) increase in the CAAR going from domestic to international

for services firms. On the other hand, this finding does not hold when the BAH returns are used as the dependent variable of the Equation 2. INT variable is not significant for either VW or EW adjusted returns. Economic magnitude of the coefficients on INT from both regressions in Table 11 is close to those for CAAR regression in Table 10. The statistical difference for the two performance measures from two regressions is not surprising though. Fama (1998) discusses the appropriateness of CAARs and BAH returns as the measures of long-term performance and argues that statistical inferences may vary depending on the measures used. Fama further suggests that CAARs should be preferred over BAH returns for theoretical and statistical considerations. From these findings, a clear superior return performance is evident for international service firms. For instance, Figure 2 and 5 clearly demonstrate the superior performance of international services firms in the post-IPO period relative to domestic services firms. In the post-IPO period, international services firms significantly increases the CAARs, which results in substantial returns for investors putting their funds on international IPO firms. On the other hand, domestic service firms perform well in the first few months following their IPOs, but their CAARs continuously decline settling down around -15%. Domestic firms seem to have a similar pattern to a portfolio of firms including both international and domestic firms. The negative returns in Figure 2 and 5, for VW-adjusted and EW-adjusted portfolios, for the entire firms is consistent with the finding of Loughran and Ritter (1995) where they show negative post-IPO returns for a large sample of IPO companies. With the entirety of these findings, it is safe to conclude a positive effect of internationalization on the long-term return performance of services firms subsequent to an IPO event. The investment market values the internationalization

of services firms, and furthermore, international firms consistently bring higher returns in the long-term. Average positive long-term returns for international services firms may be viewed as a significant indicator for these firms to evaluate their potential future return performance.

Operating performance of the international service companies in the post-IPO period is also superior to the performance of domestic companies. Jain and Kini (1994) documented a decline in the post-IPO period for IPO issuing firms. Findings of this dissertation are consistent with those of Jain and Kini, but it is clear from Table 12 that the magnitude of the performance decline is less severe for international service firms in the years 0, +1, and +2 relative to year -1. In the year +3, the difference becomes insignificant. These findings are in accord with the expectation that in the post-IPO period international services firms take the advantages of internationalization. As discussed through several hypotheses, in a multinational operating environment, international firms gain enormous operating experiences that prepare them for unforeseeable challenges. With the ability to attract and hire highly skilled managers, it becomes even less problematic to fight these challenges. Therefore, the lesser decline in the operating performance subsequent to issuing an IPO is predictable for international firms, and is evident from the findings of this study.

In conjunction with the long-term return and operating performances of international services firms in the post-IPO period, time-to-failure (delisting), or survival rate, for service firms increases for international firms. Survivability analysis provides evidence for longer life expectancy for international firms, measured as the number of months to failure since the IPO date. Provided that both long-term return performance

and operating performance of international service companies are superior to domestic service firms, longer life expectancy is intuitive. From a practical point view, this is a significant piece of information, especially for the international firms, in the phase of deciding to go public or not and how going public would affect firms' life expectancy in the post-IPO life.

Limitations and Future Research

The sample of this study is 1,822 service firms that went public between the years 1980 and 2009, and only 337 of these firms were international at the time of their IPOs. Moreover, in hypothesis testing, missing data brought usable sample of firms down to around 1,200-1,300 firms for different tests, and number of international firms dropped down to about 200. Although the number of firms used in this study is not critically low, statistical results would have been more robust if more data points were available. Yet, using only service firms, and the cross-sectional nature of the tests are the restrictions in boosting the sample size. Sample firms are obtained from Prof. Jay Ritter's database. He takes these firms from different IPO sources including SDC first issue database. There might be other sources that include IPO issuing firms that are not included in Dr. Ritter's database, and thus are left out from the sample of this research.

Main independent variable of this research is the internationalization and it is operationalized as whether or not a firm has any degree of pre-tax foreign income as reported in its annual report. INT takes a value of 1 if a firm reports any pre-tax foreign income in the year preceding IPO, 0 otherwise. This operationalization could be

perceived as a crude variable, and a more sophisticated internationalization variable could be developed and tested. However, constructing more advanced internationalization measures is not an easy task, mainly because of lack of available information for IPO firms that are transferring from a purely private domain to a public domain. The sensitivity tests of the study employs 5%, 10% and 15% internationalization thresholds for being classified as an international firm; and make use of DOI as the measure of internationalization. Both threshold adjustments and DOI are constructed based on pre-tax foreign income, and therefore, they cannot be considered completely different operationalizations from the one used in this study. Further operationalization of internationalization in this context could provide additional insights into the research questions of this dissertation.

Table 1. Major and Sub-major Industries based on SIC Codes

SIC Codes	Major Industries
4000-4799	<i>Transportation Services</i> Railroad Transportation Local And Suburban Transit And Interurban Highway Passenger Transportation Motor Freight Transportation And Warehousing Water Transportation Transportation By Air
5200-5999	<i>Retail Trade</i> Building Materials, Hardware, Garden Supply, And Mobile Home Dealers General Merchandise Stores Food Stores Automotive Dealers And Gasoline Service Stations Apparel And Accessory Stores Home Furniture, Furnishings, And Equipment Stores Eating And Drinking Places Miscellaneous Retail
7000-8999	<i>Services</i> Hotels, Rooming Houses, Camps, And Other Lodging Places Personal Services Business Services Motion Pictures Amusement And Recreation Services Health Services Legal Services Educational Services Social Services Museums, Art Galleries, And Botanical And Zoological Gardens Engineering, Accounting, Research, Management, And Related Services Private Households Miscellaneous Services

Table 2. Distribution of IPO Companies over the Years

<i>Issue Year</i>	<i>Domestic</i>	<i>International</i>	<i>Total</i>	<i>Issue Year</i>	<i>Domestic</i>	<i>International</i>	<i>Total</i>
1980	1	0	1	1995	108	22	130
1981	7	0	7	1996	175	16	191
1982	5	0	5	1997	112	18	130
1983	22	0	22	1998	83	14	97
1984	11	0	11	1999	189	19	208
1985	23	1	24	2000	95	7	102
1986	100	3	103	2001	16	5	21
1987	64	5	69	2002	27	4	31
1988	30	4	34	2003	12	2	14
1989	31	1	32	2004	36	11	47
1990	23	3	26	2005	24	7	31
1991	66	5	71	2006	27	7	34
1992	86	11	97	2007	25	17	42
1993	107	12	119	2008	4	2	6
1994	95	13	108	2009	6	3	9
Total							1,822

Table 3. Summary Statistics of Variables

<i>Variable</i>	<i># of Obs.</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min</i>	<i>Max</i>
<i>Panel A. Summary Statics of the Raw Variables in the OLS Estimation</i>					
UP	1820	22.74	55.22	-99.61	533.33
INT	1822	0.12	0.32	0.00	1.00
UWQ	1817	7.21	2.21	1.00	9.00
VC	1822	0.32	0.46	0.00	1.00
AUQ	1822	0.90	0.30	0.00	1.00
AT	1815	208.09	925.50	0.44	23043.00
GRP	1816	58.98	90.12	0.60	997.70
AGE	1822	13.58	17.55	0.00	117.00

<i>Panel B. Summary Statics of the Sample Used in the Box-Cox OLS Estimation</i>					
BC_UP	1303	2.78	1.87	-3.11	7.88
INT	1303	0.12	0.32	0.00	1.00
UWQ	1303	7.29	2.14	1.00	9.00
VC	1303	0.36	0.48	0.00	1.00
AUQ	1303	0.92	0.28	0.00	1.00
AT	1303	163.22	459.15	0.44	8863.52
GRP	1303	58.96	84.94	0.60	997.70
AGE	1303	12.63	16.01	0.00	113.00

<i>Panel C. Initial Returns of International and Domestic Service Firms</i>				
	<i># of Obs.</i>	<i>Mean</i>	<i>Std. Error</i>	<i>Std. Deviation</i>
UP- Domestic	1608	23.4728	1.4399	57.7398
UP- International	212	17.1529	2.0118	29.2923
Difference		6.3199		
p-value		0.1173		

UP represents the initial returns (underpricing) and are presented in percent. INT is the internationalization dummy taking a value of 1 if the firm is international at the time of its IPO, 0 otherwise. UWQ represents the quality of the underwriter (investment banker) that manages the whole IPO process of firm *i*, and is a scale from 1 to 9, 1 being the lowest quality and 9 being the highest quality. VC represents the involvement of a venture capitalist in the issue. It takes a value of 1 if there is at least one venture capital firm associated with the issuing firm, 0 otherwise. AUQ stands for auditor quality, and takes a value of 1 if the issuing firm is audited by a Big-4 (Big-8 and Big-6 for older years) audit firm, 0 otherwise. AT is the total assets of the issuing company in the year preceding its IPO, and presented in millions. GRP is the size of gross proceeds generated via IPO, and presented in millions. Age is the firm of the issuing firm and operationalized as the number of years from the foundation to IPO date. In Panel B, initial returns (underpricing) are box-cox transformed values.

Table 4. Correlation Analysis of the Variables

	<i>UP</i>	<i>INT</i>	<i>UWQ</i>	<i>VC</i>	<i>AUQ</i>	<i>LNSIZE</i>	<i>LNGRP</i>	<i>LNAGE</i>
<i>UP</i>	1							
<i>INT</i>	-0.0602*	1						
<i>UWQ</i>	0.0403	0.1156*	1					
<i>VC</i>	0.2358*	0.0540**	0.2482*	1				
<i>AUQ</i>	-0.0358	0.0771*	0.4161*	0.1368*	1			
<i>LNSIZE</i>	0.0146	0.1230*	0.6638*	0.0482	0.3361*	1		
<i>LNGRP</i>	0.0669*	0.1208*	0.6723*	0.0942*	0.3270*	0.8248*	1	
<i>LNAGE</i>	-0.1999*	0.0538	0.1357*	-0.1141*	0.0708*	0.2356*	0.1630*	1

UP represents initial returns (underpricing) and are presented in percent. INT is the internationalization dummy taking a value of 1 if the firm is international at the time of its IPO, 0 otherwise. UWQ represents the quality of the underwriter (investment banker) that manages the whole IPO process of firm *i*, and it is a scale from 1 to 9, 1 being the lowest quality and 9 being the highest quality. VC represents the involvement of a venture capitalist in the issue. It takes a value of 1 if there is at least one venture capital firm associated with the issuing firms, 0 otherwise. AUQ stands for auditor quality, and takes a value of 1 if the issuing firm is audited by a Big-4 (Big-8 and Big-6 for older years) audit firm, 0 otherwise. LNSIZE is the natural logarithm of total assets of the issuing company in the year preceding its IPO. LNGRP is the natural logarithm of the size of gross proceeds generated from an IPO. LNAGE is the natural logarithm of 1 plus age of the firm. Age of the firm is operationalized as the number of years from the foundation to IPO date.

** Significant at $p < 0.1$

* Significant at $p < 0.05$

Table 5. OLS Estimation of Initial Returns.

<i>Panel A. Including only Already International Firms</i>									
<i>Dependent Variable: Raw Returns</i>					<i>Dependent Variable: BC- Transf. Returns</i>				
<i>UP</i>	<i>Coefficient</i>	<i>Std. Err.</i>	<i>t</i>	<i>P>t</i>	<i>UP</i>	<i>Coefficient</i>	<i>Std. Err.</i>	<i>t</i>	<i>P>t</i>
<i>INT</i>	-11.5146	4.0581	-2.8400	0.0050	<i>INT</i>	-0.3444 (-4.26)	0.1478	-2.3300	0.0200
<i>UWQ</i>	-0.5778	0.8710	-0.6600	0.5070	<i>UWQ</i>	-0.1005 (-1.2371)	0.0332	-3.0300	0.0030
<i>VC</i>	23.4471	2.9195	8.0300	0.0000	<i>VC</i>	1.3908 (17.1137)	0.1058	13.1500	0.0000
<i>AUQ</i>	-10.2404	4.8170	-2.1300	0.0340	<i>AUQ</i>	-0.7641 (-9.4026)	0.1887	-4.0500	0.0000
<i>LNSIZE</i>	1.1501	1.7983	0.6400	0.5230	<i>LNSIZE</i>	-0.0013 (-0.0158)	0.0683	-0.0200	0.9850
<i>LNGRP</i>	4.7034	2.1540	2.1800	0.0290	<i>LNGRP</i>	0.2335 (2.8734)	0.0816	2.8600	0.0040
<i>LNAGE</i>	-8.6372	1.3993	-6.1700	0.0000	<i>LNAGE</i>	-0.2926 (-3.6002)	0.0538	-5.4400	0.0000
<i>Number of Observations</i>			1802		<i>Number of Observations</i>			1303	
<i>F(33, 1269)</i>			5.92		<i>F(33, 1269)</i>			10.27	
<i>Prob > F</i>			0.0000		<i>Prob > F</i>			0.0000	
<i>Adj R-squared</i>			0.0872		<i>Adj R-squared</i>			0.1903	

<i>Panel B. Including both Already International Firms and Expected to-become International Firms</i>									
<i>Dependent Variable: Raw Returns</i>					<i>Dependent Variable: BC- Transf. Returns</i>				
<i>UP</i>	<i>Coefficient</i>	<i>Std. Err.</i>	<i>t</i>	<i>P>t</i>	<i>UP</i>	<i>Coefficient</i>	<i>Std. Err.</i>	<i>t</i>	<i>P>t</i>
<i>INT</i>	-38.0618	8.7256	-4.3600	0.0000	<i>INT</i>	-0.670 (-8.2507)	0.3093	-2.1700	0.0300
<i>INT_ALL</i>	27.8034	8.0968	3.4300	0.0010	<i>INT_ALL</i>	0.3430 (4.2227)	0.2862	1.2000	0.2310
<i>UWQ</i>	-0.6561	0.8686	-0.7600	0.4500	<i>UWQ</i>	-0.1014 (-1.2492)	0.0332	-3.0600	0.0020
<i>VC</i>	23.1018	2.9123	7.9300	0.0000	<i>VC</i>	1.3869 (17.0736)	0.1058	13.1100	0.0000
<i>AUQ</i>	-10.0072	4.8028	-2.0800	0.0370	<i>AUQ</i>	-0.7624 (-9.3857)	0.1887	-4.0400	0.0000
<i>LNSIZE</i>	0.9336	1.7939	0.5200	0.6030	<i>LNSIZE</i>	-0.0043 (-0.0528)	0.0684	-0.0600	0.9500
<i>LNGRP</i>	4.7690	2.1476	2.2200	0.0260	<i>LNGRP</i>	0.2342 (2.8826)	0.0816	2.8700	0.0040
<i>LNAGE</i>	-8.5867	1.3951	-6.1600	0.0000	<i>LNAGE</i>	-0.2911 (-3.5837)	0.0538	-5.4100	0.0000

Table 5. OLS Estimation of Initial Returns. *Cont'd.*

<i>Number of Observations</i>	1,802	<i>Number of Observations</i>	1,303
<i>F(33, 1269)</i>	6.12	<i>F(33, 1269)</i>	10.02
<i>Prob > F</i>	0.0000	<i>Prob > F</i>	0.0000
<i>Adj R-squared</i>	0.0928	<i>Adj R-squared</i>	0.1906

UP represents the initial returns (underpricing) and are presented in percent. INT is the internationalization dummy taking a value of 1 if the firm is international at the time of its IPO, 0 otherwise. UWQ represents the quality of the underwriter (investment banker) that manages the whole IPO process of firm *i*, and is a scale from 1 to 9, 1 being the lowest quality and 9 being the highest quality. VC represents the involvement of a venture capitalist in the issue. It takes a value of 1 if there is at least 1 venture capital firm associated with the issuing firms, 0 otherwise. AUQ stands for auditor quality, and takes a value of 1 if the issuing firm is audited by a Big-4 (Big-8 and Big-6 for older years) audit firm, 0 otherwise. LNSIZE is the natural logarithm of total assets of the issuing company in the year preceding its IPO. LNGRP is the natural logarithm of the size of gross proceeds generated from an IPO. LNAGE is the natural logarithm of 1 plus age of the firm. Age of the firm is operationalized as the number of years from the foundation to IPO date. INT_ALL is the internationalization variable when expected-to-become international firms are treated and coded as international firms. All estimations include industry dummies that are not reported in the table.

Table 6. Comparison of Long-run Return Performance of International and Domestic IPO Firms Using Value-weighted Index Adjusted Monthly Returns.

Average CRSP value-weighted adjusted returns (AR_t) and cumulative average abnormal returns ($CAAR_{1,t}$) for international and domestic firms, in percent, are presented in Table 6 along with the associated t-statistics and Johnson's skewness adjusted t-statistics for the difference tests. $AR_t = 1/n \sum_{i=1}^n AR_{it}$ where AR_{it} is the total CRSP value-weighted index adjusted return for firm i in event month t . $CAAR_{1,t}$ is the cumulative average abnormal return computed as $CAAR_{1,t} = \sum_{t=q}^s AR_t$ where AR_t is the average value-weighted index adjusted monthly return in event month t . t-statistic is standard Student's t-statistic, and Johnson's skewness adjusted t-statistic is a modification of Student's t-test to correct the positive skewness presented in the AR_t and $CAAR_t$ series. t-statistics and Johnson's skewness adjusted t-statistics are consistent across the 36 months in both series except two instances in AR_t series in event months 4 and 5.

Month of Seasoning	N	AR(t) Int.	AR(t) Dom.	Diff.	Significance		Johnson skewness adj. t-stat.		N	CAAR (1, t) Int.	CAAR (1, t) Dom.	Diff.	Significance		Johnson skewness adj. t-stat.	
					t-stat	p	t-stat	p					t-stat	p	t-stat	p
1	326	0.0458	0.0214	0.0243	1.32	0.1890	1.44	0.1510	326	0.0458	0.0214	0.0243	1.32	0.1890	1.44	0.1510
2	326	0.0281	0.0150	0.0131	0.69	0.4913	0.74	0.4591	326	0.0739	0.0364	0.0375	1.32	0.1881	1.40	0.1626
3	326	0.0433	0.0297	0.0136	0.72	0.4697	0.78	0.4363	326	0.1171	0.0661	0.0511	1.44	0.1508	1.51	0.1309
4	326	0.0481	0.0086	0.0396	1.83	0.0689	2.01	0.0458	326	0.1653	0.0747	0.0906	2.19	0.0296	2.32	0.0212
5	326	0.0160	-0.0192	0.0352	1.94	0.0527	2.19	0.0295	326	0.1812	0.0554	0.1258	2.75	0.0063	2.93	0.0036
6	326	0.0004	-0.0251	0.0256	1.60	0.1115	1.79	0.0744	326	0.1817	0.0303	0.1514	3.30	0.0011	3.56	0.0004
7	326	0.0275	-0.0344	0.0619	3.51	0.0005	4.26	0.0000	326	0.2092	-0.0041	0.2132	4.24	0.0000	4.61	0.0000
8	325	0.0088	-0.0057	0.0144	0.77	0.4411	0.83	0.4066	325	0.2158	-0.0123	0.2281	4.26	0.0000	4.61	0.0000
9	322	-0.0023	-0.0142	0.0118	0.74	0.4609	0.81	0.4211	322	0.2202	-0.0279	0.2481	4.45	0.0000	4.82	0.0000
10	322	0.0095	-0.0108	0.0203	1.22	0.2244	1.34	0.1812	322	0.2302	-0.0389	0.2690	4.72	0.0000	5.13	0.0000
11	319	0.0222	-0.0274	0.0496	2.55	0.0114	2.92	0.0038	319	0.2544	-0.0677	0.3221	5.43	0.0000	5.96	0.0000
12	317	-0.0072	-0.0076	0.0003	0.02	0.9866	0.04	0.9643	317	0.2467	-0.0861	0.3328	5.30	0.0000	5.78	0.0000
13	313	0.0079	-0.0419	0.0498	2.86	0.0045	3.40	0.0008	313	0.2538	-0.1277	0.3815	5.64	0.0000	6.15	0.0000
14	310	0.0178	0.0006	0.0173	0.91	0.3623	0.99	0.3241	310	0.2755	-0.1322	0.4077	5.67	0.0000	6.16	0.0000
15	310	0.0129	-0.0085	0.0213	1.16	0.2466	1.27	0.2051	310	0.2798	-0.1501	0.4299	6.08	0.0000	6.66	0.0000
16	303	-0.0141	-0.0289	0.0148	0.83	0.4087	0.90	0.3688	303	0.2661	-0.1813	0.4474	6.13	0.0000	6.71	0.0000
17	299	0.0067	-0.0042	0.0109	0.58	0.5628	0.63	0.5302	298	0.2732	-0.1770	0.4501	5.98	0.0000	6.51	0.0000

Table 6. Comparison of Long-run Return Performance of International and Domestic IPO Firms Using Value-weighted Index Adjusted Monthly Returns. *Cont'd.*

Month of Seasoning	N	AR(t) Int.	AR(t) Dom.	Diff.	Significance		Johnson skewness adj. t- stat.		N	CAAR (1, t) Int.	CAAR (1, t) Dom.	Diff.	Significance		Johnson skewness adj. t-stat.	
					t-stat	p	t-stat	p					t-stat	p	t-stat	p
18	292	-0.0116	0.0167	-0.0284	-1.43	0.1534	-1.28	0.1998	292	0.2767	-0.1336	0.4104	5.26	0.0000	5.68	0.0000
19	289	0.0065	-0.0020	0.0085	0.45	0.6534	0.49	0.6227	289	0.2850	-0.1376	0.4226	5.12	0.0000	5.50	0.0000
20	282	-0.0189	-0.0030	-0.0159	-0.80	0.4218	-0.74	0.4623	282	0.2610	-0.1394	0.4005	4.79	0.0000	5.12	0.0000
21	274	0.0070	0.0162	-0.0092	-0.39	0.6948	-0.36	0.7200	274	0.2857	-0.1163	0.4019	4.82	0.0000	5.17	0.0000
22	269	-0.0005	0.0087	-0.0092	-0.48	0.6318	-0.43	0.6657	269	0.2766	-0.0899	0.3664	4.30	0.0000	4.58	0.0000
23	265	-0.0027	0.0190	-0.0217	-0.97	0.3343	-0.89	0.3759	265	0.2717	-0.0627	0.3344	3.77	0.0002	3.98	0.0001
24	262	0.0123	-0.0267	0.0390	2.31	0.0215	2.75	0.0063	262	0.2840	-0.0856	0.3696	4.07	0.0001	4.30	0.0000
25	258	0.0019	-0.0042	0.0062	0.33	0.7418	0.37	0.7103	258	0.2885	-0.0879	0.3764	4.18	0.0000	4.44	0.0000
26	249	-0.0218	0.0077	-0.0294	-1.66	0.0989	-1.41	0.1588	249	0.2714	-0.0924	0.3638	3.87	0.0001	4.09	0.0001
27	245	0.0157	0.0217	-0.0060	-0.28	0.7776	-0.25	0.8063	245	0.2954	-0.0767	0.3720	3.82	0.0002	4.03	0.0001
28	239	-0.0063	0.0138	-0.0201	-0.89	0.3734	-0.81	0.4177	239	0.2857	-0.0551	0.3408	3.40	0.0008	3.57	0.0004
29	229	0.0057	0.0251	-0.0194	-0.88	0.3824	-0.79	0.4289	229	0.2851	-0.0127	0.2977	2.96	0.0034	3.09	0.0023
30	222	0.0048	0.0345	-0.0297	-1.22	0.2223	-1.10	0.2726	222	0.2978	0.0699	0.2280	2.24	0.0264	2.32	0.0214
31	215	-0.0136	0.0037	-0.0173	-0.88	0.3796	-0.78	0.4361	215	0.2796	0.0853	0.1944	1.83	0.0681	1.89	0.0602
32	211	0.0325	0.0050	0.0276	1.17	0.2417	1.30	0.1951	211	0.3194	0.0833	0.2361	2.24	0.0261	2.32	0.0211
33	205	-0.0020	-0.0010	-0.0010	-0.04	0.9646	-0.01	0.9924	205	0.3460	0.0808	0.2652	2.44	0.0156	2.53	0.0120
34	202	0.0188	0.0221	-0.0033	-0.14	0.8897	-0.10	0.9177	202	0.3671	0.1006	0.2665	2.46	0.0148	2.56	0.0113
35	199	0.0046	-0.0148	0.0194	0.64	0.5234	0.69	0.4915	198	0.3877	0.0985	0.2892	2.64	0.0090	2.75	0.0065
36	190	0.0367	0.0231	0.0136	0.49	0.6237	0.54	0.5911	190	0.4507	0.1635	0.2872	2.55	0.0116	2.66	0.0085

Table 7. Comparison of Long-run Return Performance of International and Domestic IPO Firms Using Equal-weighted Index Adjusted Monthly Returns.

Average CRSP equal-weighted index adjusted returns (AR_t) and cumulative average abnormal returns ($CAAR_{1,t}$) for international and domestic firms, in percent, are presented in Table 7 along with the associated t-statistics and Johnson's skewness adjusted t-statistics for the difference tests. $AR_t = 1/n \sum_{i=1}^n AR_{it}$ where AR_{it} is the total CRSP value-weighted index adjusted return for firm i in event month t . $CAAR_{1,t}$ is the cumulative average abnormal return computed as $CAAR_{1,t} = \sum_{t=q}^s AR_t$ where AR_t is the average value-weighted index adjusted monthly return in event month t . t-statistic is standard Student's t-statistic, and Johnson's skewness adjusted t-statistic is a modification of Student's t-test to correct positive skewness presented in the AR_t and $CAAR_t$ series. t-statistics and Johnson's skewness adjusted t-statistics are consistent across the 36 months in both series except one instance in AR_t series in event month 5.

Month of Seasoning	N	AR(t) Int.	AR(t) Dom.	Diff.	Significance		Johnson skewness adj. t-stat		N	CAAR (1, t) Int.	CAAR (1, t) Dom.	Diff.	Significance		Johnson skewness adj. t-stat	
					t-stat	p	t-stat	p					t-stat	p	t-stat	p
1	326	0.0457	0.0226	0.0231	1.27	0.2057	1.39	0.1667	326	0.0457	0.0226	0.0231	1.27	0.2057	1.39	0.1667
2	326	0.0267	0.0152	0.0115	0.61	0.5425	0.66	0.5118	326	0.0724	0.0377	0.0346	1.24	0.2159	1.31	0.1896
3	326	0.0447	0.0277	0.0169	0.90	0.3673	0.97	0.3306	326	0.1171	0.0655	0.0516	1.46	0.1452	1.54	0.1255
4	326	0.0497	0.0114	0.0383	1.82	0.0698	2.00	0.0459	326	0.1668	0.0769	0.0899	2.18	0.0299	2.31	0.0214
5	326	0.0157	-0.0197	0.0354	1.99	0.0480	2.24	0.0258	326	0.1825	0.0572	0.1252	2.78	0.0057	2.97	0.0032
6	326	-0.0002	-0.0249	0.0247	1.54	0.1247	1.72	0.0861	326	0.1822	0.0323	0.1499	3.31	0.0010	3.57	0.0004
7	326	0.0252	-0.0359	0.0611	3.53	0.0005	4.30	0.0000	326	0.2075	-0.0035	0.2110	4.23	0.0000	4.60	0.0000
8	325	0.0129	-0.0090	0.0218	1.11	0.2662	1.20	0.2293	325	0.2212	-0.0154	0.2366	4.38	0.0000	4.75	0.0000
9	322	-0.0059	-0.0145	0.0086	0.55	0.5858	0.60	0.5505	322	0.2168	-0.0317	0.2485	4.56	0.0000	4.96	0.0000
10	321	0.0088	-0.0108	0.0196	1.20	0.2314	1.32	0.1872	321	0.2241	-0.0419	0.2660	4.66	0.0000	5.06	0.0000
11	318	0.0164	-0.0324	0.0488	2.60	0.0099	3.00	0.0029	318	0.2417	-0.0758	0.3175	5.16	0.0000	5.63	0.0000
12	315	-0.0061	-0.0051	-0.0010	-0.05	0.9566	-0.03	0.9793	315	0.2376	-0.0918	0.3294	5.09	0.0000	5.52	0.0000
13	313	0.0083	-0.0385	0.0469	2.77	0.0060	3.28	0.0012	313	0.2467	-0.1279	0.3746	5.54	0.0000	6.03	0.0000
14	310	0.0160	-0.0018	0.0178	0.97	0.3340	1.05	0.2940	310	0.2670	-0.1352	0.4022	5.59	0.0000	6.06	0.0000
15	307	0.0155	-0.0147	0.0302	1.64	0.1019	1.83	0.0685	306	0.2583	-0.1579	0.4162	5.85	0.0000	6.39	0.0000
16	303	-0.0125	-0.0286	0.0161	0.91	0.3638	0.99	0.3222	302	0.2607	-0.1902	0.4509	6.12	0.0000	6.69	0.0000
17	299	0.0000	-0.0071	0.0071	0.38	0.7030	0.42	0.6745	298	0.2607	-0.1880	0.4487	5.90	0.0000	6.42	0.0000
18	292	-0.0208	0.0116	-0.0324	-1.68	0.0940	-1.68	0.0940	292	0.2529	-0.1482	0.4011	5.12	0.0000	5.51	0.0000

Table 7. Comparison of Long-run Return Performance of International and Domestic IPO Firms Using Equal-weighted Index Adjusted Monthly Returns. *Cont'd.*

Month Of Seasoning	N	AR(t) Int.	AR(t) Dom.	Diff.	Significance		Johnson skewness adj. t-stat		N	CAAR (1, t) Int.	CAAR (1, t) Dom.	Diff.	Significance		Johnson skewness adj. t-stat	
					t-stat	p	t-stat	p					t-stat	p	t-stat	p
19	286	0.0011	-0.0077	0.0088	0.48	0.6333	0.52	0.6010	286	0.2547	-0.1598	0.4145	5.01	0.0000	5.36	0.0000
20	282	-0.0223	-0.0067	-0.0156	-0.80	0.4269	-0.73	0.4675	282	0.2283	-0.1641	0.3924	4.66	0.0000	4.97	0.0000
21	274	0.0020	0.0156	-0.0135	-0.58	0.5609	-0.54	0.5907	274	0.2480	-0.1379	0.3859	4.59	0.0000	4.90	0.0000
22	269	-0.0073	0.0030	-0.0103	-0.55	0.5796	-0.50	0.6169	269	0.2297	-0.1178	0.3475	4.02	0.0001	4.26	0.0000
23	265	-0.0049	0.0156	-0.0205	-0.95	0.345	-0.87	0.3875	265	0.2200	-0.0917	0.3117	3.48	0.0006	3.66	0.0003
24	262	0.0119	-0.0245	0.0363	2.19	0.0294	2.59	0.0100	262	0.2318	-0.1132	0.3450	3.74	0.0002	3.94	0.0001
25	258	-0.0024	-0.0014	-0.0011	-0.06	0.9541	-0.02	0.9824	258	0.2320	-0.1098	0.3418	3.74	0.0002	3.95	0.0001
26	249	-0.0219	0.0063	-0.0282	-1.58	0.1144	-1.36	0.1754	249	0.2160	-0.1154	0.3314	3.48	0.0006	3.65	0.0003
27	245	0.0131	0.0208	-0.0077	-0.38	0.7057	-0.34	0.7376	245	0.2380	-0.0972	0.3352	3.40	0.0008	3.57	0.0004
28	239	-0.0054	0.0140	-0.0194	-0.87	0.3833	-0.79	0.4276	239	0.2285	-0.0780	0.3065	3.02	0.0028	3.15	0.0018
29	229	0.0030	0.0216	-0.0186	-0.85	0.3962	-0.77	0.4427	229	0.2239	-0.0386	0.2625	2.57	0.0109	2.67	0.0082
30	220	-0.0003	0.0342	-0.0345	-1.46	0.147	-1.29	0.1989	220	0.2313	0.0462	0.1852	1.81	0.0723	1.86	0.0640
31	215	-0.0204	0.0029	-0.0234	-1.24	0.2149	-1.08	0.2833	215	0.2104	0.0644	0.1460	1.37	0.1730	1.40	0.1626
32	211	0.0294	-0.0011	0.0305	1.34	0.1817	1.50	0.1354	210	0.2514	0.0586	0.1928	1.83	0.0691	1.88	0.0609
33	206	-0.0058	-0.0032	-0.0026	-0.11	0.9113	-0.08	0.9397	205	0.2725	0.0575	0.2150	1.96	0.0508	2.03	0.0437
34	203	0.0164	0.0194	-0.0030	-0.13	0.8975	-0.09	0.9264	202	0.2910	0.0741	0.2170	2.00	0.0465	2.07	0.0395
35	199	0.0020	-0.0173	0.0193	0.64	0.5203	0.69	0.4880	198	0.3084	0.0696	0.2388	2.18	0.0304	2.26	0.0249
36	190	0.0396	0.0218	0.0177	0.66	0.512	0.72	0.4741	190	0.3739	0.1337	0.2402	2.16	0.0322	2.24	0.0263

Table 8. Three-year Buy-and-Hold Returns of All Firms

<i>3-year Value-weighted Buy-and-Hold Returns</i>					
Month of Seasoning	BAH (VW) International IPOs	BAH (VW) Domestic IPOs	Diff.	Significance	
				t-stat	p
12	21.2527	-8.8293	30.0820	-6.27	0.0000
24	18.1291	-1.0269	19.1560	-1.81	0.0705
36	21.7042	-7.2363	28.9405	-2.83	0.0047
<i>3-year Equal-weighted Buy-and-Hold Returns</i>					
Month of Seasoning	BAH (EW) International IPOs	BAH (EW) Domestic IPOs	Diff.	Significance	
				t-stat	p
12	21.2310	-7.1383	28.3693	-5.93	0.0000
24	19.7353	1.1158	18.6195	-1.68	0.0941
36	28.0498	-5.3911	33.4408	-2.90	0.0038

Table 9. Buy-and-Hold Returns on a Size-matched Sample

<i>Panel A. 3-year Value-weighted Buy-and-Hold Returns of Size-Matched Sample</i>								
Month of Seasoning	N	BAH (VW) International IPOs	BAH (VW) Domestic IPOs	Diff.	Significance		Johnson Skewness Adj. t-stat	
					t-stat	p	t-stat	p
12	315	22.1425	-8.5774	30.7199	3.94	0.0001	3.94	0.0001
24	262	12.9626	-6.0092	18.9719	1.74	0.0837	1.74	0.0836
36	190	22.2797	-1.2289	23.5086	1.34	0.1818	1.34	0.1817

<i>Panel B. 3-year Equal-weighted Buy-and-Hold Returns of Size-Matched Sample</i>								
Month of Seasoning	N	BAH (EW) International IPOs	BAH (EW) Domestic IPOs	Diff.	Significance		Johnson Skewness Adj. t-stat	
					t-stat	p	t-stat	p
12	315	23.5305	-6.4839	30.0144	3.89	0.0001	3.89	0.0001
24	262	18.1134	-2.4937	20.6070	1.70	0.0901	1.70	0.0900
36	190	35.3041	5.6749	29.6291	1.28	0.2007	1.28	0.2007

Table 10. Cross-Sectional Regression of CARs

	<i>Dependent Variable: 3-year VW_CAR</i>				<i>Dependent Variable: 3-year EW_CAR</i>			
	<i>Coefficient</i>	<i>Std. Err.</i>	<i>t</i>	<i>P>t</i>	<i>Coefficient</i>	<i>Std. Err.</i>	<i>t</i>	<i>P>t</i>
INT	0.1584	0.0770	2.06	0.0400	0.1661	0.0766	2.17	0.0300
UWQ	0.0943	0.0192	4.9	0.0000	0.0945	0.0191	4.94	0.0000
VC	-0.1600	0.0657	-2.43	0.0150	-0.1794	0.0655	-2.74	0.0060
AUQ	-0.1415	0.1095	-1.29	0.1970	-0.1481	0.1082	-1.37	0.1710
LNSIZE	0.1561	0.0406	3.84	0.0000	0.0940	0.0404	2.33	0.0200
LNGRP	-0.2143	0.0477	-4.49	0.0000	-0.2143	0.0474	-4.52	0.0000
LNAGE	-0.0605	0.0323	-1.87	0.0610	-0.0416	0.0321	-1.30	0.1950
UP	-0.0033	0.0006	-5.38	0.0000	-0.0041	0.0006	-6.74	0.0000
CONST.	-0.5643	0.5543	-1.02	0.3090	-0.1695	0.5521	-0.31	0.7590
<i>Number of Obs.</i>	<i>1128</i>				<i>1134</i>			
<i>F(33, 1094)</i>	<i>4.29</i>				<i>4.22</i>			
<i>Prob > F</i>	<i>0.0000</i>				<i>0.0000</i>			
<i>Adj R-squared</i>	<i>0.0879</i>				<i>0.0857</i>			

Dependent variables are value-weighted and equal-weighted CARs for 3-years. INT is the internationalization dummy taking a value of 1 if the firm is international at the time of its IPO, 0 otherwise. UWQ represents the quality of the underwriter (investment banker) that manages the whole IPO process of firm *i*, and is a scale from 1 to 9, 1 being the lowest quality and 9 being the highest quality. VC represents the involvement of a venture capitalist in the issue. It takes a value of 1 if there is at least 1 venture capital firm associated with the issuing firms, 0 otherwise. AUQ stands for auditor quality, and takes a value of 1 if the issuing firm is audited by a Big-4 (Big-8 and Big-6 for older years) audit firm, 0 otherwise. LNSIZE is the natural logarithm of total assets of the issuing company in the year preceding its IPO. LNGRP is the natural logarithm of the size of gross proceeds generated from an IPO. LNAGE is the natural logarithm of 1 plus age of the firm. Age of the firm is operationalized as the number of years from the foundation to IPO date. UP represents the initial returns (underpricing) and are presented in percent. Both estimations include industry dummies that are not presented in tables.

Table 11. Cross-Sectional Regression of BAH Returns

	<i>Dependent Variable: 3-year VW_BAH Return</i>				<i>Dependent Variable: 3-year EW_BAH Return</i>			
	<i>Observed Coefficient</i>	<i>Bootstrap Std. Err.</i>	<i>z</i>	<i>P>z</i>	<i>Observed Coefficient</i>	<i>Bootstrap Std. Err.</i>	<i>z</i>	<i>P>z</i>
INT	19.8526	13.4886	1.47	0.1410	22.9712	16.6228	1.38	0.1670
UWQ	9.3436	2.5064	3.73	0.0000	10.6330	2.2552	4.71	0.0000
VC	-25.6830	9.8539	-2.61	0.0090	-30.2036	9.5521	-3.16	0.0020
AUQ	2.2814	11.6492	0.2	0.8450	5.1517	13.8045	0.37	0.7090
LNSIZE	16.4047	5.7816	2.84	0.0050	11.3331	6.9630	1.63	0.1040
LNGRP	-23.0918	7.7311	-2.99	0.0030	-24.1439	7.8045	-3.09	0.0020
LNAGE	-10.8683	5.2037	-2.09	0.0370	-12.1940	6.5511	-1.86	0.0630
UP	-0.3514	0.0583	-6.02	0.0000	-0.3628	0.0656	-5.53	0.0000
CONST.	-13.1757	54.5297	-0.24	0.8090	-0.1706	47.7903	0.00	0.997
<i>Number of obs.</i>	1190				1190			
<i>Replications</i>	336				338			
<i>Prob > chi2</i>	0.0000				0.0000			
<i>Adj R-squared</i>	0.0321				0.0252			

Dependent variables are value-weighted and equal-weighted BAH returns for a three year holding period. INT is the internationalization dummy taking a value of 1 if the firm is international at the time of its IPO, 0 otherwise. UWQ represents the quality of the underwriter (investment banker) that manages the whole IPO process of firm *i*, and is a scale from 1 to 9, 1 being the lowest quality and 9 being the highest quality. VC represents the involvement of a venture capitalist in the issue. It takes a value of 1 if there is at least 1 venture capital firm associated with the issuing firms, 0 otherwise. AUQ stands for auditor quality, and takes a value of 1 if the issuing firm is audited by a Big-4 (Big-8 and Big-6 for older years) audit firm, 0 otherwise. LNSIZE is the natural logarithm of total assets of the issuing company in the year preceding its IPO. LNGRP is the natural logarithm of the size of gross proceeds generated from an IPO. LNAGE is the natural logarithm of 1 plus age of the firm. Age of the firm is operationalized as the number of years from the foundation to IPO date. UP represents the initial returns (underpricing) and are presented in percent. Both estimations include industry dummies that are not presented in tables.

Table 12. Long-run Operating Performance IPO Firms Relative to Completion of IPO Year

Table 12 presents the median changes in two operating performance measures: return on operating assets and operating cash flows reported for 340 IPO companies for the years between 1980 and 2010. In order to be included in this analysis, an IPO firm must have available data from Compustat pertaining to year -1. After eliminating those firms that did not have performance data from Compustat prior to IPO year, the end sample consisted of 170 international IPO firms that are matched by a similar size domestic IPO firm. For the tests of comparison in ROA, one matched pair was dropped because of extreme values. Operating return on assets equals operating income before depreciation divided by total assets measured at the end of the fiscal year. Operating cash flows are computed as operating income less capital expenditures, deflated by total assets. Year -1 is the fiscal year preceding the year during which the firm goes public. The Z-statistics reported in the table are based on Wilcoxon two-sample signed-rank test.

<i>Measure of Operating Performance</i>	Year -1 to 0				Year -1 to 1			
	<i>International IPO Firms</i>	<i>Domestic IPO Firms</i>	<i>Diff.</i>	<i>Z-statistic (p-value)</i>	<i>International IPO Firms</i>	<i>Domestic IPO Firms</i>	<i>Diff.</i>	<i>Z-statistic (p-value)</i>
Median Change in ROA (%)	0.1585	-0.6092	0.7676	2.837 (0.0045)	-0.5582	-2.4931	1.9350	8.641(0.0000)
Number of observations	169				169			
Median Change in CFL (%)	0.0054	-0.0049	0.0103	8.637(0.0000)	-0.0093	-0.0356	0.0262	9.489(0.0000)
Number of observations	170				170			
<i>Measure of Operating Performance</i>	Year -1 to 2				Year -1 to 3			
	<i>International IPO Firms</i>	<i>Domestic IPO Firms</i>	<i>Diff.</i>	<i>Z-statistic (p-value)</i>	<i>International IPO Firms</i>	<i>Domestic IPO Firms</i>	<i>Diff.</i>	<i>Z-statistic (p-value)</i>
Median Change in ROA (%)	-1.9726	-1.8172	-0.1554	4.415(0.0000)	-1.8566	-3.9884	2.1318	-0.285 (0.7757)
Number of observations	169				169			
Median Change in CFL (%)	-0.0133	-0.0306	0.0173	4.745(0.0000)	0.0139	-0.0298	0.0437	1.613(0.1068)
Number of observations	170				170			

Table 13. Accelerated Failure Time Model Estimation on a Sample of 755 IPO Firms between 1983 and 2010.

Accelerated failure time model was estimated using log-logistic form of hazard function. Data is censored at the end of 2010, and so, IPO firms that are still listed and trading at and after December 31, 2010 are marked as survivors and others that are delisted before this date for negative reasons such as liquidations, insufficient number of market makers etc. are marked as failures. Dependent variable is the natural logarithm of number of months between the IPO date and failure date or end of 2010.

<i>ln(t)</i>	<i>Coefficient</i>	<i>Std. Err.</i>	<i>z</i>	<i>P> z </i>
INT	0.4068	0.1967	2.07	0.0390
UWQ	0.0742	0.0331	2.24	0.0250
VC	-0.3141	0.1217	-2.58	0.0100
AUQ	0.1001	0.1647	0.61	0.5430
LNSIZE	-0.0187	0.0734	-0.26	0.7980
LNGRP	0.2703	0.0974	2.77	0.0060
LNAGE	0.3044	0.0545	5.59	0.0000
UP	-0.0016	0.0008	-2.16	0.0310
USEPROC	0.0150	0.0405	0.37	0.7120
MARKET	0.5098	1.3181	0.39	0.6990
CONST.	2.9175	0.1872	15.59	0.0000
No. of subjects	755	Log likelihood		-797.42
No. of failures	366	LR chi2(10)		183.97
Time at risk	81853	Prob > chi2		0.0000

Figure 1. Year Continuum Exhibiting the Changes in the Operating Performance Measures (Return on Assets and Operating Cash Flows) Relative to Year-1.

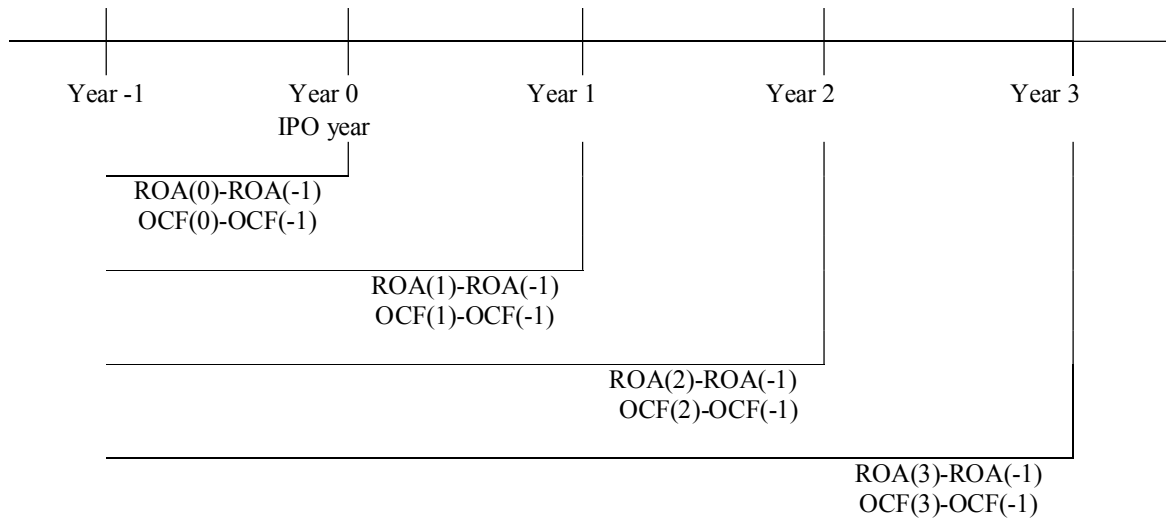


Figure 2. Value-Weighted Index Adjusted Cumulative Average Abnormal Returns over 36 Months

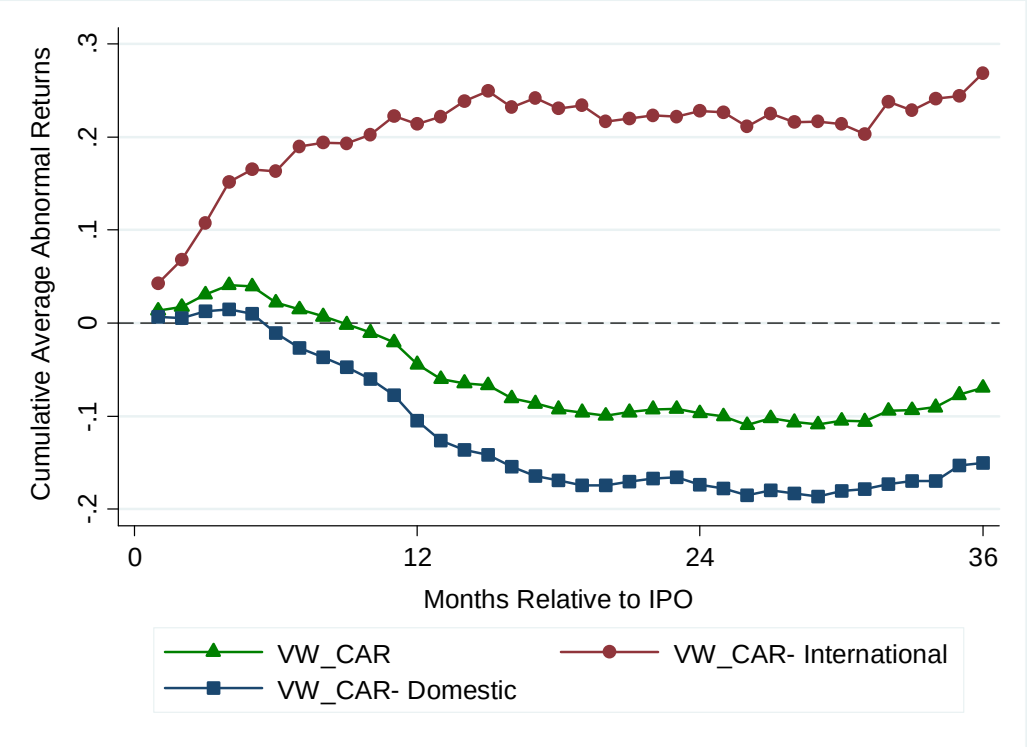


Figure 3. Change in Abnormal Returns for International and Domestic Firms over 36 Months (CRSP value-weighted adjusted returns).

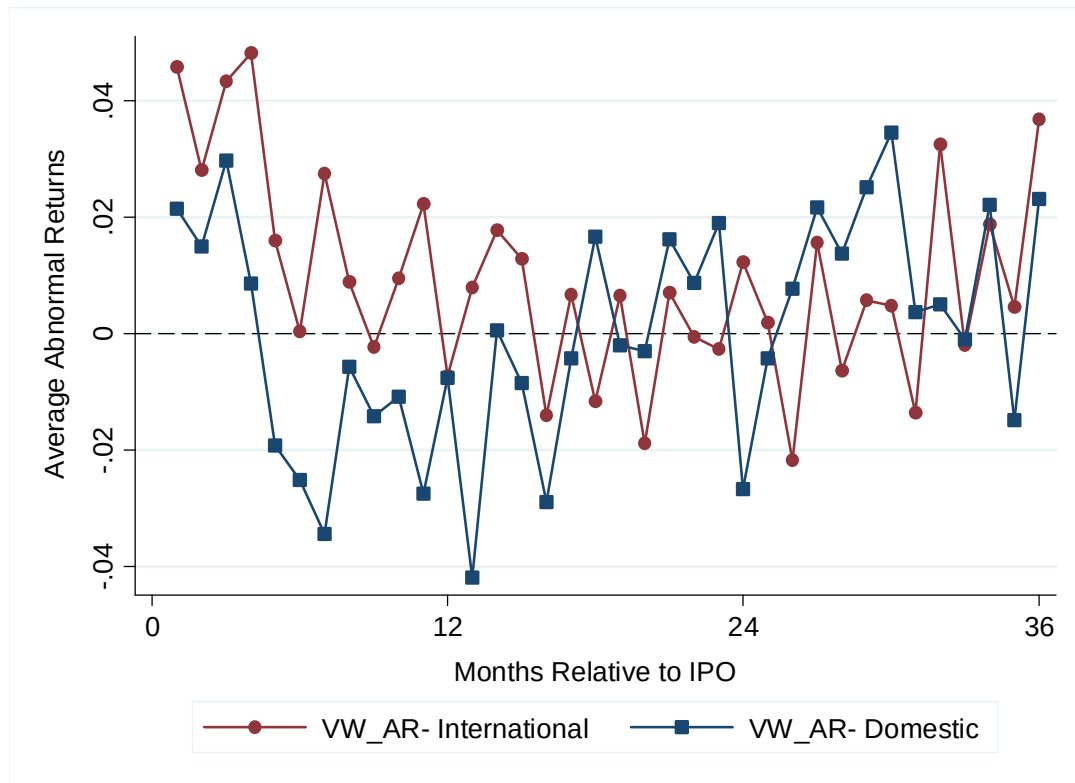


Figure 4. Change in Cumulative Average Abnormal Returns for International and Domestic Firms over 36 Months (CRSP value-weighted adjusted returns).

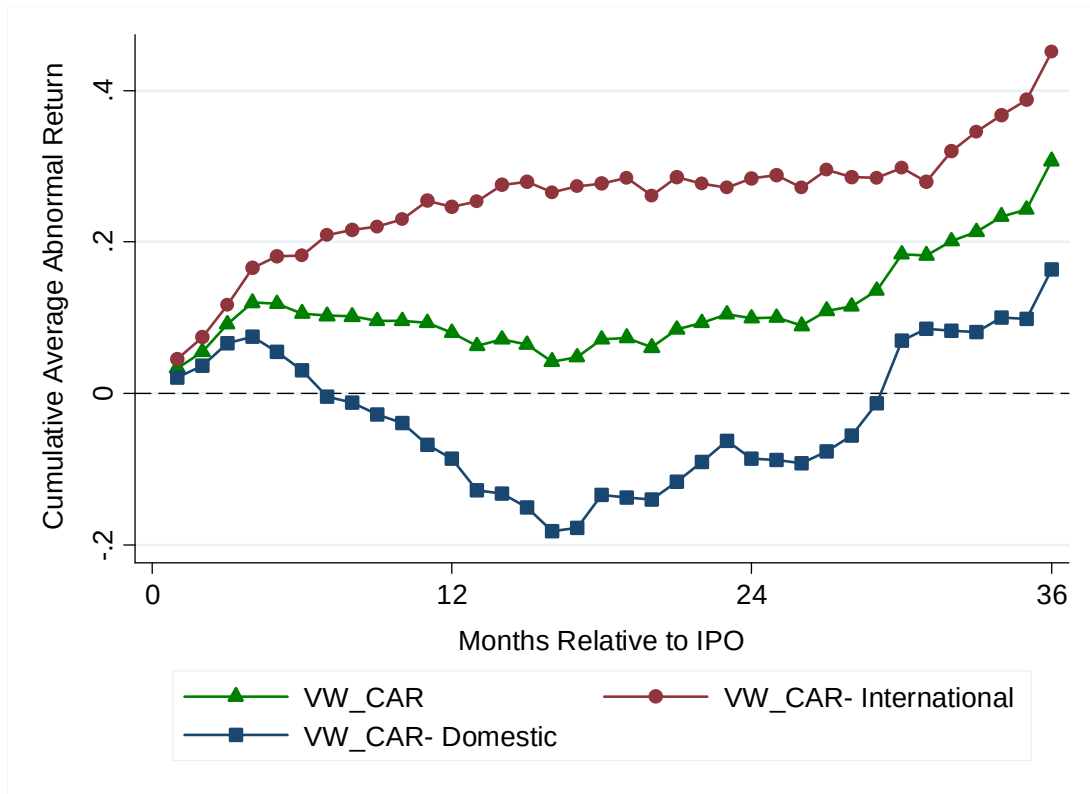


Figure 5. Equal-Weighted Index Adjusted Cumulative Average Abnormal Returns over 36 Months

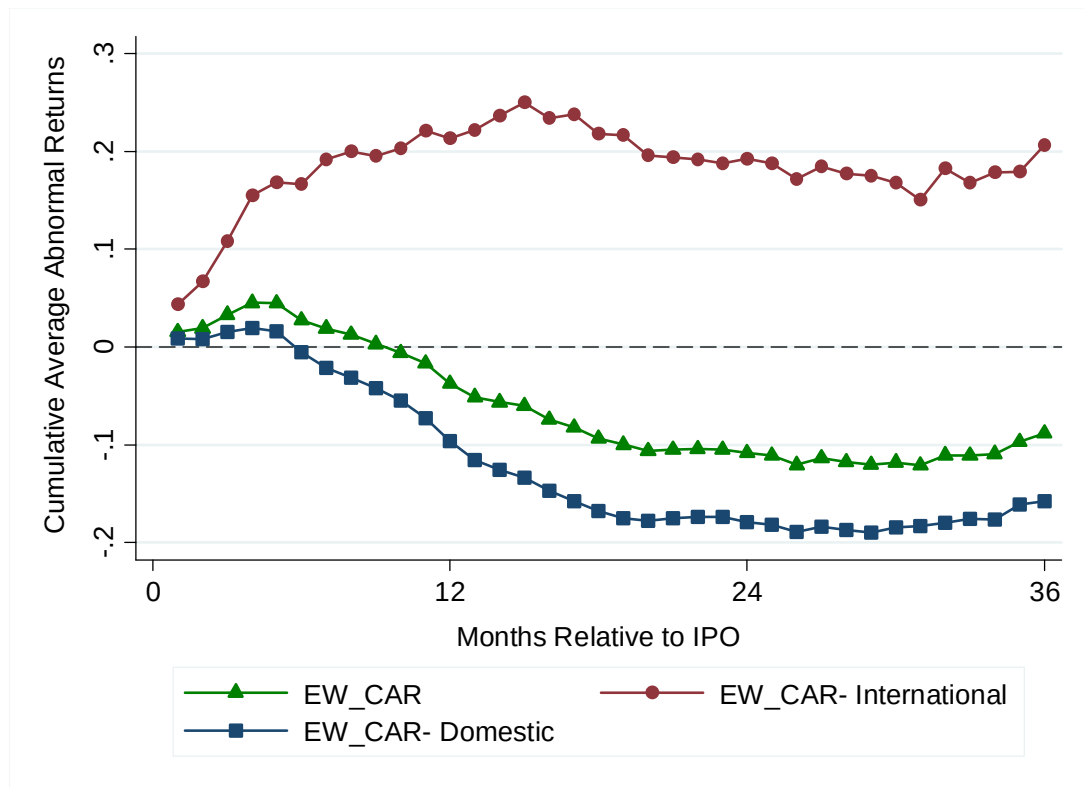


Figure 6. Change in Abnormal Returns for International and Domestic Firms over 36 Months (CRSP equal-weighted adjusted returns).

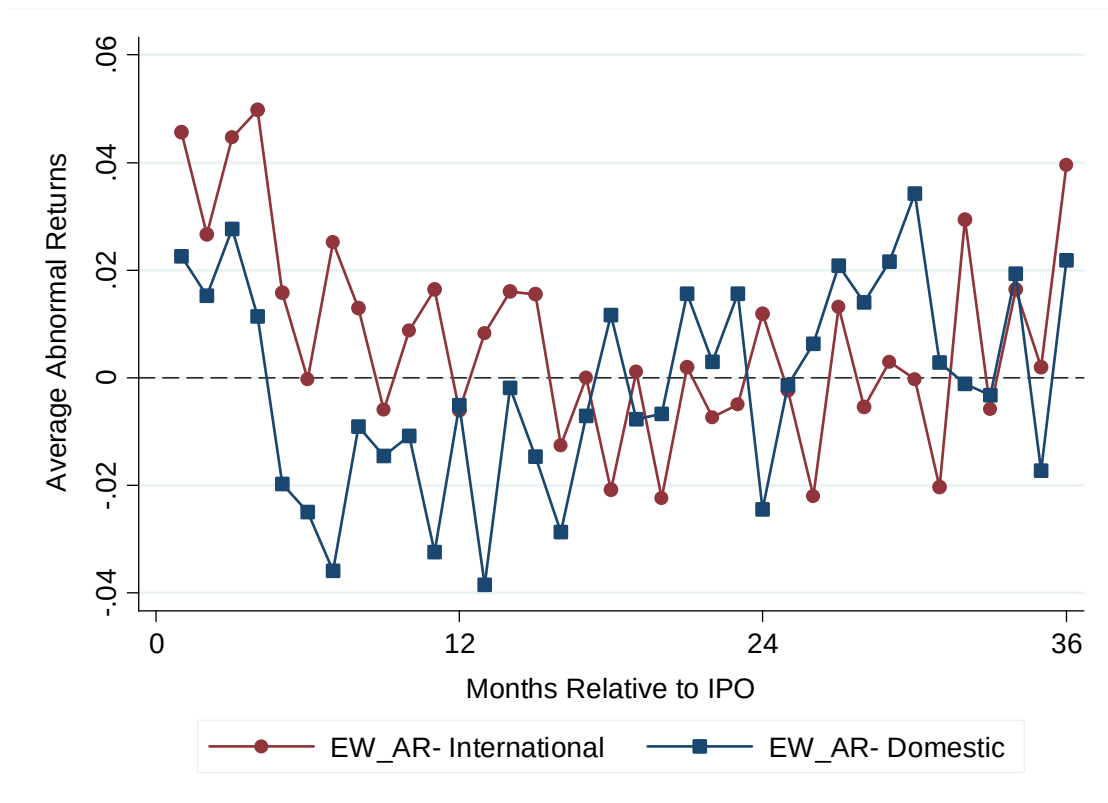


Figure 7. Change in Abnormal Returns for International and Domestic Firms over 36 Months (CRSP equal-weighted adjusted returns).

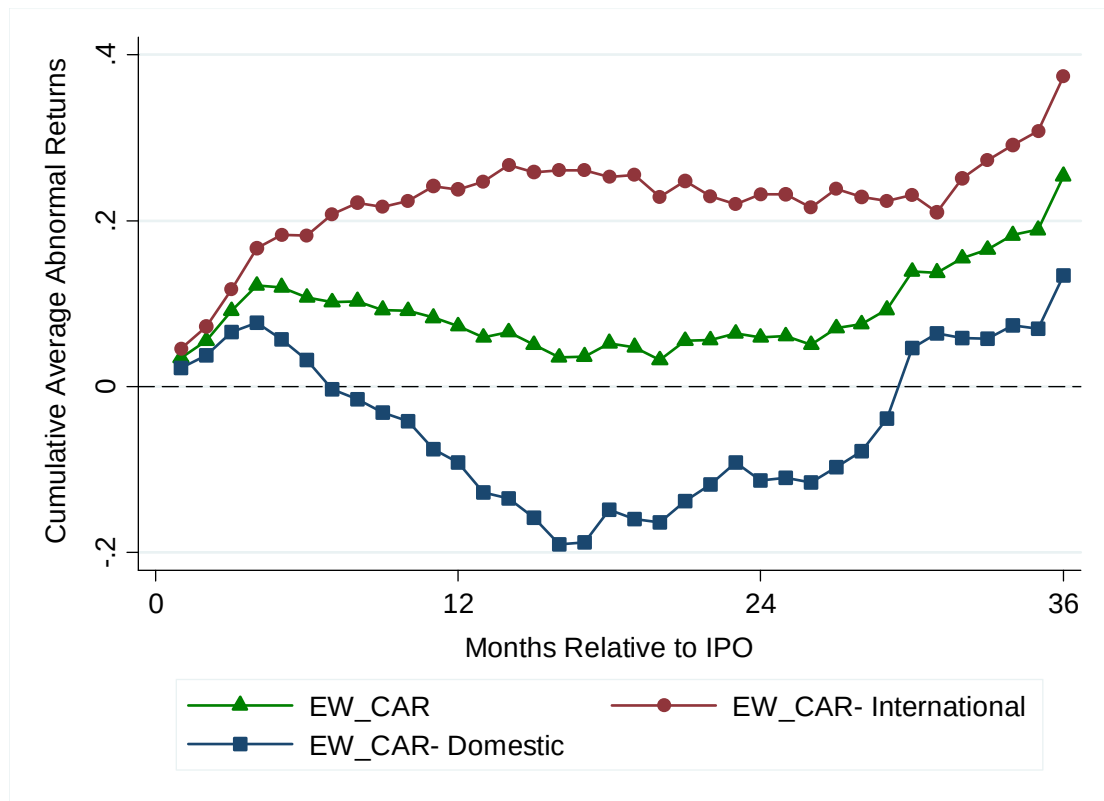
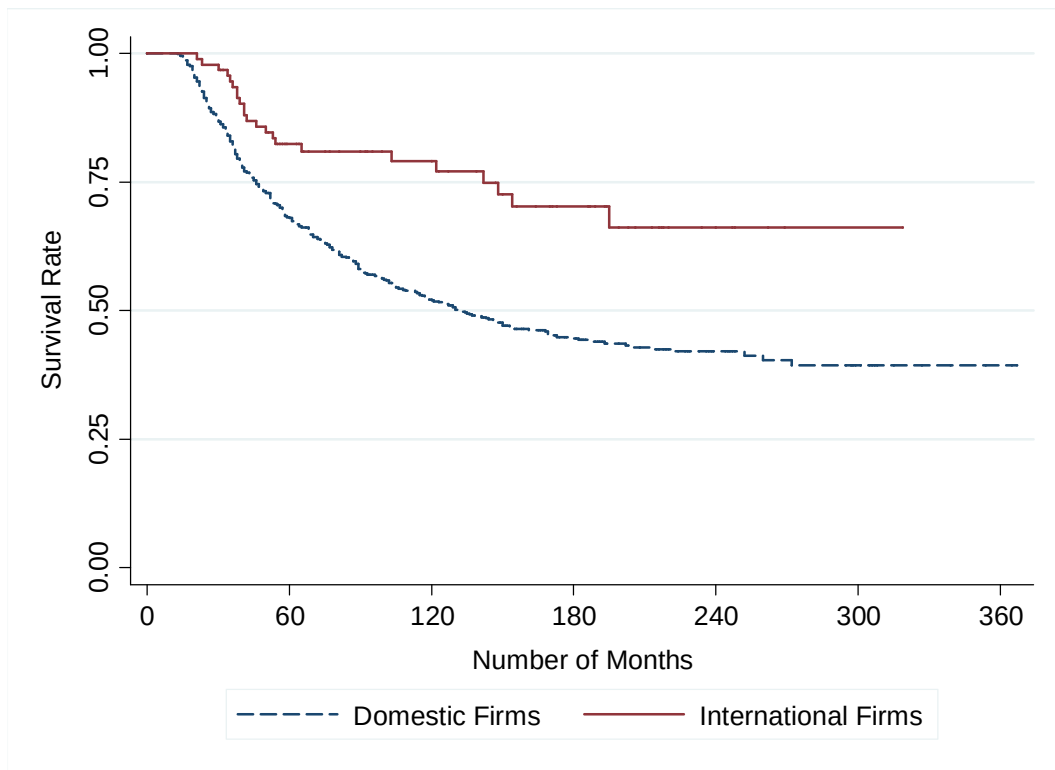


Figure 8. Survivability Functions of 755 IPO firms in the post-IPO period.



REFERENCES

- Andersen, O. (1993). On the internationalization process of firms: A critical analysis. *Journal of International Business Studies*, 24(2), 209-231.
- Balvers, R., McDonald, B. & Miller, R. (1988). Underpricing of new issues and the choice of auditor as a signal of investment banker reputation. *The Accounting Review*, 63(4), 605-622.
- Barkema, H.G., Baum, J.A.C. & Mannix, E.A. (2002). Management challenges in a new time. *Academy of Management Journal*, 45 (5), 916-930.
- Barry, C. B., Muscarella, C. J., Peavy, J. W. & Vetsuypens, M. R. (1990). The role of venture capital in the creation of public companies. *Journal of Financial Economics*, 27, 447-471.
- Beatty, C. & Ritter, J. R. (1986). Investment banking, reputation and the underpricing of initial public offerings. *Journal of Financial Economics*, 15, 213-232.
- Benveniste, L. M. & Spindt, P. A. (1989). How investment bankers determine the offer price and allocation of new issues. *Journal of Financial Economics*, 24, 343-362.
- Benveniste, L.M., Wilhelm, W.J. (1990). A comparative analysis of IPO proceeds under alternative regulatory environments. *Journal of Financial Economics*, 28, 173-207.
- Benveniste, L. M., Busaba, W. Y. & Wilhelm, W. J. (2002). Information externalities and the role of underwriters in primary equity markets. *Journal of Financial Intermediation*, 11, 61-86
- Bhagwati, J. (1984). Splintering and disembodiment of services and developing countries. *The World Economy*, 7(2), 133-144.
- Boddewyn, J., Halbrich, M. & Perry, A. (1986). Service multinationals: Conceptualization, measurement and theory. *Journal of International Business Studies*, 17, 41-57.
- Boos, D. D. (2003). Introduction to Bootstrap World. *Statistical Science*, 18(2), 168-174.
- Box, G. E. P. & Cox, D. R. (1964). An analysis of transformations. *Journal of the Royal Statistical Society, Series B (Methodological)*, 26(2), 211-252.
- Brahm, R. (1994). The institutional embeddedness of international business strategy. *Journal of Management Inquiry*, 3, 40-50.

- Brau, J. C., Francis, B. & Kohers, N. (2003). The choice of IPO versus takeover: empirical evidence. *The Journal of Business*, 76(4), 583-612.
- Camphell, T. (1979). Optimal investment financing decisions and the value of confidentiality. *Journal of Financial and Quantitative Analysis*, 14, 913-924.
- Carter, R. & Manaster, S. (1990). Initial public offerings and underwriter reputation. *Journal of Finance*, 45, 1045-1068.
- Carter, R. B., Dark, F. H. & Singh, A. K. (1998). Underwriter reputation, initial returns, and the long-run performance of IPO stocks. *The Journal of Finance*, 53(1), 285-311.
- Cavusgil, T. (1984). Differences among exporting firms based on their degree of internationalization. *Journal of Business Research*, 12, 195-208.
- Chemmanur, T. J. & Fulghieri, P. (1999). A theory of the going public decision. *The Review of Financial Studies*, 12(2), 249-279.
- Contractor, F. J., Kundu, S. K. & Hsu, C. C. (2003). A three-stage theory of international expansion: the link between multinationality and performance in the service sector. *Journal of International Business Studies*, 34, 5-19
- Cox, D. R. (1972). Regression models and life tables. *Journal of the Royal Statistical Society Series*, 34, 187-220.
- Danniels, J. D. & Bracker, J. (1989). Profit performance: Do foreign operations make a difference? *Management International Review*, 29(1), 46-56.
- Demers, E. & Lewellen, K. (2003). The marketing role of IPOs: Evidence from internet stocks. *Journal of Financial Economics*, 68, 413-437.
- Dev, C., Brown, J. R. & Zhou, K. Z. (2007). Global brand expansion: how to select a market entry strategy. *Cornell Hospitality Quarterly*, 48(1), 13-27.
- Doukas, J. & Travlos, N. (1988). The effect of corporate multinationalism on shareholders wealth: evidence from international acquisitions. *Journal of Finance*, 43, 1161-1175.
- Dunning, J. H. (1980). Toward an eclectic theory of international production: some empirical tests. *Journal of International Business Studies*, 11(1), 9-31.
- Eckbo, B.E. & Norli, O. (2005). Liquidity risk, leverage and long-run IPO returns. *Journal of Corporate Finance*, 11(1-2), 1-35.

- Enderwick, P. (1989). *Multinational Service Firms*. Routledge: New York.
- Fama, E. F. (1998). Market efficiency, long-term returns, and behavioral finance. *Journal of Financial Economics*, 49, 283-306.
- Field, L. & Ciccotello, C. (2001). The thrift IPO as the first stage of its subsequent sale. *Financial Markets, Institutions and Instruments*, 10, 19-39.
- Geringer, J. M., Beamish, P. W. & daCosta, R. C. (1989). Diversification strategy and internationalization: Implications for MNE performance. *Strategic Management Journal*, 10(2), 109-19.
- Goerzen, A. & Makino, S. (2007). Multinational corporation internationalization in the service sector: A study of Japanese Trading Companies. *Journal of International Business Studies*, 38(7), 1149-1169.
- Gomes, L. & Ramaswamy, K. (1999). An empirical examination of the form of relationship between multinationality and performance. *Journal of International Business Studies*, 30 (1), 173–188.
- Grant, R. M. (1987). Multinationality and performance among British manufacturing companies. *Journal of International Business Studies*, 18(3), 79-89.
- Habib, M. & Victor, B. (1991). Strategy, structure, and performance of US manufacturing and service MNCs: A comparative analysis. *Strategic Management Journal*, 12(8), 589-606.
- Hensler, D. A., Rutherford, R. C. & Springer, T. M. (1997). The survival of initial public offerings in the aftermarket. *The Journal of Financial Research*, 20(1), 93-110.
- Hitt, M. A., Hoskisson, R. E. & Kim, H. (1997). International diversification: Effects on innovation and firm performance in product-diversified firms. *Academy of Management Journal*, 40, 767–798.
- Hofstede, G. (1980). *Culture's consequences: Internationalization differences in work-related values*. Beverly Hills, CA: Sage.
- Hsu, H., Reed, A. V. & Rocholl, J. (2010). The new game in town: Competitive effects of IPOs. *The Journal of Finance*, 65(2), 495-528.
- Hua, N. & Upneja, A. (2011). Do investors reward restaurant firms that go abroad? *International Journal of Contemporary Hospitality Management*, 23(2), 174-188

- Hughes, P. J. & Thakor, A. V. (1992). Litigation risk, intermediation, and the underpricing of initial public offerings. *Review of Financial Studies*, 5, 709-742.
- Hymer, S. (1976). International operations of national firms: A study of direct foreign investment. MIT Press: Cambridge, MA,
- Ibbotson, R. G. (1975). Price performance of common stock new issues. *Journal of Financial Economics*, 2, 235-272.
- Ibbotson, R. G., Sindelar, J. & Ritter, J. (1988). Initial public offerings. *Journal of Applied Corporate Finance*, 1, 37-45.
- Jain, B. A. & Kini, O. (1994). The post-issue operating performance of IPO firms. *Journal of Finance*, 49(5), 1699-1726.
- Jain, B. A. & Kini, O. (1999). The life cycle of initial public offering firms. *Journal of Business Finance & Accounting*, 26(9 & 10), 1281-307.
- Jain, B. A. & Kini, O. (2000). Does the presence of venture capitalists improve the survival profile of IPO firms? *Journal of Business Finance & Accounting*, 27(9), 1139-1176.
- Jain, B. A. & Martin, C. L. Jr. (2005). The association between audit quality and post-IPO performance: A survival analysis approach. *Review of Accounting & Finance*, 4(4), 50-75.
- Jegadeesh, N., Weinstein, M. & Welch, L. (1993). An empirical investigation of IPO returns and subsequent equity offerings. *Journal of Financial Economics*, 34, 153-175.
- Jensen, M. C. & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3, 305-360.
- Johanson, J. & Wiedersheim-Paul, F. (1975). The internationalization of the firm-Four Swedish cases. *Journal of Management Studies*, 12(3), 305-22.
- Johanson, J. & Vahlne, J. (1977). The internationalization process of the firm- A model of knowledge development and increasing foreign market commitments. *Journal of International Business Studies*, 8, 23-32.
- Johnson, J. N. (1978). Modified t tests and confidence intervals for asymmetric populations. *Journal of the American Statistical Association*, 73(363), 536-544.
- Johnson, J. & Miller, R. (1988). Investment banker prestige and the underpricing of initial public offerings. *Financial Management*, 17, 19-29.

- Jones, M (1999). The Internationalization of small high-technology firms. *Journal of International Marketing*, 7(4), 15-41.
- Kalbfleisch, J. D. & Prentice, D. L. (1980). The statistical analysis of failure time data. Wiley: New York.
- Keloharju, M. (1993). The winner's curse, legal liability, and the long-run price performance of initial public offerings in Finland. *Journal of Financial Economics*, 34, 251-277.
- Kogut, B. (1985). Designing global strategies: profiting from operational flexibility. *Sloan Management Review*, 26, 27-38.
- Koh, F. & Walter, T. (1989). A direct test of Rock's model of the pricing of unseasoned issues. *Journal of Financial Economics*, 23, 251-272.
- Lane, W. R., Looney, S. W. & Wansley, J. W. (1986). An application of the Cox proportional hazards model to bank failure. *Journal of Banking and Finance*, 10(4), 511-31.
- Li, J. & Guisinger, S. (1992). The globalization of service multinationals in the "triad" regions: Japan, Western Europe and North America. *Journal of International Business Studies*, 23(4), 675-696.
- LiPuma, J. A. (2011). Internationalization and IPO performance of new ventures. *Journal of Business Research*, doi:10.1016/j.jbusres.2011.05.007
- Ljungqvist, A. P. & Wilhelm, W. J. (2002). IPO allocations: Discriminatory or discretionary? *Journal of Financial Economics*, 65, 167-201.
- Ljungqvist, A. P. (2006). IPO underpricing. *Handbook of Corporate Finance: Empirical Corporate Finance*, Volume A, Chapter 7. *Handbook of Finance Series*, Elsevier/North-Holland.
- Loughran, T & Ritter, J. R. (1995). The new issues puzzle. *Journal of Finance*, 50(1), 23-51.
- Loughran, T. & Ritter, J. R. (2002). Why don't issuers get upset about leaving money on the table in IPOs? *Review of Financial Studies*, 15, 413-444.
- Loughran, T. & Ritter, J. R. (2004). Why has IPO underpricing changed over time? *Financial Management*, 33(3), 5-37.

Loughran, T. Ritter, J. R. & Rydqvist, K. (1994). Initial public offerings: international insights. *Pacific-Basin Finance Journal*, 2, 165-199.

Maksimovic, V. & Pichler, P. (2001), Technological innovation and initial public offerings, *Review of Financial Studies*, 14, 459-494.

Maynard, T. H. (2002). Spinning in a hot IPO- Breach of fiduciary duty or business as usual? *William and Mary Law Review*, 43, 2023-2092.

Meggison, W. & Weiss, K. (1991). Venture capitalist certification in initial public offerings. *Journal of Finance*, 46, 879-904.

Mello, A. S. & Parsons, J.E. (2000). Hedging and liquidity, *Review of Financial Studies*, 13, 127-153.

Michaely, R. & Shaw, W. H. (1994). The pricing of initial public offerings: Tests of adverse selection and signaling theories. *Review of Financial Studies*, 7(2), 279-319.

Mikhail, A. & Shawky, H. (1979). Investment performance of US-based multinational corporations. *Journal of International Business Studies* 10(1), 54-66.

Morck, R. & Yeung, B. (1991). Why investors value multinationality. *Journal of Business*, 64(2), 165-178.

Pagano, M., Panetta, F., & Zingales, L. (1998). Why do companies go public? *The Journal of Finance*, 53 (1), 27-63.

Peng, M. W. & Delios, A. (2006). What determines the scope of the firm over time and around the world? An Asia Pacific perspective. *Asia Pacific Journal of Management*, 23, 385-405.

Pittman, J. A. & Fortin, S. (2004). Auditor choice and the cost of debt capital for newly public firms. *Journal of Accounting and Economics*, 37, 113-136

Porter, M. E. (1986). Changing patterns of international competition. *California Management Review*, 28, 9-40.

Reilly, F. K. (1973). Further evidence on short-run results for new issues investors. *Journal of Financial and Quantitative Analysis*, 8, 83-90.

Reilly, F. (1977). New issues revisited. *Financial Management*, 28-42.

Ritter, J. R. (1984). The 'Hot Issue' Market of 1980. *Journal of Business*, 57, 215-240.

- Ritter, J. R. (1987). The costs of going public. *Journal of Financial Economics*, 19(2), 269-281.
- Ritter, J. R. (1991). The long-run performance of initial public offerings. *Journal of Finance*, 46(1), 3-27.
- Ritter, J. R. & Welch, I. (2002). A review of IPO activity, pricing, and allocations. *The Journal of Finance*, 57(4), 1795-1828.
- Roth, K. & O'Donnell, S. (1996). Foreign subsidiary compensation strategy: An agency theory perspective. *Academy of Management Journal*, 39, 678-703.
- Sanders, W. M. G. & Carpenter, M. A. (1998). Internationalization and firm governance: The roles of CEO compensation, top management composition, and board structure. *Academy of Management Journal*, 41(2), 158-178.
- Sapienza, H. J. & Gupta, A. K. (1994). Impact of agency risks and task uncertainty on venture capital-CEO interaction. *Academy of Management Journal*, 37(6), 1618-1632.
- Saudagaran, S. M. (2002). A review of literature on the market valuation of multinational firms. *Managerial Finance*, 28(3), 5-18.
- Sherman, A. & Titman, S. (2002). Building the IPO order book: Underpricing and participation limits with costly information. *Journal of Financial Economics*, 65, 3-29.
- Somers, M. (1996). Modeling employee withdrawal behavior over time: A Study of turnover using survival analysis. *Journal of Occupational and Organizational Psychology*, 69, 315-23.
- Spatt, C. S. & Srivastava, S. (1991). Preplay communication, participation restrictions, and efficiency in initial public offerings. *Review of Financial Studies*, 4, 709-726.
- Stanton, J. & Stanton, P. (2011). The concept of internationalization and its relevance to small and medium service enterprises (SMSEs). *The Business Review*, 17(2), 28-34.
- Stoll, H. R., & Curley, A. J. (1970). Small business and the new issues market for equities. *Journal of Financial and Quantitative Analysis*, 5, 309-322.
- Stopford, J. M. & Dunning, J. H. (1983). The world directory of the multinational enterprises. 1982-83. Detroit, Michigan: Gale Research Company.
- Stopford, J. M. & Wells, L. T. (1972). Managing the multinational enterprise. New York: Basic Books.

- Teoh, S. H., Welch, I. & Wong, T. J. (1998). Earnings management and the long-run market performance of initial public equity offerings. *Journal of Finance*, 53, 1935–1974.
- Tinic, S. M. (1988) Anatomy of initial public offerings of common stock. *Journal of Finance*, 43, 789–822.
- Titman, S. & Trueman, B. (1986). Information quality and the valuation of new issues. *Journal of Accounting and Economics*, 8(2), 159-172.
- Vernon, R. (1971). *Sovereignty at Bay: The multinational spread of US enterprises*. Basic Books: New York.
- Welch, L. (1992). Sequential sales, learning and cascades. *The Journal of Finance*, 47, 695-732.
- Welch, L. S. & R. Luostarinen (1988). Internationalization: Evolution of a concept. *Journal of General Management*, 14(2), 34-55.
- Weick, K. & Van Orden, P. (1990). Organizing on a global scale. *Human Resource Management*, 29, 49-62.
- Yosha, O. (1995). Information disclosure costs and the choice of financing source. *Journal of Financial Intermediation*, 4, 3-20.
- Zahra, S. A., Ireland, R. D. & Hitt, M. A. (2000). International expansion by new venture firms: International diversity, mode of market entry, technological learning, and performance. *Academy of Management Journal*, 43(5), 925–50.
- Zingales, L. (1995). Insider ownership and the decision to go public. *Review of Economic Studies*, 60, 425–448.

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