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# **The impact of interorganizational imitation on new venture international entry and performance.**

*Stephanie A. Fernhaber, Dan Li*

We examine the impact of interorganizational imitation on new venture international entry and subsequent performance. Using a sample of 150 U.S.-based publicly held new ventures, we find that new venture international entry is in part an imitative response to the internationalization of other firms in the venture's home country industry and/or subsets of firms with certain traits or outcomes. We also find that interorganizational imitation moderates the relationship between new venture international entry and profitability, but not the relationship between new venture international entry and sales growth. These findings contribute to the growing body of literature on new venture internationalization.

Given their lack of operating history and typically limited resources, why do some new ventures pursue internationalization? This is a central research question being addressed by international entrepreneurship scholars since the late 1980s. Although firm-specific motivations have been the focal point of studies to date (e.g., Autio, Sapienza, & Almeida, 2000; Oviatt & McDougall, 1995), organization theorists have long emphasized that organizations must adapt to their environment in order to remain viable (Duncan, 1972). Existing in a state of uncertainty as they struggle to obtain the legitimacy and resource bundle necessary to survive and grow, new ventures are characterized by a "high ratio of assumption to knowledge" (McGrath & MacMillan, 1995, p. 4). Such assumption leads new ventures to frequently look to the external environment to verify that they are on the right path and gain strategic direction. Therefore, it is necessary to take into consideration the influence of external environment in order to better understand the phenomenon of new venture internationalization (McDougall & Oviatt, 2005; Zahra & George, 2002).

Drawing insights from neoinstitutional and learning theories, this paper investigates how the internationalization of other firms in a new venture's external environment influences the international entry and subsequent performance of the new venture, through interorganizational imitation processes. Interorganizational imitation occurs when the use of a practice by one or more organizations increases the likelihood of that practice being adopted by other organizations (Haunschild & Miner, 1997). Players within the same home country industry are most visible to a firm and serve as a potential reference set (Henisz & Delios, 2001; Yiu & Makino, 2002). Neoinstitutional theorists consider interorganizational imitation as a standard response to uncertainty (DiMaggio & Powell, 1983) and a form of vicarious learning where firms mimic certain behaviors to improve competitiveness (Abrahamson & Rosenkopf, 1983). By addressing two important research questions, we argue that the international entry and subsequent performance of a new venture is in part influenced by interorganizational imitation. First, is the level of internationalization most frequently exhibited by other firms within a new venture's home country industry and/or by subsets of firms based on certain traits or outcomes positively associated with new venture international entry? Second, does international entry contribute more to new venture performance when reference firms exhibit a higher level of internationalization?

Our study contributes to the emerging literature on new venture internationalization. First, this paper fills a noted gap with respect to the need to explore the impact of external factors on new venture internationalization (Fernhaber, McDougall, & Oviatt, 2007; McDougall & Oviatt, 2005; Zahra & George, 2002). Thus, a greater understanding of why new ventures internationalize is attained. Second, although neoinstitutional and learning theories are well noted for their descriptive value in understanding why certain behaviors exist, this paper pushes the frontier further by examining whether conforming to industry practices such as internationalization necessarily results in higher levels of new venture performance. As a result, both the normative and prescriptive implications of interorganizational imitation are considered. Third, interorganizational imitation has been applied to better understand the internationalization behavior of mature multinational corporations (Gimeno, Hoskisson, Beal, & Wan, 2005; Henisz & Delios, 2001); this paper contributes by extending these findings in the context of new ventures. Further insight is gained by focusing on the impact of interorganizational imitation on international entry, adding to prior research

examining other aspects of internationalization such as foreign entry mode (e.g., Lu, 2002), location choice (e.g., Yiu & Makino, 2002), or global learning (e.g., Lam, 2003).

The paper proceeds with a background on interorganizational imitation that leads to a discussion on the applicability to internationalization. We then apply neoinstitutional and learning theories to develop hypotheses that specifically consider the effect of interorganizational imitation on new venture international entry and performance. We hypothesize three imitation effects--based on frequency, trait, and outcome--on new venture international entry. We then hypothesize on the moderating effects of imitation on the relationship between new venture international entry and subsequent performance. The hypotheses are tested using a sample of 150 publicly held, U.S.-based new ventures across 46 industries.

## Theory and Hypotheses

### Interorganizational Imitation and Internationalization

Interorganizational imitation occurs when the use of a practice by one or more organizations increases the likelihood of it being adopted by other organizations (Haunschild & Miner, 1997). Based on neoinstitutional and learning theories, three selective modes of interorganizational imitation have been distinguished in the literature: frequency-based imitation (mimicking very common practices), trait-based imitation (mimicking practices of firms with certain features), and outcome-based imitation (mimicking practices of firms that exhibit certain outcomes).

Both frequency-based and trait-based imitation depend mainly upon the social environment and can best be explained by neoinstitutional theory. In the late 1970s, neoinstitutional theory emerged with the assertion that organizational structure and practices not only reflect technical demands and resource dependencies but are also shaped by institutional forces (Meyer & Rowan, 1977; Zucker, 1997). In contrast to prior theory on institutionalism, neoinstitutional theory emphasizes legitimacy, the embeddedness of organizational fields and the centrality of classification, routines, scripts, and schema (DiMaggio & Powell, 1991). Homogeneity among organizations is seen as a social process in which firms conform to practices of other firms in their population in order to be perceived as legitimate (Meyer & Rowan). As more firms within a population display certain behavior/adopt a certain practice, that behavior/practice eventually becomes taken for granted as a part of social reality (Zucker).

Outcome-based imitation, in contrast, depends more on technical rationale and is supported by learning theories. Imitation is seen as a form of vicarious learning for the imitating organization (Cyert & March, 1963) and can sometimes result in "competitive bandwagons" (Abrahamson & Rosenkopf, 1983). Firms purposely imitate good practices and avoid bad practices in an attempt to become more competitive.

While selective modes of interorganizational imitation have been evidenced to occur in various aspects of firm behavior such as bank branching decisions (Barreto & Baden-Fuller, 2006), acquisitions (Haunschild & Miner, 1997), or common strategies (Mauri & Michaels, 1998), existing research also provides support for the imitation of behaviors relating to firm internationalization. In multiple studies that have been conducted on the foreign entry mode choice of Japanese firms (Henisz & Delios, 2001; Lu, 2002; Yiu & Makino, 2002), the results suggested that firms look to others in a similar position in making their decisions. For instance, both Yiu and Makino and Henisz and Delios found support for imitative behavior based specifically on those incumbents in the firm's home country. These findings suggest that firms perceive their home country as a relevant reference base for information search. Lu reports similar results but specific to entry mode choices. Guillen's (2002) study of South Korean firms in China confirms the imitation of location selection decisions and advances the imitation effects to home country industry level.

In a more recent study, Gimeno et al. (2005) examined the mimicry of foreign location choice by large firms within the telecommunications industry. Given the unique regulatory conditions in the time period of their study, they were able to discriminate mimicry motivated by competitive reasons from that motivated by neoinstitutional pressures. Their results suggest that both competitive and neoinstitutional mechanisms were at play, with one or the other more relevant depending upon how narrowly or broadly the practice was defined:

Because narrowly defined practices, such as "entry into Mexico," are more likely to be crowded out by prior adoption, competitive motivations may be more relevant when such crowding out is possible. Broadly defined practices such as "internationalization" may not be devaluated by prior adoption and may be more amenable to diffusion by noncompetitive processes (Gimeno et al., p. 315).

This supports earlier theoretical work suggesting that a neoinstitutional view supplements that of competitive rationality in obtaining a more complete picture of firm homogenization (DiMaggio & Powell, 1983).

However, to the best of our knowledge, no research has investigated the interorganizational imitation of internationalization by new ventures. Although not specific to new ventures, Guillen (2002) did expect the imitation behavior to be more highly associated with younger firms than older firms; yet no significant findings were reported. This is likely due to the use of a continuous variable to measure the age of firms, which ranged from 2 to 99 years old. The magnitude of imitation probably levels out after a certain number of years, perhaps when a new venture begins to transform from its growth stage to the mature stage, at which less uncertainty is confronted on a regular basis and the survival mentality of a new venture is lessened. This explanation is in part supported by the research of Lu (2002), who did find experience to moderate the relationship between isomorphic behavior and foreign entry mode choice. Firms with less foreign entry experience tended to rely more on the frequency of other firms' past entry mode choices in deciding how they would enter. In short, although in great need to enrich our understanding of new venture internationalization, the research gap remains regarding the interorganizational imitation of internationalization by new ventures.

#### New Venture International Entry

Research exploring the internationalization of new ventures has increased steadily from the late 1980s. Given that new ventures typically lack legitimacy and have limited access to resources (Stinchcombe, 1965), the majority of this research has focused on firm-specific motivations to internationalize. For example, scholars note the desire of a new venture to internationalize in order to fully exploit a unique product (e.g., Oviatt & McDougall, 1994, 1995) before their large or potential foreign competitors learn about new products and business ideas. In addition, Autio et al. (2000) argue that new ventures may internationalize to take advantage of their flexibility and newness, whereas it can be difficult for mature firms to change strategic directions and internationalize due to structural inertia pressures. Among the many other firm-specific reasons for new ventures to internationalize are the desire to take advantage of foreign networking opportunities (Reuber & Fischer, 1997), following of target customers, and the need to expand the customer base to become profitable or survive (Oviatt & McDougall, 1995).

While the importance of these firm-specific motivations to new venture internationalization has been well recognized, the impact of relative industry conditions on new venture internationalization has not been investigated from an institutional perspective. Organization theorists have long emphasized that organizations must adapt to their environment in order to remain viable (e.g., Duncan, 1972). This is particularly relevant for new ventures considering their existence in a state of uncertainty. New venture research has reported the influence of industry structure on some aspects of new venture behavior, such as the new venture formation rate (e.g., Dean & Meyer, 1996), performance (e.g., Keeley & Roure, 1990; Robinson, 1999), and choice of strategy (e.g., Robinson & McDougall, 2001; Sandberg & Hofer, 1987). Yet no research has been conducted, from an institutional perspective, to examine the external environment's effect on new venture internationalization. Actually, awareness of such effects is suggested by the frequent control of industry in empirical studies on new venture internationalization (e.g., Bloodgood, Sapienza, & Almeida, 1996; Shrader, Oviatt, & McDougall, 2000). While together these studies imply the existence of a relationship between industry structure and new venture internationalization, in-depth

understanding is needed regarding the nature and rationale behind this relationship (Zahra & George, 2002). In particular, one important condition that has not been adequately explored in the context of new venture internationalization is interorganizational imitation processes. Drawing insights from neoinstitutional and learning theories, this paper fills such a gap by exploring the impact of interorganizational imitation on new venture internationalization and subsequent performance.

Firms that succeed in becoming isomorphic with their environments "maximize their legitimacy and increase their resources and survival capabilities" (Meyer & Rowan, 1977, p. 352). Given the limited survival rate of new ventures, which is suggested to be related to a lack of legitimacy (Stinchcombe, 1965), it is likely that new ventures will attempt to reduce these liabilities in whatever ways possible. Further, the continued need for additional resources as the new venture grows is another incentive for imitative behavior (Greiner, 1998). Thus, the premise of this study is that because of the uncertainty in their environment, new ventures may feel pressured to conform to certain practices in their industry, such as internationalization.

An element of strategic choice also exists, in that new ventures may respond to these pressures by selectively choosing which firms in their industry to conform to (Scott, 2001). Some firms within an industry are likely to be more visible and serve as a potential reference set leading to firm internationalization. As distinguished by Haunschild and Miner (1997), firms tend to mimic the behaviors most frequently undertaken by the entire reference group and/or the behaviors undertaken by a subset of firms that exhibit certain traits or outcomes.

**Frequency-Based Imitation.** Frequency-based imitation involves the mimicking of practices that have been adopted by a large number of organizations (Haunschild & Miner, 1997). From a neoinstitutional perspective, one reason that firms adopt practices that many other firms have adopted is because when many firms adopt a practice, the legitimacy of the practice is enhanced (Aldrich & Fiol, 1994). Obtaining legitimacy can be especially important in allowing new ventures to access the resources necessary to survive and grow (Aldrich & Fiol; Suchman, 1995). For example, being perceived as a legitimate organization by venture capitalists or future stockholders is necessary in obtaining key financial resources. In addition, new ventures might wish to be perceived as legitimate organizations simply for normative approval (Aldrich & Fiol; Suchman). This is supported by Honig and Karlsson (2004), where entrepreneurs were found to be more likely to write a business plan if such a task were deeply rooted in the industry. Similarly, new ventures are hereby proposed to base their international entry decisions on the level of internationalization most frequently exhibited by industry firms. By mimicking the common industry practice regarding internationalization, the new venture hopes to be perceived as legitimate.

Another reason that new ventures might imitate the level of internationalization most frequently exhibited by firms in their home country industry relates to a more unconscious process. The more common a practice is for a group of firms, the more likely it is to be taken for granted as being part of social reality (Zucker, 1997). It no longer is a question of whether a firm should undertake the practice; rather, it is simply done because not to do so would be inconceivable. New ventures have a limited operating history and often turn to the external environment for knowledge in making strategic decisions (McGrath & MacMillan, 1995).

Scholars have also suggested that the frequency of use may serve as a valid indicator of the technical value of a given practice (Abrahamson & Rosenkopf, 1983). In the context of this study, a new venture may perceive internationalization as an effective and valuable business practice in a given industry if many other firms are engaged in international business. On the other hand, if very few firms are international or conducting limited business abroad, the venture may not perceive internationalization as an effective business practice. Thus, attaining effectiveness of their limited resources is yet another reason why new ventures may imitate the level of internationalization most frequently exhibited by firms in their home country industry. By imitating the common practice, new ventures attempt to overcome the liability of newness (Stinchcombe, 1965) and vicariously exploit what is assumed to be a key to survival and success.

**Hypothesis 1a:** The higher the level of internationalization within a new venture's home country industry, the greater the likelihood of international entry by the new venture.

Trait-Based Imitation. In contrast to frequency-based imitation, trait-based imitation reflects a more selective mimetic process and focuses on the imitation of practices of a subset of organizations with certain features (Haunschild & Miner, 1997). Although many reference groups likely exist, the possibility is here considered that new ventures will mimic the internationalization by a subset of firms within their home country industry based on firm size. As argued by McKendrick (2001), new ventures may look to smaller firms that are likely to be similar to their own size and with which the new ventures can therefore more easily identify. Yet it is also possible that new ventures may imitate large firms in their industry (Haveman, 1993), as such firms are typically more visible and receive more attention from the media. Given our interest in this study in high-growth new ventures, we focus on the imitation of large firms due not only to their visibility but also because these high-growth ventures are likely to aspire to and thus perceive large firms as a similar set of firms in which to imitate.

Legitimacy is often positively associated with firm traits such as large size (DiMaggio & Powell, 1983; Fombrun & Shanley, 1990). Thus, as with frequency-based imitation, new ventures might selectively imitate internationalization by large firms within their home country industry in order to obtain the legitimacy necessary to attract resources and/or to be more effective. Moreover, new ventures may seek to acquire reputational status by imitating large firms in their industry (Fombrun & Shanley). Customers can be hesitant to do business with new ventures because of the limited operating history and typically small size of new ventures. However, if a new venture adopts certain practices that large organizations in their home country industry perform, the new ventures can be perceived as more legitimate and reputable by their customers. Internationalization is likely a practice that new ventures are able to observe in large firms and thus are also likely to imitate.

Large firms, which are likely more established and knowledgeable about the industry, present a model of success for new ventures that are characterized by short operating history and limited knowledge. Even if new ventures do not fully understand why a certain practice is undertaken, they can still assume that such a practice contributes to survival and success. Accordingly, we hypothesize:

Hypothesis 1b: The higher the level of internationalization by large firms within a new venture's home country industry, the greater the likelihood of international entry by the new venture.

Outcome-Based Imitation. In outcome-based imitation, organizations may selectively imitate practices that are perceived to provide certain outcomes (Haunschild & Miner, 1997). The imitation process is largely technically oriented, in comparison to frequency-based and trait-based imitation, which more strongly involve social processes (Haunschild & Miner; Lu, 2002). That is, imitation is motivated by observing practices that clearly have produced valuable economic returns for others rather than being motivated solely by a quest for legitimacy. An example is presented by the knowledge spillover literature, in which firms observe and/or imitate innovative practices in order to improve their likelihood of success (Audretsch, 1998; Feinberg & Gupta, 2004).

As internationalization involves expansion into new markets, constituting additional revenue sources for the internationalizing firm, one outcome that is likely to be perceived as a consequence of internationalization is firm growth. On this basis, we suggest that new ventures will tend to mimic internationalization by a subset of firms within their home country industry that exhibit a high level of growth. This is supported by organizational learning theorists suggesting that firms learn by following practices with favorable consequences and avoiding practices with negative consequences (Cyert & March, 1963). In essence, high-growth firms serve as a set of best practices for new ventures entering the industry. Thus, new ventures can be more effective and improve their likelihood of success by copying the practices, such as internationalization, undertaken by high-growth firms in their industry.

Hypothesis 1c: The higher the level of internationalization by the fastest-growing firms within a new venture's home country industry, the greater the likelihood of international entry by the new venture.

## New Venture Performance

Although interorganizational imitation may thus offer descriptive insight into why new ventures internationalize, does such imitative behavior result in superior new venture performance? In other words, should new ventures be basing their internationalization decisions on the practices of other industry firms? A secondary purpose of this

paper is to add to the debate as to whether or not conformity leads to higher levels of performance (Honig & Karlsson, 2004; Scott, 2001).

Prior research suggests that new venture internationalization leads to increased performance. Zahra, Ireland, and Hitt (2000) attribute the increase in new venture performance to the breadth, depth, and speed of technological learning obtained when internationalizing. Through entering foreign countries, new ventures are exposed to many different sources of innovation and interact in local environments. This enables the new venture to see more opportunities for technological development. Other scholars conclude that the increased performance of ventures is a result of capturing potential profit opportunities abroad and being better able to withstand competitive pressure (Bloodgood et al., 1996; McDougall & Oviatt, 1996; Sapienza, Autio, George, & Zahra, 2006). Lu and Beamish (2001) argue that the internationalization and performance linkage is positive but contingent upon conditions such as modes of entry adopted in the internationalization process and/or the extent to which a firm internationalizes. We likewise argue that the extent to which new venture international entry leads to performance is dependent upon the extent to which industry imitation takes place.

International Entry, Frequency-Based Imitation, and Performance. Neoinstitutional theory largely explains the social process that is argued to lead new ventures to base their international entry decision on the level of internationalization most frequently observed in other industry firms. Such interorganizational imitation occurs as a willingness to conform to institutionally prescribed expectations regardless of whether it is profitability based or efficient to do so, but in order to fit in with their peers. As noted by Meyer and Rowan (1977, p. 340), "institutionalized products, services, techniques, policies, and programs function as powerful myths, and many organizations adopt them ceremonially." Thus, firms mimic others in order to increase their level of legitimacy, resources, and survival capabilities (Meyer & Rowan).

Although increased performance is not the direct motivation of neoinstitutional behavior, a review of the literature finds that higher levels of performance do follow such institutionally prescribed behavior in some instances and do not in other cases. For example, Honig and Karlsson (2004) found that neoinstitutional forces influence the propensity for entrepreneurs to produce business plans but that the actual act of business planning was not significantly related to survival or profitability. The authors concluded that writing a business plan was symbolically done and offered internal value, but it did not lead to competitiveness. However, in another study, Brouthers, O'Donnell, and Hanjimarou (2005) demonstrated that firms from emerging markets are able to improve their export performance satisfaction when they imitated the home country multinational enterprise (MNE) strategy in each triad nation. Emerging market firms are typically resource poor, and it is argued that they benefit from drawing on and leveraging the collective wisdom, experience, and resources of large firms. This suggests that the resulting performance implications of interorganizational imitation may depend upon the specific context and behavior being imitated.

In the context of new venture international entry, we posit that new ventures are likely to achieve higher levels of performance when they base their internationalization decisions on the industry norm observed in their home country. New ventures have a "high ratio of assumption to knowledge" (McGrath & MacMillan, 1995, p. 44) and, like the emerging market firms studied by Brouthers et al. (2005), new ventures can maximize their strategic choices by drawing on the wisdom and experience of industry firms in their home country. Sapienza et al. (2006) argue that knowledge of foreign markets will increase the probability of new venture growth following international entry. Although the knowledge of foreign markets is assumed, in this case, to come from the prior international experience of the management team, it is also likely that new ventures can acquire internationalization knowledge vicariously through observation of other firms in their reference group. Thus, if the international entry decision of a new venture is based on mimicking the popular behavior of industry firms, new ventures can also look to these industry firms for knowledge as to how to internationalize, improving their level of performance.

In addition to international knowledge, many other reputational, social, and tangible resources are needed by a new venture for successful entry into the international arena and for success in overcoming the associated constraints related to entering an international market. Otherwise referred to as the liability of foreignness, such constraints might include transaction costs related to spatial distance as well as the unfamiliarity and lack of legitimacy within the host country context (Zaheer, 1995). For this reason, new ventures must rely heavily on alternate governing structures or partnerships in the external environment in order to access resources (Oviatt & McDougall, 1994). If

the top management team of a new venture decides to internationalize because it is the industry norm and therefore the "correct" thing to do, the new venture will likely receive better acceptance of the decision and support by key resource holders because the decision appears to be a legitimate strategic decision. However, if a new venture decides to enter international markets because it sees an opportunity, even though internationalization is not the norm for the industry, the new venture may have more difficulties in obtaining "buy in" from resource providers. Thus, although a positive linkage between new venture internationalization and performance is established in the literature (McDougall & Oviatt, 1996), we argue that the magnitude of the relationship depends upon the norm behavior in the industry; the relationship between new venture internationalization and performance will be higher when coupled with a high level of internationalization by other industry firms.

Hypothesis 2a: The higher the level of internationalization within a home country industry, the more positive the association between new venture international entry and performance.

International Entry, Trait-Based Imitation, and Performance. Trait-based imitation is also explained chiefly by neoinstitutional theory, but is more selectively based than frequency-based imitation. Specifically, large firms in a new venture's industry are argued to serve as a reference group that new ventures look to in making decisions. New ventures exist in a state of high uncertainty (McGrath & MacMillan, 1995); to improve their chances of success, they imitate what are assumed to be the more legitimate strategies being undertaken by their large counterparts. The internationalization of large industry counterparts can lead to a reduction in transaction costs for internationalizing new ventures, and thus to improved performance, for at least three reasons. First, this can occur through the development of infrastructure in the country of entry and/or internationalization knowledge. For instance, new ventures can colocate overseas with large industry firms in order to benefit from the informal knowledge spillovers and take advantage of the pool of qualified workers that is being created (Birkinshaw & Hood, 2000). Second, large industry firms that internationalize can create a rising demand in the country of entry that a new venture can likewise capitalize on. Dunning (1995) argues that an increasing number of small firms exist in the international arena that are part of keiretsu-like networks typically dominated by large, lead, or flagship firms. New ventures can specialize in niche markets that complement their large competitor offerings overseas. Third, through observing large industry firms, new ventures can also gain critical knowledge to determine whether or not internationalization is important to performance, whether international opportunities exist, and what entry methods should be used (Anand, Glick, & Manz, 2002). As demonstrated by McDougall, Robinson, and DeNisi (1992), the fit between a new venture's strategy and its industry is a critical determinant of new venture performance.

Based on these premises, a new venture that internationalizes to imitate their large industry counterparts is likely to perform better. Thus, we posit that if multiple new ventures enter foreign markets, the new ventures in industries in which the largest firms are highly international will ultimately perform better.

Hypothesis 2b: The higher the level of internationalization by the largest firms within a home country industry, the more positive the association between new venture international entry and performance.

International Entry, Outcome-Based Imitation, and Performance. As opposed to frequency-based or trait-based imitation, outcome-based imitation is explained less by the social processes relating to neoinstitutional theory than by the technical rationale of learning theories. In this case, it is the international behavior of firms that have achieved high levels of growth in a new venture's home country industry that motivate international entry by a new venture. Interestingly, a higher level of performance is still not guaranteed when interorganizational imitation is based on technical rationale. Abrahamson and Rosenkopf (1983) demonstrated how the adoption of innovations by other industry firms can sometimes lead to negative returns, even when the adoption is spurred by competitive reasoning. In the context of new venture internationalization, however, we argue that it again depends upon the context and nature of the behavior imitated. Specifically, we suggest that new ventures will achieve higher levels of performance when they imitate the internationalization behavior of fast-growth firms. Like large firms, fast-growth firms or gazelles tend to receive high levels of attention from the media. Thus, it is possible that new ventures could more successfully internationalize through leveraging knowledge relating to how best to exploit such an opportunity. By observing and imitating firms that are achieving abnormal rates of growth, one is more apt to see emerging opportunities that may not yet be fully exploited or saturated. For these reasons, we posit that the relationship between new venture international entry and performance will be more positive in industries where the high-growth firms exhibit higher levels of internationalization.



Hypothesis 2e: The higher the level of internationalization by the fastest-growing firms within a home country industry, the more positive the association between new venture international entry and performance.

## Methodology

### Sample

This study utilizes a sample of 150 U.S.-based new ventures across 46 industries that completed an initial public offering (IPO) in either 1999 or 2000. The Securities Data Corporation's (SDC) Global New Issues database, a source that provides research on public offerings, was used to identify firms that potentially could be included in the sample. Financial data and other company-specific information were obtained through the ventures' prospectus or Compustat North America. Offered by Standard and Poor's Investment Services, Compustat North America is a standardized database that provides fundamental and market information on publicly held companies in the United States and Canada.

All firms that met the following criteria were included in the sample. First, the firms had to be located in the United States and had to have conducted an IPO in 1999 or 2000. Public firms were chosen in order to have a consistent data source against which to measure both the independent and dependent variables. Similarly, U.S. firms were chosen for data availability as well as to have a way to eliminate the influence of other environmental variables that differ among countries. Including firms that conducted an IPO in either 1999 or 2000 provided a larger sample size for testing the hypotheses.

Second, the firms had to be 6 years old or younger at the time of IPO. This is consistent with the standards for other new venture studies (e.g., Robinson, 1999; Shrader et al., 2000), as the first 6 years are regarded as a crucial period in which survival is determined for a majority of companies (U.S. Small Business Administration, 1992).

Third, to ensure the temporal sequence between reference groups' internationalization and new ventures' imitation of such internationalizing activities, we include in the sample only new ventures that had not internationalized as of 2 years preceding their IPOs. Multiple archival sources have been searched to identify when a new venture internationalized, including ventures' prospectus (424Bs), publicly available annual reports (10 Ks), company websites, the Directory of Corporate Affiliations, Lexis-Nexis Academic (for news clippings), Mergent Online, RDS Business Reference Suite (for news clippings), and Thomson Financial Database. In our analyses, a 2-year time lag is embedded between reference groups' internationalization and new ventures' international entry and performance.

Fourth, all firms that were corporately held or that resulted from a corporate spin-off were eliminated from the sample, leaving only those new ventures that were independently owned and operated. As has been argued in other studies utilizing IPO venture data (e.g., Carpenter, Pollock, & Leary, 2003; Florin, Lubatkin, & Schulze, 2003; Robinson & McDougall, 2001), firms that are corporately held or results of spin-offs are not truly new ventures and may have additional experience and networks that independent new ventures do not possess.

To ensure that the 1999-2000 time frame of the study was appropriate, a sampling of new ventures that had gone public between 1995 and 2002 was conducted. First, we performed a one-way ANOVA test, which confirmed that there was no significant difference among other key firm characteristics (return on sales [ROS], Assets, Sales, international entry) based on the year of IPO. Second, to verify whether businesses performed "as usual" in 1999 and 2000 at the macro level, we collected data to compute the degree of internationalization and the performance, both at the industry level, between 1995 and 2002. We employed multiple measures for each of the industry-level variables. (1) After compiling the data set at the industry level, we ran ordinary least squares (OLS) regression of industry performance on industry internationalization with a series of year dummy variables included to examine possible temporal effects. Coefficients on year 1999 and year 2000 are not statistically significant when the dependent variable is industry ROS, industry sales growth, or industry return on assets (ROA) when different years serve as the comparison baseline. These results illustrate that our sample of 1999-2000 is appropriate and not biased. In addition, instead of using a series of dummy variables for all years, we generated a dummy variable taking the value of 1 for years 1999 and 2000 (our sample year) and 0 for all other years (i.e., 1995-1998, 2001, and 2002). The

same OLS regression models were conducted, and no significant temporal difference was observed for years 1999 and 2000 as a group, offering additional support for the sample period.

A summary of the number of new ventures within each industry represented is presented in Table 1. Approximately 57% of the new ventures came from the service industries (standard industrial classification [SIC] 7331-8734), of which the majority were specifically computer programming and software related. This is likely due to the "Internet bubble" during this time period. However, new ventures were also represented among the other industry types.

#### Dependent Variables

Two sets of dependent variables and regressions were used in this study. The first dependent variable, for the test of our first set of hypotheses predicting the effect of interorganizational imitation on new venture international entry, is international entry of a new venture. The second dependent variable of interest is new venture performance. Because prior research and reviews of performance measures in entrepreneurship studies indicate that profitability and sales growth are two of the most appropriate performance goals for new ventures (Murphy, Trailer, & Hill, 1996; Robinson, 1999), both measures were included to assess new venture performance in this study.

**New Venture International Entry.** A dichotomous variable was created that considered whether or not a new venture had entered international markets (e.g., McDougall, 1989; McDougall & Oviatt, 1996; Reuber & Fischer, 2002). Data were sourced from Compustat North America for the fiscal year in which the new venture underwent the IPO.

**New Venture Performance.** To assess new venture performance, both profitability and sales growth variables were gathered. Consistent with previous studies (Lu & Beamish, 2001; Robinson & McDougall, 2001; Shrader, 2001), the ROS was calculated to assess the profitability of a new venture. Both ROS and sales growth were operationalized by taking the average of each for the first three fiscal years following the IPO of a new venture. The use of a 3-year average is common (Robinson & McDougall, 1998) because it smoothes out yearly fluctuations in the data, which can be quite marked for the high-growth new ventures in this sample. The data were taken from Compustat.

#### Independent Variables

To assess the interorganizational imitation of other firms or subsets of firms in a given industry, previous studies were followed that typically calculate the average behavior among the respective firms (e.g., Davis, 1991; Schoonhoven, Eisenhardt, & Lyman, 1990). All of the variables were gathered 2 years prior to IPO in order to allow for a 2-year lag between the independent and dependent variables. For the reference groups of large firms and fast-growth firms, the top three (2) firms in each category were included in order to create a more conservative test of the hypothesized relationship (Lu, 2002; March, Sproull, & Tamuz, 1991).

**Industry Internationalization--All Firms (Frequency-Based Imitation).** In order to determine the average level of internationalization by other firms within the new ventures' home country industry, all firms that belonged to the primary SIC code of each new venture were first identified in Compustat North America. Within each SIC code, the average foreign sales to total sales ratio of all firms was then calculated for the year prior to the new venture's IPO.

**Industry Internationalization--Largest Firms (Trait-Based Imitation).** The average level of internationalization by the largest firms within the new ventures' home country industry was calculated by taking the average foreign sales to total sales ratio of the three firms within each SIC code that had the largest amount of assets in the year prior to the new venture's IPO.

**Industry Internationalization--Fastest-Growth Firms (Outcome-Based Imitation).** To assess the average internationalization of the fastest-growth firms in an industry, we first identified the three firms that exhibited the highest growth rate over a 2-year period (3) leading into the year prior to the new venture's IPO. The percentage sales growth was then calculated as  $([\text{Sales.sub.t}] - [\text{Sales.sub.t-2}]) / ([\text{Sales.sub.t-2}])$ , where the year preceding the IPO is defined as t, to determine the three fastest-growth firms. The foreign sales to total sales ratio was averaged for these three firms.

## Control Variables

As in other new venture internationalization studies, we incorporated control variables for both the age and the size of the new venture. First, age is likely to influence a new venture's propensity to internationalize and grow because older firms typically have more resources and a greater number of network relationships to rely on (Kotha, Rindova, & Rothaermel, 2001; Zahra, Neubaum, & Huse, 1997; Zahra et al., 2000). The age of the new venture at IPO was determined from the founding date listed in the SDC's Global New Issues database and cross-validated within the new ventures' prospectus. Second, the size of the new venture was considered because large firms have more resources available, which might influence their ability to internationalize (Bloodgood et al., 1996; Burgel & Murray, 2000; Zahra et al., 1997, 2000). Size was operationalized through the new ventures' total assets in their IPO year. Because all financial data are taken as of the fiscal year end following the new venture's IPO, the proceeds of the IPO are included in the assets figure.

Table 1

Industries Represented by New Ventures in Sample (n = 150)

n	SIC description (code)	n	SIC description (code)
1	Lumber and Wood PDS (2400)	1	Electric Services (4911)
2	Commercial Printing (2750)	1	Computers & Software—Whol (5045)
3	Pharmaceutical Preparations (2834)	1	Drugs and Proprietary—Whol (5122)
2	Biological PDS (2836)	1	Eating Places (5812)
1	Oil & Gas Field Machinery, Equipment (3533)	1	Miscellaneous Retail (5900)
1	Computer Storage Devices (3572)	4	Catalog, Mail-Order Houses (5961)
2	Computer Communication Equipment (3576)	1	Short-Term Bus Credit (6153)
1	Computer Peripheral Eq (3573)	1	Mortgage Bankers & Loan Corr (6162)
1	Office Machines (3579)	2	Ins Agents, Brokers & Service (6411)
1	Electrical Insl Apparatus (3620)	1	Real Estate Investment Trust (6798)
1	Motors and Generators (3621)	2	Direct Mail Advertising Svcs (7331)
1	Household Audio & Video Eq (3651)	31	Comp Programming & Data Processing (7370)
6	Tele & Telegraph Apparatus (3661)	2	Computer Programming Services (7371)
4	Radio, TV Broadcast, Comm Eq (3663)	28	Prepackaged Software (7372)
1	Electronic Comp, Accessories (3670)	5	Comp Integrated Sys Design (7373)
7	Semiconductors, Related Devices (3674)	1	Telephone Interconnect Sys (7385)
3	Lab Analytical Instruments (3826)	4	Business Services (7389)
1	Ortho, Prosth, Surg Appl, Supply (3842)	1	Misc Amusement & Rec Service (7990)
2	Electromedical Apparatus (3845)	1	Medical Laboratories (8071)
2	Radiotelephone Communication (4812)	2	Educational Services (8200)
4	Phone Communication (4813)	1	Engineering Services (8711)
1	Cable and Other Pay TV Svcs (4841)	6	Comd Physical, Biological Resh (8731)
3	Communication Services (4899)	1	Testing Laboratories (8734)

The prior international experience of the ventures' top management teams was also controlled for because it has been found to lead to new venture internationalization (Bloodgood et al., 1996; Sapienza et al., 2006). From the biographies provided in the prospectus, a count (4) was obtained of the top management team members whose biographies indicated that they had worked in a foreign company or for the foreign subsidiary of a U.S.-based company (Bloodgood et al.; Carpenter et al., 2003).

As venture capital ownership has been shown to influence internationalization (George, Wiklund, & Zahra, 2005), a dummy variable was created to control for whether or not the new venture had received venture capital financing prior to the IPO.

In addition, a dummy variable was created to control for the year of IPO because the new ventures identified in the sample had completed an IPO in 1999 or 2000, and either year could have had other unobservable effects (Carpenter et al., 2003).

We controlled for industry growth because industries that are experiencing higher growth might have a higher likelihood of both new venture internationalization (Shrader et al., 2000) and performance (Robinson & McDougall, 1998). To measure the level of industry growth, the percentage sales growth for all public firms within the new venture's SIC code was calculated over a 2-year period. Like the industry independent variables, this variable was

also lagged 1 year behind the IPO year of the new venture and calculated as follows:  $([\text{Sales.sub.t}] - [\text{Sales.sub.t-2}]) / ([\text{Sales.sub.t-2}])$ , where the year preceding the IPO is defined as t. The percentage sales growths for all firms were then averaged by SIC code for the period.

It is also possible that new ventures could internationalize and/or perform higher if internationalization ensured competitiveness for the industry. (5) Thus, an additional control variable was introduced for the relative performance of industry firms that had internationalized compared with those industry firms that were domestic. To calculate this variable, the ROS was calculated for all public firms within the new venture's SIC code in the year prior to IPO. The firms were then split into two groups based on whether or not any international sales had been reported, and the average ROS for each group was calculated. The average ROS for domestic firms was then subtracted from the average ROS for international firms to determine the relative performance or attractiveness of internationalizing.

## Analysis

To examine the implications of interorganizational imitation on the international entry and performance of a new venture, a two-step analytical technique was used (Brouthers, Brouthers, & Werner, 2003; Brouthers & Nakos, 2004). In step one, we used a logistic regression to determine whether the international entry of a new venture was explained by the internationalization behavior of other home country firms in the venture's industry. The specification of the logistic model is:

$$\text{International Entry}^* = [\gamma]w + [\text{upsilon}]$$

$$\text{International Entry} = 1 \text{ if } \text{International Entry}^* > 0, 0 \text{ otherwise.}$$

The vector w includes an intercept constant, the control variables (age, assets, prior international experience, venture capital backing, IPO year dummy, industry growth rate, relative performance), and the three independent variables: industry internationalization--all firms, industry internationalization--largest firms, and industry internationalization--fastest-growth firms.

In step two, the implications for performance were examined through the use of a treatment-effects model (6) in Stata. A treatment-effects model was appropriate because it considers the effect of an endogenously chosen binary treatment (international entry) on another endogenous continuous variable (sales growth), conditional on two sets of independent variables. The treatment-effects model fitted in the second step estimates the maximum likelihood estimates of the following parameters:

$$\text{Performance} = [\beta]x + [\delta]\text{International Entry} + [\text{epsilon}]$$

$$\text{International Entry}^* = [\gamma]w + [\text{upsilon}]$$

Where:  $\text{International Entry} = 1 \text{ if } \text{International Entry}^* > 0, 0 \text{ otherwise.}$

And where  $[\text{epsilon}]$  and  $[\text{upsilon}]$  have a bivariate distribution with a zero mean and covariance matrix

$$\begin{bmatrix} [\sigma] & [\rho] \\ [\rho] & 1 \end{bmatrix}$$

The vector  $x$  includes an intercept constant, control variables (age, assets, venture capital backing, IPO year dummy, industry growth rate, relative performance), the three industry internationalization variables, and the respective interaction variables. In both sets of regressions, the standard errors were adjusted for intragroup correlations based on twodigit SIC codes. This was done using the cluster feature within Stata.

Before tests of the hypotheses were performed, all variables were analyzed for normal distributions and the presence of outliers. Because of the lack of linearity, the assets variable was transformed by taking the natural logarithm (e.g., Preece, Miles, & Baetz, 1998). To test for the hypothesized interaction effects, the new venture international entry variable was multiplied by each of the industry internationalization variables. Before the interaction terms were created, each variable was mean centered.

## Results

Descriptive statistics of the sample are provided in Table 2. The average age of the new ventures was 3.65 years, with the average size being \$255.38 million in assets. The majority of the new ventures have not yet reached profitability, as evident in the negative average return on sales ratio of -3.40. Of the 150 ventures, a total of 40 reported international sales.

Correlations, means, and standard deviations of the variables are presented in Table 3. The level of internationalization varied considerably by industry. Although the average level of internationalization across industries for all firms was 8.9%, this increased to 27.1% when only large firms based on assets were considered. The average industry

internationalization was 9.7% when based on firm growth. All of the interorganizational imitation variables exhibited significant correlations with new venture international entry. As expected, the imitation variables were also moderately correlated with each other. The average internationalization of all industry firms was correlated with the average internationalization of the largest industry firms and fastest-growth industry firms at the 0.56 ( $p < 0.001$ ) and 0.46 ( $p < 0.001$ ) levels, respectively. The average internationalization of the largest industry firms and fastest-growth industry firms were correlated at 0.14.

As the highest correlated independent variables were the three industry internationalization variables, we followed a similar study (Lu, 2002) and present the results individually for frequency-based imitation, trait-based imitation, and outcome-based imitation (Models 2-4 in Tables 4-6).

To test whether a problem of multicollinearity existed in Models 2-4, the approach recommended by Neter, Kutner, Nachtsheim, and Wasserman (1996) was followed and variance inflation factors (VIFs) were computed when all variables were included in each model. The VIFs ranged from 1.09 to 2.87, with a mean of 1.49 for the first regression on international entry. For the ROS model, the VIFs ranged from 1.12 to 3.45 with a mean of 1.55. For the sales growth model, the VIFs ranged from 1.14 to 3.08 with a mean of 1.63. The maximum VIF in each case is less than the VIF value of 10 noted by Neter et al. to indicate a major problem with multicollinearity. However, some concern remains as Neter et al. also note that mean VIF values larger than 1 are indicative of serious multicollinearity.

We then input all variables into the regression model to obtain an overall glance of the imitation effects (Model 5 in Tables 4-6). The highest VIF spikes to 11.47, 15.96, and 15.96 in the three complete models, respectively. In addition, we examine standard errors for independent variables in full models because the inflation of standard errors can be a useful indicator of potential multicollinearity problem. The majority of standard errors of interest in the full model are inflated. (7) These observations suggest the existence of multicollinearity problem in our full models, and coefficients estimated in Model 5 could be biased and misleading (Cohen, Cohen, West, & Aiken, 2003).

To correct the multicollinearity in the full model, we include a second full model where all three imitation variables are orthogonalized to remove the common variance among them (Model 6 in Tables 4-6). Although the procedure of orthogonalization partials out the common variance and thus allows for evaluation of the direction of relationships, this procedure makes direct interpretation of coefficients more difficult (Cohen & Cohen, 1983). Therefore, our discussion of results is mainly based on the individual models (Models 2-4 in Tables 4-6) and adopts the full model with orthogonalized variables as a robustness test.

### International Entry

The results of the logistic regression on international entry are presented in Table 4. In Model 1, the control variables were entered. Due to moderate levels of correlation between the independent variables and relatively high VIFs, a separate model was then used to test the relationship between new venture internationalization and each imitation variable (e.g., Lu, 2002) in Models 2-4, followed by the full models (Models 5 and 6).

Hypothesis 1a argues that new ventures are likely to imitate the internationalization exhibited by all firms within its home country industry. As evidenced by Model 2, strong support is found for this hypothesis as indicated by the positive and statistically significant coefficient on industry internationalization--all firms ( $[\beta] = 4.59, p < 0.001$ ). Hypothesis 1b considers the possibility that new ventures would imitate the internationalization specifically of firms of large size within its home country industry. There is again support for this hypothesis ( $[\beta] = 1.26, p < 0.01$ ), as shown in Model 3. Last, Hypothesis 1c suggests that new ventures will imitate the internationalization of industry firms that exhibit high levels of growth. Strong support is found for this hypothesis in Model 4 as well ( $[\beta] = 1.12, p < 0.01$ ). A closer examination of the additional variance explained by each of the models suggests that the average internationalization of all industry firms explains the majority of the overall variance. This provides substantial evidence that of the three hypotheses, Hypothesis 1a provides the strongest explanation for the new venture internationalization behavior ( $[\Delta][\chi^2] = 59.59, p < 0.001$ ), followed by Hypothesis 1c pertaining to imitation of the three highest-growth firms in the home country industry ( $[\Delta][\chi^2] = 11.38, p < 0.001$ ).

We then included all three imitation variables in one regression. As shown in Model 5, significance levels of most independent variable coefficients are notably altered due to multicollinearity. The highest VIF value spikes to 11.47. We therefore conclude that coefficients in Model 5 are likely misleading due to multicollinearity problem (Cohen et al., 2003).

Table 2

Sample Characteristics (n = 150)

	Mean	Standard deviation	Minimum	Maximum
Age	3.65	1.33	1	6
Assets (millions)	\$255.38	\$571.31	\$5.10	\$4,242.48
Sales (millions)	\$49.00	\$102.45	\$0.03	\$957.57
International entry	0.27	0.44	0	1
Returns on sales <sup>1</sup>	-3.40	6.41	-46.00	0.39
Sales growth <sup>1</sup>	107.9%	167.31%	-66.27%	11,169.3%

<sup>1</sup> Based on the 121 new ventures remaining in the sample in the 3-year period following IPO.

To correct the multicollinearity, we included a second full model where the three imitation variables were orthogonalized to remove all common variance among them (Model 6--full model with orthogonalization). The signs of coefficients on the orthogonalized independent variables are statistically significant and in the same direction as those in individual models (Models 2-4) in Table 4. Therefore, we conclude that coefficients from individual models (Models 2-4) are reliable and robust. That is, all three reference groups studied are valuable to new ventures' internationalization decisions. Multiple reference groups exist for new ventures, which is consistent with what the literature has reported, for example, Lu (2002).

## Performance

The second set of hypotheses examines the implications for conforming to industry internationalization practices on new venture performance. These results for the ROS and sales growth models are shown in Tables 5 and 6, respectively.

For both models, Model 1 offers a regression of both the controls and international entry on new venture performance. Consistent with the literature, this offers strong support for a linkage between new venture international entry and both ROS ( $\beta = 2.72, p < 0.05$ ) and sales growth ( $\beta = 1.74, p < 0.001$ ). Because of the perceived benefits of conforming to industry norms, Hypothesis 2a stated that the linkage between international entry and performance would be more positive for new ventures in industries that exhibit high levels of firm internationalization. As shown by the significant interaction term in Model 2 of Table 5, this hypothesis is strongly supported for ROS ( $\beta = 17.25, p < 0.05$ ). However, no support is obtained for sales growth in Model 2 of Table 6.

In Hypothesis 2b, international entry was predicted to be more positively associated with performance in industries in which the three largest firms exhibited a high level of internationalization. In Model 3 of Table 5, support ( $\beta = 7.76, p < 0.05$ ) exists for the ROS model. Again, no support is observed for the sales growth model in Model 3 of Table 6.

Hypothesis 2c posited that the international entry and performance relationship would be magnified in industries in which the high-growth firms exhibited higher levels of internationalization. As shown in Model 4 of Table 5, this hypothesis receives support for the ROS model ( $\beta = 7.40, p < 0.05$ ). However, Model 4 of Table 6 shows a lack of support for the sales growth model.

We then include all three imitation variables into regression models of ROS (Model 5 in Table 5) and sales growth (Model 5 in Table 6). Significance levels of most independent variable coefficients changed due to multicollinearity. The highest VIF value spikes to 15.96 for both full models. We conclude that coefficients are biased due to multicollinearity (Cohen et al., 2003).

We then include Model 6 (full model with orthogonalization) where the three imitation variables are orthogonalized in both Tables 5 and 6. For the ROS model in Table 5, the coefficients on the orthogonalized variables are of the same direction and largely of the same significance level except for one interaction term (between international entry and trait-based imitation). For the sales growth model in Table 6, the coefficients on the orthogonalized independent variables are of the same direction and of the similar significance level as those in individual models (Models 2-4). Therefore, we conclude that coefficients from individual models (Models 2-4) are reliable and robust.

To gain further insight into the moderating effects of interorganizational imitation on the relationship between new venture international entry and performance, we plot the interactions that are statistically significant at the level of  $p < 0.05$  based on results from Models 2-4 of Table 5. As seen in Figure 1 a-c, there is a more strongly positive relationship between new venture international entry and ROS when industry internationalization is of a higher level.

## Discussion

Table 3

## Means, Standard Deviations, and Correlations

	1	2	3	4	5	6	7	8	9	10	11	12	13
Mean	0.27	-3.40	107.93%	3.65	4.75	1.39	0.85	0.45	36.69%	6.36	8.88%	27.06%	9.68%
Standard deviation	0.44	6.41	167.31%	1.33	1.10	1.37	0.36	0.50	24.19%	7.07	6.29%	15.17%	14.69%
1. New venture international entry	1.00												
2. New venture ROS	0.20	1.00											
3. New venture sales growth	-0.18	-0.44	1.00										
4. New venture age	0.34	0.00	-0.19	1.00									
5. New venture assets (log transformed)	-0.02	-0.01	0.02	-0.10	1.00								
6. Prior international experience	0.22	-0.20	0.10	0.14	0.10	1.00							
7. Venture capital backing	0.13	0.14	0.10	0.07	0.15	0.22	1.00						
8. IPO year	0.24	0.00	-0.30	-0.14	0.12	0.15	0.09	1.00					
9. Industry growth	0.07	0.15	-0.03	-0.02	0.03	0.06	0.04	-0.04	1.00				
10. Relative industry performance for internationalization	-0.06	-0.16	0.00	0.09	0.04	0.21	0.14	0.40	-0.09	1.00			
11. Industry internationalization—all firms	0.47	0.04	0.14	0.18	-0.05	0.09	0.18	-0.08	-0.08	-0.11	1.00		
12. Industry internationalization—largest firms	0.27	-0.08	0.03	0.13	0.01	0.04	0.11	0.18	-0.11	0.22	0.56	1.00	
13. Industry internationalization—fastest-growth firms	0.35	-0.07	-0.16	0.20	0.12	0.15	0.13	0.31	-0.16	-0.13	0.46	0.14	1.00

Note: Correlations with the absolute value greater than 0.18 are statistically significant at the  $p < 0.05$  level.  
ROS, return on sales.

The purpose of this study was to explore whether interorganizational imitation affects new ventures' international entry and subsequent performance. The results support neoinstitutional and learning theories in that new ventures tend to imitate the internationalization exhibited by industry firms. The strongest level of support was found for imitation by new ventures of the average internationalization exhibited by all firms within their home country industry. Thus, this supports the findings of previous research that in periods of high uncertainty, firms are most likely to imitate actions or behaviors that are frequently exhibited (Haunschild & Miner, 1997). Although the most frequently exhibited behavior in an industry appears to have the most influence, an interesting result is that the new ventures appear to follow the internationalization of industry firms exhibiting high levels of growth more closely than the internationalization exhibited by large industry firms. This suggests that new ventures do pay attention to the behaviors of specific firms and are apt to model themselves after firms with these so-called best practices. The new ventures appear to be less interested in those industry firms that have achieved growth and are large as a result than in the industry firms that are in the process of growing. Thus, neoinstitutional and learning theories offer descriptive value to new venture internationalization research.

The results further improve our understanding of the relationship between new venture internationalization and performance. First, international entry by a new venture was found to lead to higher levels of new venture performance in terms of both ROS and sales growth, offering additional evidence in support of prior research (McDougall & Oviatt, 1996). Second, all three measures of industry internationalization were negatively related to both ROS and sales growth. Two of the three measures were statistically significant in the ROS model, and one of the three measures was statistically significant in the sales growth model. Although further research is warranted, our speculation is that new ventures in highly international industries face greater competition and require more resources. This, in turn, negatively impacts the profitability of new ventures early on. As new venture international entry remains positive and significant with both ROS and sales growth, this suggests that although more resources are required to internationalize, they are resources well spent. Third and most interestingly, the results suggest that the relationship between new venture internationalization and performance is more complex than had been assumed by these studies. When a high level of internationalization is exhibited by industry firms, there is a stronger and more positively correlated relationship between new venture international entry and ROS. This is a significant finding because although neoinstitutional theory argues that firms follow industry norms to increase their perceived legitimacy and perceived access to resources, these benefits are not necessarily always achieved. In fact, Honig and Karlsson (2004) found that although institutional forces influence the propensity for entrepreneurs to produce business plans, the actual act of business planning was not significantly related to survival or profitability. Yet in the case of following industry internationalization norms, it appears that new ventures do indeed achieve higher levels of ROS, likely due to actual increases in legitimacy and knowledge resources. In terms of practitioner implications, this initially suggests that new ventures considering international markets should also pay attention to the behavior of other firms in their industry environment.



Although interorganizational imitation did affect the relationship between new venture international entry and ROS, an interesting result was that such imitation did not influence the relationship between international entry and sales growth. Whether or not internationalization is the norm for an industry, the implication of international entry on new venture sales growth is not significantly different. This finding presents a caveat in the performance measures assessed in international entrepreneurship research. As clearly shown here, the impact on performance can differ drastically depending upon the component being measured. Future research is warranted to examine multiple facets of new venture performance and further understand the differing impact of segments of performance.

Overall, the results of this study support the claim by Gimeno et al. (2005) that neoinstitutional pressures for mimicry are evident in broad practices. Although previous studies have explored the applicability of neoinstitutional theory to specific internationalization behaviors such as foreign entry mode (Lu, 2002), location choice (Yiu & Makino, 2002), or global learning (Lam, 2003), this study differed by examining how industry practices influence the international entry of a new venture. Because neoinstitutional pressures were evident in this broader internationalization practice, a question for future research is whether or not neoinstitutional theory as a whole may be more applicable to new ventures in broader rather than specific behaviors.

Although existing studies have found mimicry to be exhibited by subsets of host country firms based on traits and/or outcomes (Lu, 2002), this study offers evidence of the similar role of home country firms. Thus, at least in the case of new ventures, the behavior of those industry firms within their national boundary critically impacts their subsequent behavior and needs to be cautiously taken into account.

In terms of new venture internationalization research, this study underscores the importance of the new venture's external environment as a motivator for international entry (Fernhaber et al., 2007; Forsgren, 2002; Zahra & George, 2002). In addition to the many firm-specific factors that influence a new venture to go against traditional internationalization theories and enter international markets at a young age (McDougall, Shane, & Oviatt, 1994), the external environment plays an important role. Specifically, our results demonstrate that other firms in the new venture's industry can influence new venture international entry through interorganizational imitation. Given these findings, the argued need for multilevel research (Davidsson & Wiklund, 2001) becomes evident in the context of new venture internationalization.

Moreover, findings on a couple of control variables are worth mentioning. Our results show that prior international experience by top managers negatively affects ventures' profitability (ROS) and has no impact on ventures' sales growth. Although the literature has reported that prior international experience of top managers leads to a higher probability of new venture internationalization, such international experience does not seem to be contributing to new venture performance after the effect of internationalization is partialled out. This interesting observation may imply that the international business knowledge by top managers is obtained from their experience with large multinationals and may not be directly applicable to new venture internationalization. In addition, industry growth seems to be contributing to ventures' profitability, indicating that new ventures in the "right" industry perform better. This finding is consistent with prior literature and further confirmed that new ventures in fast-growing industries have a higher likelihood of internationalization (e.g., McDougall, Oviatt, & Shrader, 2003) and better performance (ROS) (e.g., Robinson & McDougall, 1998).

Limitations and Future Research

Table 4

## Interval Regression Results (Dependent Variable = New Venture International Entry)

	Model 1	Model 2	Model 3	Model 4	Model 5 (full model without orthogonalization)	Model 6 (full model with orthogonalization)
New venture age	0.16*** (0.04***)	0.11** (0.04**)	0.14** (0.05**)	0.14*** (0.03***)	0.12** (0.04**)	0.12** (0.04**)
New venture assets (log transformed)	-0.01 (0.05)	0.00 (0.05)	-0.02 (0.05)	-0.03 (0.05)	0.00 (0.05)	0.00 (0.05)
Prior international experience	0.08 <sup>†</sup> (0.04 <sup>†</sup> )	0.07** (0.02**)	0.09** (0.04**)	0.06** (0.02**)	0.07*** (0.02***)	0.07*** (0.02***)
Venture capital backing	0.24 (0.16)	0.06 (0.14)	0.22 (0.17)	0.19 (0.13)	0.05 (0.13)	0.05 (0.13)
IPO year	0.35*** (0.09***)	0.41*** (0.09***)	0.29*** (0.08***)	0.19** (0.06**)	0.43*** (0.08***)	0.43*** (0.08***)
Industry growth	-0.10 (0.48)	0.13 (0.13)	-0.12 (0.42)	0.14 (0.30)	0.14 (0.12)	0.14 (0.12)
Relative industry performance for internationalization	-0.02* (0.01*)	-0.01* (0.01*)	-0.02** (0.01**)	-0.004* (0.002*)	-0.003* (0.002*)	-0.003* (0.002*)
Industry internationalization—all firms	—	4.59*** (0.59***)	—	—	4.97*** (1.21***)	0.42*** (0.05***)
Industry internationalization—largest firms	—	—	1.26** (0.41**)	—	-0.26 (0.56)	0.15* (0.06*)
Industry internationalization—fastest-growth firms	—	—	—	1.12** (0.33**)	-0.05 (0.39)	0.19** (0.06**)
Intercept	-1.23*** (0.21***)	-1.06*** (0.21***)	-1.07*** (0.28***)	-1.03*** (0.26***)	-1.09*** (0.26***)	-1.09*** (0.26***)
Log pseudolikelihood	-67.94	-47.12	-62.65	-63.30	-46.92	-46.92
Wald $\chi^2$	544.61***	6.75.51***	2,120.16***	444.25***	7,135.12***	7,135.12***
Change ( $\chi^2$ ) from model 1	—	59.59***	9.27**	11.38***	104.23***	104.23***

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ , <sup>†</sup>  $p < 0.10$

Note: Robust standard errors in parentheses (N = 150).

Although this study has provided insights, several limitations and related opportunities for future research need to be acknowledged. One limitation is the actual testing of interorganizational imitation. In order to test for the effect of imitation, we have examined the relationship between the internationalization of existing firms within an industry and the international entry of a new venture. Although such a relationship would be expected in the case of interorganizational imitation, the assumption that the internationalization of the new venture was indeed a result of intentional imitation was not explicitly tested. However, the fact that our results indicated that new ventures imitated the internationalization behavior of high-growth firms in their industry rather than simply the largest firms suggests that the new ventures were attentive to important information in their organizational field. As the new ventures in our sample are high growth, an alternative explanation is that new ventures follow firms that most closely resemble them.

Another limitation is inherent in the sampling of only U.S.-based, high-potential new ventures that have undergone an IPO. It is recognized that the sampled new ventures are not typical of all new ventures because of their access to relatively large amounts of equity capital raised through an IPO. However, the sampling method was chosen so as to be able to access reliable financial and internationalization data that are typically not available. Nonetheless, the question of whether our findings generalize to privately held and/or less successful new ventures, as well as new ventures in other countries, has not been addressed. Additional testing with a wider array of samples is encouraged.

The results of the current study suggest other promising avenues for future research. Although our study offers a unique contribution by examining imitation by new ventures of the overall level of internationalization by other firms within a home country industry, further research is needed to investigate the implications of imitation on specific behaviors of new ventures pursuing internationalization. For example, do new ventures tend to enter the same countries/regions and utilize the same entry mode as other firms in their home country industry? Is the percentage of foreign sales ultimately achieved by the new venture a result of imitation and, if so, what is the impact on performance? Although neoinstitutional and learning theories offer one explanation for mimetic behavior, other explanations do exist. For example, competitive rationale suggests that firms imitate potential rivals as a defensive strategy with the goal of wanting to stay in pace with competitors (Gimeno et al., 2005). While it is argued that smaller firms are less likely to imitate dominant firms based on defensive forces, this possibility needs to be ruled out. However, it is recognized that it can be difficult to distinguish empirically between competitive and noncompetitive rationales (Gimeno et al.).

Another possible explanation for new venture internationalization is the performance and aspiration of the new venture. Greve (1998) demonstrates how firms are less likely to change when firm performance improves relative to

the social aspirations. This suggests new ventures that perform below their expectations would be more likely to internationalize. Future research is needed to explore this possibility further.

Table 5

Maximum Likelihood Estimates With Treatment Effects (Dependent Variable = New Venture ROS)

	Model 1	Model 2	Model 3	Model 4	Model 5 (full model without orthogonalization)	Model 6 (full model with orthogonalization)
New venture age	-0.02 (0.66)	-0.13 (0.56)	-0.10 (0.57)	0.10 (0.47)	-0.15 (0.60)	-0.15 (0.60)
New venture assets (log transformed)	-0.15 (0.65)	-0.24 (0.63)	-0.18 (0.66)	-0.25 (0.62)	-0.19 (0.76)	-0.19 (0.76)
Prior international experience	-1.25*** (0.31***)	-1.28*** (0.32***)	-1.27*** (0.32***)	-1.16*** (0.17***)	-1.38*** (0.35***)	-1.38*** (0.35***)
Venture capital backing	3.24 (2.37)	3.79 (2.40)	3.70 (2.57)	2.45 (2.00)	4.00 (2.55)	4.00 (2.55)
IPO year	0.17 (1.26)	-0.45 (1.10)	0.01 (0.99)	-0.24 (1.02)	-0.32 (1.22)	-0.32 (1.22)
Industry growth	3.24* (1.44*)	2.98* (1.30*)	2.89* (1.50*)	3.00* (1.40*)	3.47* (1.46*)	3.47* (1.46*)
Relative industry performance for internationalization	-0.11 (0.10)	-0.11 (0.10)	-0.09 (0.09)	-0.09 (0.09)	-0.09 (0.09)	-0.09 (0.09)
New venture international entry	2.72* (1.38*)	4.69** (1.40**)	3.63** (1.23**)	2.64* (1.04*)	3.73* (1.67*)	3.73* (1.67*)
Industry internationalization—all firms	—	-20.28** (6.79**)	—	—	-4.20 (5.70)	-1.52* (0.80*)
Industry internationalization—largest firms	—	—	-7.38* (3.76*)	—	-6.35* (3.68*)	-1.36* (0.58*)
Industry internationalization—fastest-growth firms	—	—	—	-3.95 (3.94)	-4.52 (4.51)	-1.16 (0.95)
New venture international entry × industry internationalization—all firms	—	17.25* (8.71*)	—	—	-5.74 (11.60)	1.72* (0.90*)
New venture international entry × industry internationalization—largest firms	—	—	7.76* (3.94*)	—	8.23 (8.89)	1.48 (1.33)
New venture international entry × industry internationalization—fastest-growth firms	—	—	—	7.40* (3.07*)	12.71** (3.81**)	2.32** (0.67**)
Intercept	-5.00 (4.38)	-5.10 (3.98)	-5.34 (3.99)	-5.47 (3.73)	-5.54 (4.83)	-5.54 (4.83)
Lambda	0.38	-0.77	-0.22	0.08	-0.37	-0.37
Log pseudelikelihood	-431.01	-430.06	-429.64	-560.12	-428.19	-428.19
Change ( $\chi^2$ ) from model 1	—	56.40***	9.19*	113.29***	510.48***	510.48***

\*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ , †  $p < 0.10$

Note: Robust standard errors in parentheses (N = 121). ROS, return on sales.

Although all new ventures generally face a high degree of uncertainty in their environment because of their limited period of existence, it is likely that the level of uncertainty may vary from industry to industry or from new venture to new venture. What impact do specific sources of uncertainty have on the tendency of new ventures to conform to institutional pressures? In what cases might a new venture be more susceptible to trait-based or outcome-based imitation rather than frequency-based imitation when international markets are considered? Furthermore, the coercive and normative implications of institutional theory on new venture internationalization need to be explored. Last, as the age at international entry has been argued to impact new venture performance (Sapienza et al., 2006), it would be useful to consider the temporal implication of internationalization and age at entry on new venture performance.

## Conclusions

In conclusion, neoinstitutional and learning theories were found to be very appropriate and useful perspectives for gaining insight as to why new ventures internationalize. Given the level of uncertainty associated with newness, new ventures likely imitate other firms in their environment in order to increase legitimacy and access to resources. The prescriptive implications of interorganizational imitation on new venture internationalization were also tested, and the results suggest that new ventures do benefit in terms of profitability by conforming to industry internationalization norms.

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Table 6

## Maximum Likelihood Estimates With Treatment Effects (Dependent Variable = Sales Growth)

	Model 1	Model 2	Model 3	Model 4	Model 5 (full model without orthogonalization)	Model 6 (Full model with orthogonalization)
New venture age	-0.39* (0.18*)	-0.38* (0.19*)	-0.39* (0.19*)	-0.36' (0.20')	-0.36' (0.21')	-0.36' (0.21')
New venture assets (log transformed)	0.04 (0.12)	0.03 (0.15)	0.05 (0.13)	0.09 (0.14)	0.07 (0.19)	0.07 (0.19)
Prior international experience	0.11 (0.18)	0.12 (0.18)	0.11 (0.18)	0.14 (0.15)	0.15 (0.16)	0.15 (0.16)
Venture capital backing	0.37 (0.41)	0.51 (0.43)	0.37 (0.44)	0.45 (0.42)	0.47 (0.44)	0.47 (0.44)
IPO year	-1.40*** (0.32***)	-1.50*** (0.31***)	-1.39*** (0.33***)	-1.20*** (0.32***)	-1.21** (0.45**)	-1.21** (0.45**)
Industry growth	-0.29 (0.48)	-0.41 (0.42)	-0.30 (0.48)	-0.64' (0.37')	-0.64' (0.36')	-0.64' (0.36')
Relative industry performance for internationalization	0.03' (0.01')	0.03* (0.01*)	0.03' (0.01')	0.02 (0.01)	0.02 (0.01)	0.02 (0.01)
New venture international entry	1.74*** (0.46***)	1.91*** (0.44***)	1.79*** (0.46***)	1.89*** (0.35***)	1.97*** (0.40***)	1.97*** (0.40***)
Industry internationalization—all firms	—	-3.20 (3.28)	—	—	-2.44 (5.48)	-0.39 (0.28)
Industry internationalization—largest firms	—	—	-0.09 (0.90)	—	0.40 (1.51)	-0.07 (0.17)
Industry internationalization—fastest-growth firms	—	—	—	-2.17** (0.75**)	-1.85 (1.57)	-0.44** (0.14**)
New venture international entry × industry internationalization—all firms	—	-0.47 (3.02)	—	—	3.16 (3.01)	0.02 (0.22)
New venture international entry × industry internationalization—largest firms	—	—	-0.95 (1.29)	—	-1.33 (1.10)	-0.13 (0.20)
New venture international entry × industry internationalization—fastest-growth firms	—	—	—	-0.72 (0.62)	-1.22 (0.86)	-0.13 (0.11)
Intercept	1.96' (1.04')	1.91' (1.03')	1.92' (1.08')	1.61 (1.17)	1.62 (1.33)	1.62 (1.33)
Lambda	-1.58	-1.62	-1.58	-1.60	-1.64	-1.64
Log pseudolikelihood	-258.78	-258.05	-258.61	-256.37	-256.09	-256.09
Change ( $\chi^2$ ) from model 1	—	52.48***	23.11***	23.34***	482.23***	482.23***

\*  $p < .05$ , \*\*  $p < .01$ , \*\*\*  $p < .001$ , '  $p < .10$ 

Note: Robust standard errors in parentheses (N = 121).

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(1.) We measured industry internationalization by the percentage of international sales and the percentage of internationalizing firms within an industry. We measured industry performance by the 3-year average of ROS, 3-year average of sales growth (in both absolute and percentage terms), 3-year average of return on assets (ROA), and 3-year average of net income.

(2.) We tested the sensitivity of our results by computing relevant variables based on the top 5 or top 10 largest/fastest-growth firms. Results remain largely the same when different cutoff points were used, indicating the robustness of our findings.

(3.) We also computed the growth rate based on a 3-year period. Similar results were observed.

(4.) An alternative measure was generated--the percentage of top managers with international business experience in the top management team. Similar results were observed.

(5.) We are indebted to the editor and to a reviewer for this point.

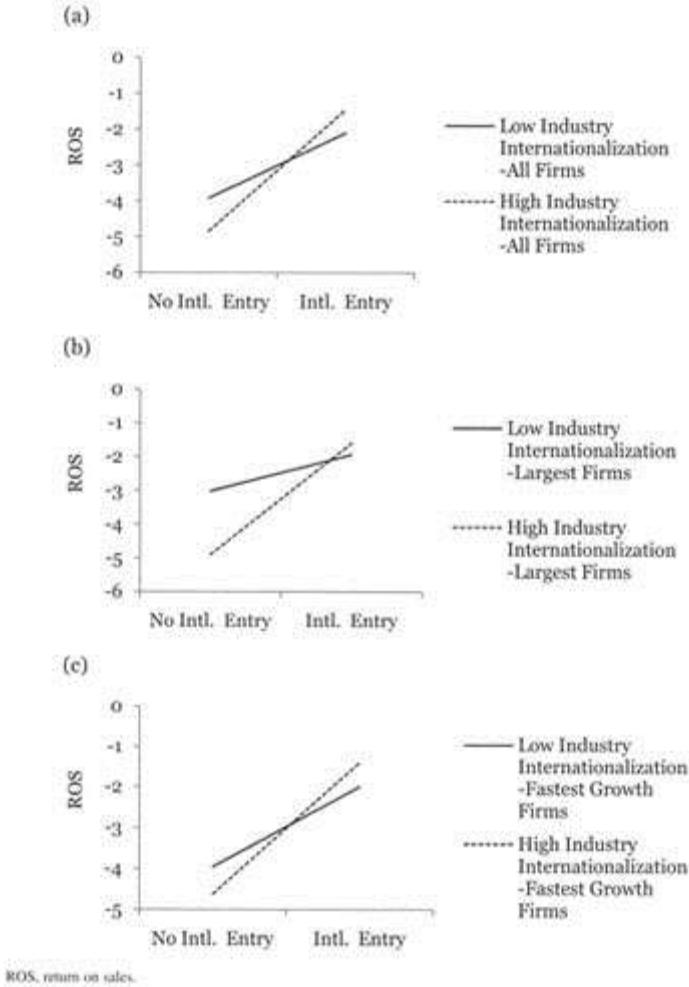
(6.) We thank one of the reviewers for suggesting the procedure.

(7.) We thank one of the reviewers for this observation.

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Figure 1

The Moderating Role of Imitation on the Effects of New Venture International Entry on Profitability; Moderating Effect of (a) Frequency-Based Imitation; (b) Trait-Based Imitation; (c) Outcome-Based Imitation



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Table 1  
Industries Represented by New Ventures in Sample (n = 150)

n SIC description (code)

1 Lumber and Wood PDS (2400)  
 2 Commercial Printing (2750)  
 3 Pharmaceutical Preparations (2834)  
 2 Biological PDS (2836)  
 1 Oil & Gas Field Machinery, Equipment (3533)  
 1 Computer Storage Devices (3572)  
 2 Computer Communication Equipment (3576)  
 1 Computer Peripheral Eq (3577)  
 1 Office Machines (3579)  
 1 Electrical Indl Apparatus (3620)  
 1 Motors and Generators (3621)  
 1 Household Audio & Video Eq (3651)  
 6 Tele & Telegraph Apparatus (3661)  
 4 Radio, TV Broadcast, Comm Eq (3663)  
 1 Electronic Comp, Accessories (3670)  
 7 Semiconductors, Related Devices (3674)  
 3 Lab Analytical Instruments (3826)  
 1 Ortho, Prosth, Surg Appl, Supply (3842)  
 2 Electromedical Apparatus (3845)  
 2 Radiotelephone Communication (4812)  
 4 Phone Communication (4813)  
 1 Cable and Other Pay TV Svcs (4841)  
 3 Communication Services (4899)

n SIC description (code)

1 Electric Services (4911)  
 1 Computers & Software--Whsl (5045)  
 1 Drugs and Proprietary--Whsl (5122)  
 1 Eating Places (5812)  
 1 Miscellaneous Retail (5900)  
 4 Catalog, Mail-Order Houses (5961)  
 1 Short-Term Bus Credit (6153)  
 1 Mortgage Bankers & Loan Corr (6162)  
 2 Ins Agents, Brokers & Service (6411)  
 1 Real Estate Investment Trust (6798)  
 2 Direct Mail Advertising Svcs (7331)  
 31 Cmp Programming & Data Processing (7370)  
 2 Computer Programming Services (7371)  
 28 Prepackaged Software (7372)  
 5 Cmp Integrated Sys Design (7373)  
 1 Telephone Interconnect Sys (7385)  
 4 Business Services (7389)  
 1 Misc Amusement & Rec Service (7990)  
 1 Medical Laboratories (8071)  
 2 Educational Services (8200)  
 1 Engineering Services (8711)  
 6 Coml Physical, Biological Resh (8731)  
 1 Testing Laboratories (8734)

Table 2  
 Sample Characteristics (n = 150)

	Mean	deviation	Minimum	Maximum
Age	3.65	1.33	1	6
Assets (millions)	\$255.38	\$571.31	\$5.10	\$4,242.46
Sales (millions)	\$49.00	\$102.45	\$0.03	\$957.57
International entry	0.27	0.44	0	1
Return on sales ([dagger])	-3.4	6.41	-46.00	0.39
Sales growth ([dagger])	107.9%	167.31%	-66.27%	11,169.3%

([dagger]) Based on the 121 new ventures remaining in the sample in the 3-year period following IPO.

Table 3  
Means, Standard Deviations, and Correlations

	1	2	3	
Mean				
Standard deviation	0.27	-3.4	107.93%	
	0.44	6.41	167.31%	
1 New venture international entry	1.00			
2 New venture ROS	0.20	1.00		
3 New venture sales growth	-0.18	-0.44	1.00	
4 New venture age	0.34	0.00	-0.19	
5 New venture assets (log transformed)	-0.02	-0.01	0.02	
6 Prior international experience	0.22	-0.20	0.10	
7 Venture capital backing	0.13	0.14	0.10	
8 IPO year	0.24	0.00	-0.30	
9 Industry growth	0.07	0.15	-0.03	
10 Relative industry performance for internationalization	-0.06	-0.16	0.00	
11 Industry internationalization--all firms	0.47	0.04	0.14	
12 Industry internationalization--largest firms	0.27	-0.08	0.03	
13 Industry internationalization--fastest-growth firms	0.35	0.07	-0.16	
	4	5	6	7
Mean				
Standard deviation	3.65	4.75	1.39	0.85
	1.33	1.10	1.37	0.36
1 New venture international entry				
2 New venture ROS				
3 New venture sales growth				
4 New venture age	1.00			
5 New venture assets (log transformed)	-0.10	1.00		
6 Prior international experience	0.14	0.10	1.00	
7 Venture capital backing	0.07	0.15	0.22	1.00
8 IPO year	0.14	0.12	0.15	0.09
9 Industry growth	-0.02	0.03	0.06	0.04
10 Relative industry performance for internationalization	0.09	0.04	0.21	0.14
11 Industry internationalization--all firms	0.18	-0.05	0.09	0.18
12 Industry internationalization--	0.13	0.01	0.04	0.11

	largest firms				
13	Industry internationalization-- fastest-growth firms	0.20	0.12	0.15	0.13
		8	9	10	
	Mean				
	Standard deviation	0.45	36.69%	6.36	
		0.50	24.19%	7.07	
1	New venture international entry				
2	New venture ROS				
3	New venture sales growth				
4	New venture age				
5	New venture assets (log transformed)				
6	Prior international experience				
7	Venture capital backing				
8	IPO year	1.00			
9	Industry growth	-0.04	1.00		
10	Relative industry performance for internationalization	0.40	-0.09	1.00	
11	Industry internationalization-- all firms	-0.08	-0.08	-0.11	
12	Industry internationalization-- largest firms	0.18	-0.11	0.22	
13	Industry internationalization-- fastest-growth firms	0.31	-0.16	-0.13	
		11	12	13	
	Mean				
	Standard deviation	8.88%	27.06%	9.68%	
		6.29%	15.17%	14.69%	
1	New venture international entry				
2	New venture ROS				
3	New venture sales growth				
4	New venture age				
5	New venture assets (log transformed)				
6	Prior international experience				
7	Venture capital backing				
8	IPO year				
9	Industry growth				
10	Relative industry performance for internationalization				
11	Industry internationalization-- all firms	1.00			
12	Industry internationalization-- largest firms	0.56	1.00		
13	Industry internationalization-- fastest-growth firms	0.46	0.14	1.00	

Note: Correlations with the absolute value greater than 0.18 are statistically significant at the  $p < 0.05$  level. ROS, return on sales.

Table 4  
Interval Regression Results (Dependent Variable = New Venture International Entry)

Model 1

New venture age	0.16 *** (0.04 ***)
New venture assets (log transformed)	-0.01 (0.05)
Prior international experience	0.08 ([dagger]) (0.04 ([dagger]))
Venture capital backing	0.24 (0.16)
IPO year	0.35 *** (0.09 ***)
Industry growth	-0.10 (0.48)
Relative industry performance for internationalization	-0.02 * (0.01 *)
Industry internationalization-- all firms	--
Industry internationalization-- largest firms	--

Industry internationalization-- fastest-growth firms	--
Intercept	-1.23 *** (0.24 ***)
Log psuedolikelihood	-67.94
Wald [chi square]	544.61 ***
Change ([chi square]) from model 1	--

Model 2

New venture age	0.11 ** (0.04 **)
New venture assets (log transformed)	0.00 (0.05)
Prior international experience	0.07 ** (0.02 **)
Venture capital backing	0.06 (0.14)
IPO year	0.41 *** (0.09 ***)
Industry growth	0.13 (0.13)
Relative industry performance for internationalization	-0.01 * (0.01 *)
Industry internationalization-- all firms	4.59 *** (0.59 ***)
Industry internationalization-- largest firms	--
Industry internationalization-- fastest-growth firms	--
Intercept	-1.06 *** (0.24 ***)
Log psuedolikelihood	-47.12
Wald [chi square]	6,75.51 ***
Change ([chi square]) from model 1	59.59 ***

Model 3

New venture age	0.14 ** (0.05 **)
New venture assets (log transformed)	-0.02 (0.05)
Prior international experience	0.09 ** (0.04 **)
Venture capital backing	0.22 (0.17)
IPO year	0.29 *** (0.08 ***)
Industry growth	-0.12 (0.42)
Relative industry performance for internationalization	-0.02 ** (0.01 **)
Industry internationalization-- all firms	--
Industry internationalization-- largest firms	1.26 ** (0.41 **)
Industry internationalization-- fastest-growth firms	--
Intercept	-1.07 *** (0.28 ***)
Log psuedolikelihood	-62.65
Wald [chi square]	2,120.16 ***
Change ([chi square]) from model 1	9.27 **

Model 4

New venture age	0.14 *** (0.03 ***)
New venture assets (log transformed)	-0.03 (0.05)
Prior international experience	0.06 ** (0.02 **)
Venture capital backing	0.19 (0.13)
IPO year	0.19 ** (0.06 **)
Industry growth	0.14 (0.30)
Relative industry performance for internationalization	-0.004 * (0.002 *)
Industry internationalization-- all firms	--
Industry internationalization-- largest firms	--
Industry internationalization-- fastest-growth firms	1.12 ** (0.33 **)
Intercept	-1.03 *** (0.26 ***)
Log psuedolikelihood	-63.30
Wald [chi square]	444.25 ***
Change ([chi square]) from model 1	11.38 ***

Model 5 (full model without orthogonalization)

New venture age	0.12 ** (0.04 **)
New venture assets (log transformed)	0.00 (0.05)
Prior international experience	0.07 *** (0.02 ***)
Venture capital backing	0.05 (0.13)
IPO year	0.43 *** (0.08 ***)
Industry growth	0.14 (0.12)
Relative industry performance for internationalization	-0.003 * (0.002 *)

Industry internationalization-- all firms	4.97 *** (1.21 ***)
Industry internationalization-- largest firms	-0.26 (0.56)
Industry internationalization-- fastest-growth firms	-0.05 (0.39)
Intercept	-1.09 *** (0.26 ***)
Log psuedolikelihood	-46.92
Wald [chi square]	7,135.12 ***
Change ([chi square]) from model 1	104.23 ***

Model 6 (full  
model with  
orthogonalization)

New venture age	0.12 ** (0.04 **)
New venture assets (log transformed)	0.00 (0.05)
Prior international experience	0.07 *** (0.02 ***)
Venture capital backing	0.05 (0.13)
IPO year	0.43 *** (0.08 ***)
Industry growth	0.14 (0.12)
Relative industry performance for internationalization	-0.003 * (0.002 *)
Industry internationalization-- all firms	0.42 *** (0.05 ***)
Industry internationalization-- largest firms	0.15 * (0.06 *)
Industry internationalization-- fastest-growth firms	0.19 ** (0.06 **)
Intercept	-1.09 *** (0.26 ***)
Log psuedolikelihood	-46.92
Wald [chi square]	7,135.12 ***
Change ([chi square]) from model 1	104.23 ***

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001, ([dagger]) p < 0.10

Note: Robust standard errors in parentheses (N = 150).

Table 5

Maximum Likelihood Estimates With Treatment Effects  
(Dependent Variable = New Venture ROS)

	Model 1
New venture age	-0.02 (0.66)
New venture assets (log transformed)	-0.15 (0.65)
Prior international experience	-1.25 *** (0.31 ***)
Venture capital backing	3.24 (2.37)
IPO year	0.17 (1.26)
Industry growth	3.24 * (1.44 *)
Relative industry performance for internationalization	-0.11 (0.10)
New venture international entry	2.72 * (1.38 *)



Industry internationalization-- all firms	--
Industry internationalization-- largest firms	--
Industry internationalization-- fastest-growth firms	--
New venture international entry x industry internationalization-- all firms	--
New venture international entry x industry internationalization-- largest firms	--
New venture international entry x industry internationalization-- fastest-growth firms	--
Intercept	-5.09 (4.38)
Lambda	0.38
Log psuedolikelihood	-431.01
Change ([chi square]) from model 1	--

Model 2

New venture age	-0.13 (0.56)
New venture assets (log transformed)	-0.24 (0.63)
Prior international experience	-1.28 *** (0.32 ***)
Venture capital backing	3.79 (2.40)
IPO year	-0.45 (1.10)
Industry growth	2.98 * (1.30 *)
Relative industry performance for internationalization	-0.11 (0.10)
New venture international entry	4.69 ** (1.40 **)
Industry internationalization-- all firms	-20.28 ** (6.79 **)
Industry internationalization-- largest firms	--
Industry internationalization-- fastest-growth firms	--
New venture international entry x industry internationalization-- all firms	17.25 * (8.71 *)
New venture international entry x industry internationalization-- largest firms	--
New venture international entry x industry internationalization-- fastest-growth firms	--
Intercept	-5.10 (3.98)

Lambda	-0.77
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Log psuedolikelihood	-430.06	
Change ([chi square]) from model 1	56.40 ***	
		Model 3
New venture age	-0.10 (0.57)	
New venture assets (log transformed)	-0.18 (0.66)	
Prior international experience	-1.27 *** (0.32 ***)	
Venture capital backing	3.70 (2.57)	
IPO year	0.01 (0.99)	
Industry growth	2.89 ([dagger]) (1.50 ([dagger]))	
Relative industry performance for internationalization	-0.09 (0.09)	
New venture international entry	3.63 ** (1.23 **)	
Industry internationalization-- all firms		--
Industry internationalization-- largest firms	-7.38 * (3.76 *)	
Industry internationalization-- fastest-growth firms		--
New venture international entry x industry internationalization-- all firms		--
New venture international entry x industry internationalization-- largest firms	7.76 * (3.94 *)	
New venture international entry x industry internationalization-- fastest-growth firms		--
Intercept	-5.34 (3.99)	
Lambda	-0.22	
Log psuedolikelihood	-429.64	
Change ([chi square]) from model 1	9.19 *	
		Model 4
New venture age	0.10 (0.47)	
New venture assets (log transformed)	-0.25 (0.62)	
Prior international experience	-1.16 *** (0.17 ***)	
Venture capital backing	2.45 (2.00)	
IPO year	-0.24 (1.02)	
Industry growth	3.00 * (1.40 *)	
Relative industry performance for internationalization	-0.09 (0.09)	
New venture international entry	2.64 * (1.04 *)	
Industry internationalization-- all firms		--
Industry internationalization-- largest firms		--
Industry internationalization-- fastest-growth firms	-3.95 (3.94)	
New venture international entry x industry internationalization-- all firms		--
New venture international entry x		--

industry internationalization-- largest firms	
New venture international entry x industry internationalization-- fastest-growth firms	7.40 * (3.07 *)
Intercept	-5.47 (3.73)
Lambda	0.08
Log psuedolikelihood	-560.12
Change ([chi square]) from model 1	113.29 ***
	Model 5 (full model without orthogonalization)
New venture age	-0.15 (0.60)
New venture assets (log transformed)	-0.19 (0.76)
Prior international experience	-1.38 *** (0.35 ***)
Venture capital backing	4.00 (2.55)
IPO year	-0.32 (1.22)
Industry growth	3.47 * (1.46 *)
Relative industry performance for internationalization	-0.09 (0.09)
New venture international entry	3.73 * (1.67 *)
Industry internationalization-- all firms	-4.20 (5.70)
Industry internationalization-- largest firms	-6.35 ([dagger]) (3.68 ([dagger]))
Industry internationalization-- fastest-growth firms	-4.52 (4.51)
New venture international entry x industry internationalization-- all firms	-5.74 (11.69)
New venture international entry x industry internationalization-- largest firms	8.23 (8.89)
New venture international entry x industry internationalization-- fastest-growth firms	12.71 ** (3.81 **)
Intercept	-5.54 (4.83)
Lambda	-0.37
Log psuedolikelihood	-428.19
Change ([chi square]) from model 1	510.48 ***
	Model 6 (full model with orthogonalization)
New venture age	-0.15 (0.60)
New venture assets (log transformed)	-0.19 (0.76)
Prior international experience	-1.38 *** (0.35 ***)
Venture capital backing	4.00 (2.55)
IPO year	-0.32 (1.22)
Industry growth	3.47 * (1.46 *)
Relative industry performance for internationalization	-0.09 (0.09)

New venture international entry	3.73 * (1.67 *)
Industry internationalization-- all firms	-1.52 ([dagger]) (0.80 ([dagger]))
Industry internationalization-- largest firms	-1.36 * (0.58 *)
Industry internationalization-- fastest-growth firms	-1.16 (0.95)
New venture international entry x industry internationalization-- all firms	1.72 ([dagger]) (0.90 ([dagger]))
New venture international entry x industry internationalization-- largest firms	1.48 (1.33)
New venture international entry x industry internationalization-- fastest-growth firms	2.32 ** (0.67 **)
Intercept	-5.54 (4.83)
Lambda	-0.37
Log psuedolikelihood	-428.19
Change ([chi square]) from model 1	510.48 ***

\* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001, ([dagger]) p < 0.10

Note: Robust standard errors in parentheses (N = 121).  
ROS, return on sales.

Table 6  
Maximum Likelihood Estimates With Treatment Effects  
(Dependent Variable = Sales Growth)

	Model 1
New venture age	-0.39 * (0.18 *)
New venture assets (log transformed)	0.04 (0.12)
Prior international experience	0.11 (0.18)
Venture capital backing	0.37 (0.41)
IPO year	-1.40 *** (0.32 ***)
Industry growth	-0.29 (0.48)
Relative industry performance for internationalization	0.03 ([dagger]) (0.01 ([dagger]))
New venture international entry Industry internationalization-- all firms	1.74 *** (0.46 ***) --
Industry internationalization-- largest firms	--
Industry internationalization-- fastest-growth firms	--
New venture international entry x industry internationalization-- all firms	--
New venture international entry x industry internationalization-- largest firms	--
New venture international entry x industry internationalization-- fastest-growth firms	--

Intercept	1.96 ([dagger]) (1.041)
Lambda	-1.58
Log psuedolikelihood	-258.78
Change ([chi square]) from model 1	--

Model 2

New venture age	-0.38 * (0.19 *)
New venture assets (log transformed)	0.03 (0.15)
Prior international experience	0.12 (0.18)
Venture capital backing	0.51 (0.43)
IPO year	-1.50 *** (0.31 ***)
Industry growth	-0.41 (0.42)
Relative industry performance for internationalization	0.03 * (0.01 *)
New venture international entry	1.91 *** (0.44 ***)
Industry internationalization-- all firms	-3.20 (3.28)
Industry internationalization-- largest firms	--
Industry internationalization--	--

fastest-growth firms

New venture international entry x industry internationalization-- all firms	-0.47(3.02)
New venture international entry x industry internationalization-- largest firms	--
New venture international entry x industry internationalization-- fastest-growth firms	--
Intercept	1.91 ([dagger]) (1.031)
Lambda	-1.62
Log psuedolikelihood	-258.05
Change ([chi square]) from model 1	52.48 ***

Model 3

New venture age	-0.39 * (0.19 *)
New venture assets (log transformed)	0.05 (0.13)
Prior international experience	0.11 (0.18)
Venture capital backing	0.37 (0.44)
IPO year	-1.39 *** (0.33 ***)
Industry growth	-0.30 (0.48)
Relative industry performance for	0.03 ([dagger])(0.01 ([dagger]))

internationalization		
New venture international entry	1.79 ***	(0.46 ***)
Industry internationalization-- all firms		--
Industry internationalization-- largest firms	-0.09	(0.90)
Industry internationalization-- fastest-growth firms		--
New venture international entry x industry internationalization-- all firms		--
New venture international entry x industry internationalization-- largest firms	-0.95	(1.29)
New venture international entry x industry internationalization-- fastest-growth firms		--
Intercept	1.92	([dagger]) (1.08 ([dagger]))
Lambda	-1.58	
Log psuedolikelihood	-258.61	
Change ([chi square]) from model 1	23.11 ***	

Model 4

New venture age	-0.36	([dagger]) (0.20 ([dagger]))
New venture assets (log transformed)	0.09	(0.14)
Prior international experience	0.14	(0.15)
Venture capital backing	0.45	(0.42)
IPO year	-1.20 ***	(0.32 ***)
Industry growth	-0.64	([dagger]) (0.37 ([dagger]))
Relative industry performance for internationalization	0.02	(0.01)
New venture international entry	1.89 ***	(0.35 ***)
Industry internationalization-- all firms		--
Industry internationalization-- largest firms		--
Industry internationalization-- fastest-growth firms	-2.17 **	(0.75 **)
New venture international entry x industry internationalization-- all firms		--
New venture international entry x industry internationalization-- largest firms		--
New venture international entry x industry internationalization-- fastest-growth firms	-0.72	(0.62)
Intercept	1.61	(1.17)
Lambda	-1.60	
Log psuedolikelihood	-256.37	
Change ([chi square]) from model 1	23.34 ***	

Model 5 (full

model without  
orthogonalization)

New venture age	-0.36	[[dagger]]	(0.21	[[dagger]])
New venture assets (log transformed)	0.07	(0.19)		
Prior international experience	0.15	(0.16)		
Venture capital backing	0.47	(0.44)		
IPO year	-1.21	**	(0.45	**)
Industry growth	-0.64	[[dagger]]	(0.36	[[dagger]])
Relative industry performance for internationalization	0.02	(0.01)		
New venture international entry	1.97	***	(0.40	***)
Industry internationalization-- all firms	-2.44	(5.48)		
Industry internationalization-- largest firms	0.40	(1.31)		
Industry internationalization-- fastest-growth firms	-1.85	(1.57)		
New venture international entry x industry internationalization-- all firms	3.16	(3.01)		
New venture international entry x industry internationalization-- largest firms	-1.33	(1.10)		
New venture international entry x industry internationalization-- fastest-growth firms	-1.22	(0.86)		
Intercept	1.62	(1.33)		
Lambda	-1.64			
Log psuedolikelihood	-256.09			
Change ([chi square]) from model 1	482.23	***		

Model 6 (Full  
model with  
orthogonalization)

New venture age	-0.36	[[dagger]]	(0.21	[[dagger]])
New venture assets (log transformed)	0.07	(0.19)		
Prior international experience	0.15	(0.16)		
Venture capital backing	0.47	(0.44)		
IPO year	-1.21	**	(0.45	**)
Industry growth	-0.64	[[dagger]]	(0.36	[[dagger]])
Relative industry performance for internationalization	0.02	(0.01)		
New venture international entry	1.97	***	(0.40	***)
Industry internationalization-- all firms	-0.39	(0.28)		
Industry internationalization-- largest firms	-0.07	(0.17)		
Industry internationalization-- fastest-growth firms	-0.44	**	(0.14	**)
New venture international entry x industry internationalization-- all firms	0.02	(0.22)		

New venture international entry x	-0.13	(0.20)
industry internationalization--		
largest firms		
New venture international entry x	-0.13	(0.11)
industry internationalization--		
fastest-growth firms		
Intercept	1.62	(1.33)
Lambda	-1.64	
Log psuedolikelihood	-256.09	
Change ([chi square]) from	482.23	***
model 1		

\* p < .05, \*\* p < .01, \*\*\* p < .001, ([dagger]) p < .10

Note: Robust standard errors in parentheses (N= 121).