

A STUDY OF THE MODERATING EFFECTS OF FIRM AGE AT INTERNATIONALIZATION ON FIRM SURVIVAL AND SHORT-TERM GROWTH

JON C. CARR,^{1*} K. STEPHEN HAGGARD,² KEITH M. HMIELESKI,¹ and SHAKER A. ZAHRA³

¹M.J. Neeley School of Business, Texas Christian University, Fort Worth, Texas, U.S.A.

²College of Business Administration, Missouri State University, Springfield, Missouri, U.S.A.

³Carlson School of Management, University of Minnesota, Minneapolis, Minnesota, U.S.A.

Research on firm internationalization has focused primarily on the antecedents, rather than outcomes, of the strategic decision to enter foreign markets. In addition, factors moderating the outcomes of internationalization have not received systematic analysis. Aiming to fill these gaps in the literature, the current study examines the moderating effects of firm age on postinternationalization survival and growth. Consistent with the liabilities of newness perspective, we suggest that firm age will have a positive moderating effect on postinternationalization survival. Building from the liabilities of aging perspective, we propose that firm age will have a negative moderating effect on postinternationalization short-term growth. We test these arguments using a longitudinal sample of 787 firms. Results showed that, postinternationalization, younger firms experienced significantly higher rates of short-term growth than older firms. Findings regarding firm age and survival, postinternationalization, were, however, not conclusive. Overall, our findings indicate that the timing of internationalization has important implications with regard to the short-term growth of firms. Copyright © 2010 Strategic Management Society.

INTRODUCTION

The growing ease of entering global markets has provided opportunities for many firms to rapidly expand their sales and achieve growth (Keupp and Gassmann, 2009; Westhead, Wright, and Ucbasaran, 2001). Despite differences in resources and capabilities, firms have taken advantage of the opportunity to grow by expanding internationally (Cumming *et al.*, 2009; Soriano and Dobon, 2009).

Keywords: internationalization; firm age; firm survival; firm growth; liabilities of newness

*Correspondence to: Jon C. Carr, M.J. Neeley School of Business, Texas Christian University, P.O. Box 298530, Fort Worth, TX 76129, U.S.A. E-mail: jon.carr@tcu.edu

These resources and capabilities appear to be age dependent; with younger companies having limited resources and fewer capabilities than their established counterparts. Given the importance of resources and capabilities for successful internationalization, it is surprising that the literature has not empirically considered the potential difference that firm age might have on the outcomes of the decision to enter foreign markets (Brush, 1995; Zahra, 2005). Thus, it is not clear whether it is more advantageous for firms to move into foreign markets earlier or later in their life cycles. This raises the important question of what effects age at the time of internationalization has on a firm's subsequent survival and short-term growth.

In this study, we draw from the liabilities of newness (Stinchcombe, 1965) and the liabilities of aging (Barron, West, and Hannan, 1994) theoretical perspectives in order to address this question. The liabilities of newness perspective suggests that young firms are at a disadvantage and, therefore, are likely to face higher mortality rates than more well-established firms when entering international markets. This is because younger firms often lack the same levels of recognition and legitimacy in the marketplace, economies of scale, development of routines and organizational processes, and relationships in the form of alliances and/or partnerships (Delmar and Shane, 2004; Zahra, 2008). Building upon this perspective, we develop arguments as to why firm age should have a positive moderating effect on postinternationalization survival, such that more established firms will be more likely to *survive* the internationalization process than relatively younger firms.

The liabilities of aging perspective suggests that established firms might be at a competitive disadvantage as compared to less established firms because of their tendency to be more rigid in their organizational routines and decision-making processes. This rigidity can impede firms from making rapid adjustments in their current products and services, as well as recognizing and exploiting business opportunities (BarNir, Gallagher, and Auger, 2003). Building on this perspective, we suggest that firm age will have a negative moderating effect on postinternationalization *growth* such that, for those firms surviving the postinternationalization process, they will experience higher rates of short-term growth than their older counterparts. These arguments are depicted in Figure 1, which presents the model we test in this study.

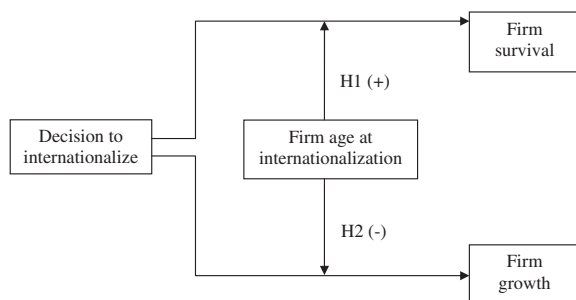


Figure 1. Proposed model of the moderating effects of the decision to internationalize and firm age at internationalization on firm survival and growth (adapted from Sapienza *et al.*, 2006)

HYPOTHESES

Liabilities of newness: why age improves firm survival prospects when entering international markets

The liabilities of newness perspective suggests that older and more established firms are likely to have more developed routines and established processes and greater access to resources in comparison to younger and less established firms (Sorensen and Stuart, 2000). Arguments made by Sapienza and colleagues (2006) regarding new venture internationalization are based on the recognition that the decision to internationalize is often a highly resource-intensive process. New ventures that are able to learn and reconfigure their capabilities quickly (e.g., develop the necessary routines and processes) to the requirements of internationalization are likely to face the unfortunate constraint of limited resources. A lack of resources and capabilities can be hazardous for new firms (Wiklund, Baker, and Shepherd, 2010), making the decision to internationalize a particularly risky activity. Thus, adequate resources and firm-level experience are key requirements for firm survival and should be gradually developed before entering international markets in order to minimize the potential *shock* of entry (Fernhaber, McDougall-Covin, and Shepherd, 2009; Johanson and Vahlne, 1990).

Given that new ventures typically do not have established routines, organizational processes, and/or the organizational knowledge-base necessary for successfully competing against incumbent firms, they are vulnerable to failure should they pursue entry into international markets. The threat to survival is particularly relevant regarding the decision to internationalize, because firms that lack the resources and capabilities necessary to compete in international markets '... bear the strain of such a pursuit' (Sapienza *et al.*, 2006: 921). As firms age, they gain experience and build their resources in domestic markets, which can allow them to better handle the shocks created by internationalization. Older firms are also more likely to have the complementary assets (e.g., name recognition and technological capabilities) as well as intangible resources needed to support international expansion. Older firms also typically have the slack organizational resources and, therefore, do not compromise ongoing commitments to their existing operations. As such, newer firms are more likely than their older

counterparts to fail subsequent to internationalization because of their lack of international experience, established routines, and existing resources. Therefore, we propose the following hypothesis:

Hypothesis 1: Internationalization will positively moderate firm age on the likelihood of survival after internationalization, such that older firms will be more likely to survive following initial foreign market entry than younger firms.

Liabilities of aging: why youth improves firm short-term growth prospects when entering international markets

As Barron and colleagues (1994) have suggested, liabilities of aging arguments are based on more established firms' inability to quickly adapt to new environmental conditions. This might render practices that, at one time had created value for firms, less than optimal. Despite the built-in advantages of established routines and organizational processes, the decision to internationalize can disrupt the systems and practices that had previously given established firms an edge over rivals in their domestic markets. New ventures, which have few such routines and, therefore, are less constrained by them, are likely to be more flexible in their efforts to enter international markets and may be more malleable in adapting their operations and resources to meet the requirements of international expansion (Autio, Sapienza, and Almeida, 2000; McDougall, Shane, and Oviatt, 1994). Research suggests that new ventures are likely to be adaptable and responsive in reallocating and mobilizing their resources, as well as in building relationships and networks that support their international operations (Oviatt and McDougall, 1994). Additionally, they might be better than established firms at vicariously learning the requirements for successful internationalization from successful competitors and then using this knowledge to configure their resources into capabilities that lead to growth (Autio, Sapienza, and Almeida, 2000). It is through this flexibility and adaptive capability that new ventures can quickly make their decisions to internationalize and move forward to realize their growth objectives. Consistent with the liabilities of aging perspective, international expansion enables younger firms to experiment and identify or adopt successful competitive recipes, which can expedite their entry into different markets and enable them to achieve their growth goals.

Despite an accompanying increased potential for failure, the decision to internationalize might reveal new opportunities for revenue growth. With the strong need to successfully adapt to the foreign business environment, firms can learn from their experiences and potentially improve their overall performance (Zahra, Ireland, and Hitt, 2000). When younger firms choose to internationalize, they can sometimes leverage their capabilities and successfully transfer that learning to domestic markets. Through the imprinting of new routines associated with foreign market entry, younger firms can quickly develop new capabilities and use them in their operational and strategic activities. This leads us to suggest that higher firm growth can be realized once these new capabilities are in place (Sapienza *et al.*, 2006). Therefore, we propose the following hypothesis:

Hypothesis 2: Firm age will negatively moderate short-term growth after internationalization, such that older firms will experience lower short-term growth following initial foreign market entry than younger firms.

Method

An initial matched list of 1,408 firms was drawn for the years 1985–99 from *Compustat*, a database that has been used in previous research to study the internationalization of new ventures (e.g., Shrader, Oviatt, and McDougall, 2000). We used the years 1985–99 to allow for effective tracking of firm survival and short-term growth, while also providing a sufficient window to include periods of both economic growth and contraction. This matched list was developed following a two-step process. First, 704 firms were selected from *Compustat* based upon the first year that they indicated international revenue within the years described above, which served as their base year to track firm outcomes subsequent to internationalization. Data on international revenues prior to the sampling window for these firms were examined to insure that at no point did these firms show international revenues before their base year. Secondly, 704 firms which had no prior or subsequent international revenues were selected from *Compustat* and matched to the internationalizing firms based on asset size during the base year for internationalizing firm. Each matching firm was coded with the same base year as its international match. We matched the entire sample with data from

the Center for Research in Security Prices (CRSP) to obtain merger and delisting data for firms, similar to other studies that have looked at firm survival (Fischer and Pollock, 2004). We tracked all firms in the sample for five years from their base year, such that the sampling time frame for the analyses was not biased in favor of firms selected at an earlier time (Hosmer and Lemeshow, 1999).

STATISTICAL ANALYSIS APPROACHES

Because these data are captured annually for five years, we use discrete-time logit analysis to test the decision to internationalize, firm age at internationalization, and subsequent survival. Our use of this technique follows other studies which have examined liabilities of newness and firm survival (Wiklund *et al.*, 2010). In order to use logit, the data were structured in a firm-period data format (Singer and Willet, 1993) and analyzed using the techniques outlined by Hayes and Matthes (2009). Similar to the approach taken by Wiklund and colleagues (2010) and Fischer and Pollock (2004), merged firms remained in the firm-period data until the year of reported merger. To test the short-term growth hypothesis, moderated hierarchical regression was used by first selecting the initial point in time for which firms were tracked as being internationalized (or a noninternationalizing matched firm), and then matching them with their corresponding three-year growth indicator.

Measures

Firm age

We reviewed SEC filings and performed Internet searches to determine firm founding age, which is not simply the age of the firm based upon its *Compustat* listing, but rather its actual age based upon its founding date. The identification of founding date impacted the size of our sample considerably. In many instances founding ages were difficult to obtain, with the founding date of the firm being unclear, unmentioned, or—in the case of bankrupt or delisted firms—unavailable. As a result, we were forced to eliminate a number of firms from further analyses. We conducted *t*-tests for firms where

founding dates could be identified with those that could not be identified, using firm-level assets, sales, long-term debt, and cash. None of the *t*-tests were significant, suggesting that the firms retained for further analysis were not biased on these dimensions. Additionally, through the process of identifying founding dates, we discovered that a few firms had ages greater than 100 years. To prevent undue influence of these extreme cases on our estimates, we removed firms with founding dates greater than 25 years old. As a result of these efforts, the final sample used for the analyses (prior to any missing data values for the study variables) was composed of 787 firms, of which 450 firms had internationalized and 337 firms had not. For the discrete-time logit analyses, this resulted in a firm-period data structure with 3,856 observations.

The median founding age of firms within the final sample, at the point in time that we began tracking the firms, was 10 years, with approximately 27 percent of the sample comprising firms that were less than seven years old. The number of firm less than seven years old represents firms that fall in a time period that scholars have argued can be classified as new ventures, as they tend to be in developmental stages and susceptible to the liabilities of newness—particularly in regard to the decision to go international (Shrader *et al.*, 2000). The age of our sample cuts across firms that are likely to suffer from the liabilities of newness (e.g., those that are seven years or younger) and also firms that may suffer from the liabilities of aging (e.g., firms with founding ages that are greater than seven years) at the *point of internationalizing*. We highlight this point to acknowledge that both liabilities of newness and liabilities of aging are appropriate perspectives for examining the effects of age of firms (which is positioned as a continuous moderating variable) in our sample and particularly for studying the effects of the decision to internationalize. We should additionally clarify that even though the firms in our sample have gone public and may have the benefit of acquiring additional resources through this process, the young firms in our sample are not likely to have highly developed routines and procedures, and likely suffer from a lack of broad recognition and legitimacy. Further, by going public at a very young age, such firms have the added pressures of coping with the requirements of being public (e.g., dealing with market fluctuation in stock prices, meeting with analysts, answering to a broader range of stakeholder; e.g., Certo, 2003).

Decision to internationalize

To capture a firm’s internationalization, we coded firms having international revenues as 1, with the matched sample of firms having no international revenues coded as 0. Even though the sample reflected firms with international revenues versus matched firms with no international revenues, a given firm’s decision to internationalize is likely to be an endogenous choice resulting from firm-level and market characteristics, a view supported by the capabilities perspective (Sapienza *et al.*, 2006). Therefore, we created a probit model of the decision to internationalize using independent variables likely to represent resources or contextual variables associated with internationalization. The variables used in the probit model include the number of industry firms, Herfindahl’s concentration index, research and development expenses as a percentage of assets, and 14 yearly dummy variables to capture macro-economic factors. Results of the probit model were significant (Model $\chi^2 = 900.63$, d.f. = 759, $p < 0.001$). The coefficients derived from the model were used in a set of calculations following Heckman’s (1979) choice model to correct for self-selection in the decision to internationalize (Shaver, 1998). We created this variable (termed λ) to control for the unmeasured characteristics of the firm related to the decision to internationalize in our analyses.

Firm survival and short-term growth

To test our hypothesis on the likelihood of firm survival, the dependent variable of interest is the time (in the number of years) it takes until a specified *event* occurs (in this case, the firm going bankrupt or delisted within the five-year tracking window). Those firms that did not delist within the five-year window were treated as right censored for

the analysis. For the short-term growth hypothesis, we used three-year sales growth, subsequent to the sampling frame year, as our outcome variable.

Control variables

Our analyses controlled for three variables. First, as discussed by Loughran and Ritter (1995), matching companies based on industry presents problems for smaller industries. Therefore, we controlled for industry differences between internationalizing firms and matching firms using industry indicators. The two-digit SIC code was identified for each firm. Dummy variables were then created, with each firm having a value of 1 for its associated two-digit SIC industry code. Second, with regard to firm size, the impact of a given absolute increase in firm size on internationalization and survival is likely to be greater for smaller firms than for larger firms. Therefore, we use a log transformation of the book value of assets to account for this nonlinearity in the effect of size. Third and finally, the decision choice control variable calculated using the probit model results was included in both the discrete-time logit analyses and regressions. Means, standard deviations, and correlations of the primary study predictor variables are provided in Table 1.

RESULTS

Firm survival subsequent to internationalization

To test our first hypothesis, we entered the industry control variables, decision choice and firm size control, and main effects (the decision to internationalize and the age of the firm at internationalization). For our second step, we added the interaction term of decision to internationalize x age at internationalization. Results are shown in Table 2.

Table 1. Descriptive statistics, reliabilities, and correlations for study variables ($n = 787$)^a

Variable	Mean	SD	1	2	3	4
1. Decision to internationalize	0.57	0.50				
2. Age at internationalization	10.41	5.51	-0.01			
3. Firm size ^b	4.39	1.53	0.03	0.03		
5. Short-term sales growth	0.90	2.61	0.06	-0.09*	-0.13**	

^aDummy industry controls excluded.
^bNatural log on the book value of assets.
 * $p < 0.05$.
 ** $p < 0.01$.

Table 2. Results of discrete-time logit analysis for firm failure^a ($n = 3,856$)

Predictors ^b	Model 1	Model 2
Constant	-2.30 (0.91)*	-1.89 (0.93)*
Mining	0.52 (1.02)	0.60 (1.02)
Construction	0.08 (1.25)	-0.03 (1.25)
Manufacturing	0.25 (0.74)	0.26 (0.74)
Transportation	0.16 (1.24)	0.21 (1.24)
Wholesale trade	1.74 (0.81)*	1.85 (0.81)*
Retail trade	1.34 (0.83)	1.43 (0.84)
Food services	-0.09 (1.02)	-0.07 (1.02)
Financial services	-0.09 (0.86)	-0.15 (0.86)
Real estate services	0.50 (1.24)	0.52 (1.25)
Information services	0.99 (0.77)	1.06 (0.77)
Professional services	0.93 (0.83)	0.98 (0.83)
Health services	1.47 (0.86)	1.57 (0.86)
Decision control ^c	0.61 (0.62)	0.50 (0.62)
Firm size ^d	-0.40 (0.07)**	-0.39 (0.07)**
Internationalization	-0.87 (0.24)**	-1.90 (0.50)*
Age at internationalization	-0.06 (0.02)*	-0.10 (0.03)*
Internationalization x age at internationalization		0.11 (0.05)*
-2 Log likelihood	766.83	761.29
Model χ^2	87.41**	92.96**
$\Delta\chi^2$		5.54*

^aFirm survival is coded as 1 for all firms which delisted or were bankrupt within five years of when they were initially measured—all other firms were right censored.

^bValues shown are unexponentiated coefficients. Negative values indicate increased likelihood of survival. Values in parentheses are standard errors.

^cVariable calculated from the probit analysis using the Heckman procedure.

^dNatural log on the book of assets.

* $p < 0.05$; ** $p < 0.01$.

Hypothesis 1 stated that firm age at internationalization will positively moderate the likelihood of survival after internationalization, such that established firms will be more likely to survive following initial foreign market entry than new ventures. The results in Table 2 of the discrete-time logit analyses indicate the moderating effect is significant (coefficient = 0.11, $p < 0.05$). However, examination of the effect for firms that internationalize versus those that do not indicate that the significant moderating effects of internationalization and firm age apply only to those firms that do not internationalize (See Figure 2). Following the approaches used by Fischer and Pollock (2004) and Wiklund and colleagues (2010), we calculated values which represent the odds of failure for each age at internationalization for both firms that internationalized and those that did not, using the coefficients for different levels of the moderating variable (i.e., the decision to internationalize). This value was then exponentiated to obtain an odds of failure for each type of firm. For those firms

that internationalize, the coefficient of the focal variable is 0.006, which when multiplied by different ages at internationalization, produces a nonsignificant slope. For those firms that do not internationalize, the coefficient of the focal variable is -0.103, which when multiplied by different ages at internationalization, gives a declining effect as age at internationalization increases.

Based upon the multiplier effect size calculations, the inclusion of the interaction term substantially increased the survival of firms that do not internationalize, in that increased age improved survival for firms that did not internationalize. No effect for age on survival was found for firms that internationalized. Thus, support is not found for Hypothesis 1.

Firm growth subsequent to internationalization

Hypothesis 2 stated that firm age will negatively moderate short-term growth after internationalization, such that established firms will experience

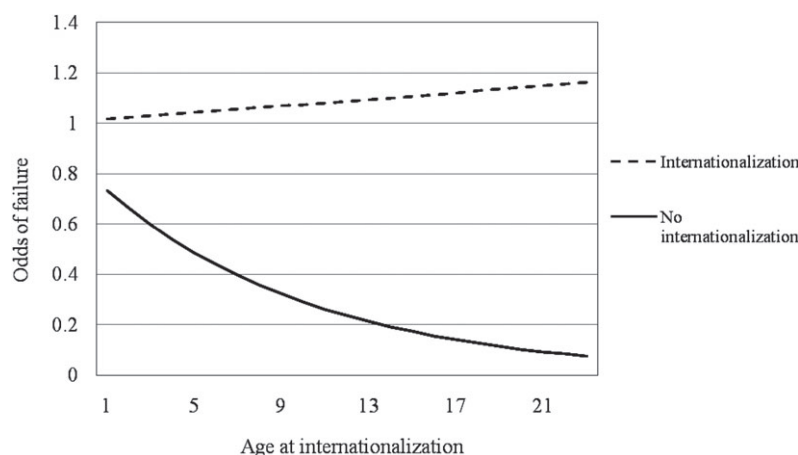


Figure 2. Odds of failure for firms that internationalize

Table 3. Linear regression of study variables on short-term sales growth ($n = 663$)

Predictors ^a	Model 1	Model 2
Constant	2.43 (0.68)**	2.44 (0.68)**
Mining	-0.18 (0.77)	-0.19 (0.77)
Construction	-0.73 (1.05)	-0.67 (1.05)
Manufacturing	-0.57 (0.55)	-0.60 (0.55)
Transportation	-0.44 (0.91)	-0.51 (0.91)
Wholesale trade	-0.23 (0.76)	-0.32 (0.76)
Retail trade	-0.41 (0.73)	-0.55 (0.73)
Food services	-0.50 (0.87)	-0.57 (0.87)
Financial services	-0.30 (0.63)	-0.27 (0.62)
Real estate services	-0.63 (0.97)	-0.69 (0.97)
Information services	-0.32 (0.60)	-0.42 (0.60)
Professional services	-0.87 (0.68)	-0.92 (0.67)
Health services	0.88 (0.83)	0.79 (0.83)
Decision control ^b	0.07 (0.51)	0.08 (0.51)
Firm size ^c	-0.26 (0.07)**	-0.25 (0.07)**
Internationalization ^d	0.19 (0.12)	0.21 (0.12)
Age at internationalization ^d	-0.23 (0.10)*	-0.24 (0.10)*
Internationalization x age at internationalization		-0.21 (0.10)*
Model R^2	87.41**	92.96**
ΔR^2		5.54*

^aValues shown are unstandardized coefficients. Values shown in parentheses are standard errors.

^bVariable calculated from the probit analysis using the Heckman procedure.

^cNatural log on the book value of assets.

^dStandardized, prior to inclusion.

* $p < 0.05$; ** $p < 0.01$.

lower short-term growth following initial foreign market entry than will new ventures. This hypothesis was tested using moderated hierarchical linear regression, with sales growth over the three years following the decision to internationalize for those firms that did not delist used as the outcome variable (see Table 3). When the control variables are

included in the analysis, the main effects of the regression indicate that the decision to internationalize is marginally significant and positively related to short-term sales growth (coefficient = 0.21, $p = 0.08$). The interaction term (decision x age at internationalization) indicates that age significantly moderates the relationship between the decision to

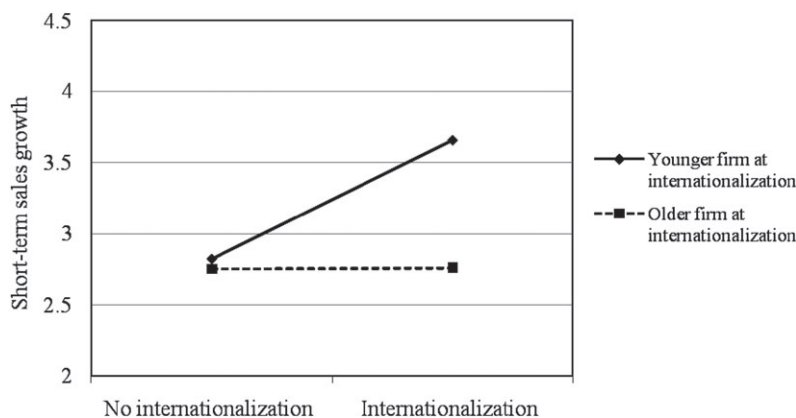


Figure 3. Moderating effect of firm age with the decision to internationalize on short-term sales growth

internationalize and short-term sales growth (coefficient = -0.21 , $p < 0.05$) in the hypothesized direction.

The graph of the moderating effect of internationalization and firm age at internationalization provides evidence in support of Hypothesis 2 (see Figure 3). For younger firms, the decision to internationalize leads to significantly higher levels of short-term sales growth than for older firms. Simple slope tests were conducted to determine the nature of the moderated relationship found in the regression analyses (Aiken and West, 1991). For older firms, the decision to internationalize and short-term sales growth were not strongly related and the slope was nonsignificant (simple slope = 0.004 , $t = 0.026$, $p = ns$). For younger firms, however, there was a significant and positive relationship between the decision to internationalize and short-term sales growth (simple slope = 0.418 , $t = 2.75$, $p < 0.01$). Thus, the results provide support for Hypothesis 2.

DISCUSSION AND CONCLUSIONS

A growing body of research examining the internationalization of young versus established firms has emerged over the past two decades (Johanson and Vahlne, 1990; Oviatt and McDougall, 1994). While the bulk of this research has focused on these firms' motivation to internationalize, far less attention has been given to the outcomes of internationalization. Recent theoretical work by Sapienza and colleagues (2006) highlights the potential outcomes of internationalization for new and established firms. Using a capabilities perspective, Sapienza *et al.* (2006) have

sought to theoretically reconcile the potential trade-off that firms are forced to make between short-term growth and survival when entering international markets. In this study, we have tested some of the propositions. Applying the liabilities of newness perspective (Stinchcombe, 1965), we have suggested that firm age positively impacts higher survival rates in international markets because of the more developed organizational capabilities and resources of more established firms. In contrast, using the liabilities of aging perspective (Barron *et al.*, 1994), we argued and found that, of the firms that survive internationalization, younger firms displayed higher short-term growth rates than their more established counterparts.

Our results show that firms may face a dilemma—failing to internationalize is likely to enhance the odds of long-term survival, yet internationalizing early in the development of the firm is likely to maximize the short-term growth potential of the firm. It is possible that firms could achieve both survival and growth by creating a balanced set of capabilities prior to internationalization. Knowing which capabilities to develop and use in international markets requires foresight on the part of managers and founders, since recipes for internationalization are not to be well-known *a priori*.

Prior research has primarily focused on those factors that encourage firms to internationalize. Our results extend current knowledge of early internationalization by focusing on the factors that can influence gains from internationalization (i.e., liabilities of newness and aging) and showing that newer firms stand to gain when they internationalize (at

least in terms of firm short-term growth). Integrating our findings with the theoretical arguments made by Sapienza *et al.* (2006) using a capabilities perspective of internationalization, our results also suggest that the consequences of the decision to internationalize are important for new and established firms. Though limited in their capabilities, younger firms appear to have the flexibility to reconfigure and reuse their capabilities in ways that established firms cannot always do (Eisenhardt and Martin, 2000; Nelson and Winter, 1982). For this reason, younger firms make better and repeated use of their limited capabilities.

Our study has limitations that present opportunities for future research. Most notably, as happens with archival data, the development of our longitudinal database led to a decrease in the number of firms used in the analyses. We believe that a critical need for future research is the availability of reliable data that can catalog firm founding dates successfully. Further, the use of publicly traded firms to build the initial dataset made it impossible for us to study firms from their inception. Although highly challenging in terms of obtaining the necessary data from nascent firms, ideally, future research would examine both private and public firms to avoid this particular limitation. Finally, since the firms in the sample were all U.S. firms, it is likely that an exploration of non-U.S. firms and their decision to internationalize might lead to different results. Non-U.S. firms might experience distinct cultural, political, or economic challenges associated with internationalization.

With regard to firm outcomes, firm age and short-term growth may have a curvilinear relationship, depending upon the firm's primary industry and macroeconomic forces. Also, firm age is likely to be only one of several moderating factors determining the survival and short-term growth of internationalizing firms. For example, Sapienza *et al.* (2006) proposed several other moderators, such as managerial experience with internationalization and the fungibility of resources. Given our initial finding of support for the moderating effects of firm age with regard to short-term growth, further examinations of other moderating factors seems warranted.

In conclusion, the timing of the decision to internationalize is important to firms. This decision is likely to influence managers' ability to select and deploy the resources needed for internationalization and bundle them in ways that enable survival and subsequent short-term growth. The decisions made

in the context of internationalization are likely to have enduring effects on firms, thus determining the outcomes of their international entry decision. How early after firm founding the development of capabilities needed for successful internationalization occurs might be particularly important with respect to the timing of foreign market entry. Additionally, our results indicate that younger firms that go international have advantages in terms of adaptability, but this adaptability might be bounded by their own resource constraints. Being able to redeploy resources quickly gives these younger firms an advantage over their established rivals. In situations where older firms engage in internationalization, capabilities that are strongly tied to an existing home country environment could promote inertia and conservatism, possibly reducing these firms' ability to adapt quickly and exploit promising international opportunities.

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REFERENCES

- Aiken LS, West SG. 1991. *Multiple Regression: Testing and Interpreting Interactions*. Sage: Newbury Park, CA.
- Autio E, Sapienza HJ, Almeida JG. 2000. Effects of age at entry, knowledge intensity, and imitability on international growth. *Academy of Management Journal* **43**(5): 909–924.
- BarNir A, Gallaughier JM, Auger P. 2003. Business process digitization, strategy, and the impact of firm age and size: the case of the magazine industry. *Journal of Business Venturing* **18**(6): 789–814.
- Barron DN, West E, Hannan MT. 1994. A time to grow and a time to die: growth and mortality of credit unions in New York City, 1914–1990. *American Journal of Sociology* **100**(2): 381–421.
- Brush CG. 1995. *International Entrepreneurship: The Effects of Firm Age on Motives of Internationalization*. Garland Publishing Co.: New York.
- Certo ST. 2003. Influencing initial public offering investors with prestige: signaling with board structures. *Academy of Management Review* **28**(3): 432–446.
- Cumming D, Sapienza HJ, Siegel DS, Wright M. 2009. International entrepreneurship: managerial and policy

- implications. *Strategic Entrepreneurship Journal* 3(4): 283–296.
- Delmar F, Shane S. 2004. Legitimizing first: organizing activities and the survival of new ventures. *Journal of Business Venturing* 19(3): 385–410.
- Eisenhardt K, Martin J. 2000. Dynamic capabilities: what are they? *Strategic Management Journal* 21(10): 1105–1121.
- Fernhaber SA, McDougall-Covin PP, Shepherd DA. 2009. International entrepreneurship: leveraging internal and external knowledge sources. *Strategic Entrepreneurship Journal* 3(4): 297–320.
- Fischer HM, Pollock TG. 2004. Effects of social capital and power on surviving transformational change: the case of initial public offerings. *Academy of Management Journal* 47(4): 463–481.
- Hayes AF, Matthes J. 2009. Computational procedures for probing interactions in OLS and logistic regression: SPSS and SAS implementations. *Behavior Research Methods* 41: 924–936.
- Heckman JT. 1979. Sample selection bias as a specification error. *Econometrica* 47(1):153–161.
- Hosmer DH, Lemeshow S. 1999. *Applied Survival Analysis: Regression Modeling of Time to Event Data*. John Wiley: New York.
- Johanson J, Vahlne JE. 1990. The mechanism of internationalization. *International Marketing Review* 7(4): 11–24.
- Keupp MM, Gassmann O. 2009. The past and the future of international entrepreneurship: a review and suggestions for developing the field. *Journal of Management* 35(3): 600–633.
- Loughran T, Ritter JR. 1995. The new issues puzzle. *The Journal of Finance* 50(1): 23–51.
- McDougall PP, Shane S, Oviatt BM. 1994. Explaining the formation of international new ventures: the limits of theories from international business research. *Journal of Business Venturing* 9(6): 469–487.
- Nelson RR, Winter SG. 1982. *An Evolutionary Theory of Economic Change*. Harvard Press: Cambridge, MA.
- Oviatt BM, McDougall PP. 1994. Toward a theory of international new ventures. *Journal of International Business Studies* 25(1): 45–64.
- Sapienza HJ, Autio E, George G, Zahra S. 2006. A capabilities perspective on the effects of early internationalization on firm survival and growth. *Academy of Management Review* 31(4): 914–933.
- Shaver JM. 1998. Accounting for endogeneity when assessing strategy performance: does entry mode choice affect FDI survival? *Management Science* 44(4): 571–585.
- Shrader RC, Oviatt BM, McDougall PP. 2000. How new ventures exploit trade-offs among international risk factors: lessons of the accelerated internationalization of the 21st century. *Academy of Management Journal* 43(6): 1227–1247.
- Singer JD, Willett JB. 1993. It's about time: using discrete-time survival analysis to study duration and the timing of events. *Journal of Educational Statistics* 18(2): 155–195.
- Sorensen JB, Stuart TE. 2000. Aging, obsolescence, and organizational innovation. *Administrative Science Quarterly* 45(1): 81–112.
- Soriano DR, Dobon SR. 2009. Linking globalization of entrepreneurship in small organizations. *Small Business Economics* 32(3): 233–239.
- Stinchcombe AL. 1965. Social structure and organizations. In *Handbook of Organizations*, March JG (ed). Rand McNally: Chicago, IL; 142–193.
- Westhead PM, Wright M, Ucbasaran D. 2001. The internationalization of new and small firms: a resource-based view. *Journal of Business Venturing* 16(4): 333–358.
- Wiklund J, Baker T, Shepherd D. 2010. The age-effect of financial indicators as buffers against the liability of newness. *Journal of Business Venturing*. Forthcoming.
- Zahra S. 2005. A theory of international new ventures: a decade of research. *Journal of International Business Studies* 36(1): 20–28.
- Zahra S. 2008. The virtuous cycle of discovery and creation of entrepreneurial opportunities. *Strategic Entrepreneurship Journal* 2(3): 243–257.
- Zahra S, Ireland R, Hitt MA. 2000. International expansion by new venture firms: international diversity, mode of market entry, technological learning, and performance. *Academy of Management Journal* 43(5): 925–950.