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Internationalize to live: a study of the post-internationalization survival of new ventures

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Abstract Despite a growing number of studies on the survival of new ventures who pursue an international entry strategy, research in this area is not yet conclusive. One line of argument tells a story of unprepared novices making a risky move, and thus predicts negative consequences. Another line of argument tells a story of prepared entrepreneurs making a strategic decision, and thus predicts positive consequences. The problem of estimating the true effect involves an important endogeneity problem that can only be overcome by accounting for the fact that new ventures self-select into internationalization. The goal of this research is to add to the post-internationalization survival literature by accounting for this self-selection using an endogenous switching model in a potential outcomes or counterfactual inference approach. Leveraging a panel of US new ventures from the Kauffman Firm Survey, our results paint a picture more in line with the preparedness logic of new venture internationalization. After controlling for this self-selection, we find a positive average treatment effect of internationalization on survival, and we find evidence that early internationalization is better for post-internationalization survival than late internationalization. We argue that these results suggest that the new theories of new venture internationalization needs to be further unchained from the process theories of internationalization.

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1 Introduction

Despite a growing number of studies on the survival of new ventures who pursue an international entry strategy, research in this area is not yet conclusive. Both positive and negative effects have been attributed to internationalization as a strategy for newly established firms. The traditional process theory of internationalization (Johanson and Vahlne 1977) views new ventures as too young and inexperienced, and thus unprepared for internationalization. Following this line of argument, researchers have pointed to liabilities of newness, smallness, and foreignness (Zahra 2005), to argue that internationalization needs resource commitments and experience that new ventures cannot afford and poses them to risks they cannot handle, and hence predict a higher mortality rate for international new ventures compared to their counterparts that remain local (Schueffel et al. 2011). In sum, the old theory paints a picture of unprepared novices blindly jumping to their own demise.

Nevertheless, in reality we have seen a marked rise in the actual number of new ventures that internationalize (Oviatt and McDougall 1994). The phenomenon has gained interest from a variety of scholars, and has become the center of attention in the growing area of international entrepreneurship, at the intersection of

international business and entrepreneurship research (Keupp and Gassmann 2009). On the one hand, one could argue that increasing internationalization of new ventures is simply a product of changing times: international markets are now much more homogenous than they used to be, and communication and transportation across national boundaries is now much easier (Bloodgood et al. 1996). However, international entrepreneurship scholars argue that new ventures internationalize not just because they can, but because they see advantages in doing so (Oviatt and McDougall 2005). International entry provides new ventures with access to larger, more diversified markets, and access to new opportunities. The new theory paints a picture of prepared entrepreneurs jumping to grasp opportunities.

Although it would seem that from this new theory of international entrepreneurship, we could derive a prediction of internationalization leading to increased chances of new venture survival, the most important theoretical study to date aiming to integrate the old and new theories would deny us such a prediction. Sapienza et al. (2006) note the abovementioned benefits of internationalization as well as an "imprinting" effect of openness to change and adaptiveness when international entry is done early in a venture's life, both suggest that these benefits would be observed in post-internationalization growth but not survival. Survival, they argue instead, is mostly influenced—and influenced negatively—by the unpreparedness issues outlined in the old theory, such as lack of social embeddedness in the new market, lack of positional advantage in the new market, and lack of internal and external processes and routines for coordination, managing relationships, etc.

Notwithstanding the tenuous logic of new ventures growing post-internationalization while at the same time not surviving, another problem of trying to simultaneously hold on to the new and old theories of new venture internationalization is that as argued above, these theories hold different views on the antecedents of internationalization, i.e., the unpreparedness vs. preparedness logic. This creates a conspicuous endogeneity problem. The fact that new ventures do not choose to internationalize blindly, but instead self-select into internationalization anticipating the outcome, represent a quintessential case of the commonly existing but rarely dealt with endogeneity problem in strategy research (Hamilton and Nickerson 2003). Accounting for this endogeneity means recognizing that firms that take one strategy versus another (e.g., to internationalize or not) do so because they anticipate that particular strategy to be more beneficial. Thus, it is reasonable to expect that both internationalizing and non-internationalizing new ventures choose their respective strategies to maximize their chances of survival, hence rendering a substantially different net effect of internationalization on survival once this self-selection is accounted for. In line with this expectation, Mudambi and Zahra (2007) found lower survival rates for international new ventures compared to other foreign market entry modes of British firms, but notably, the effect disappeared after self-selection was considered in the analysis.

Beyond a lack of negative effect on survival, other voices in the international entrepreneurship literature have presented more clear arguments for a distinctively positive effect of internationalization on new venture survival. In many industries, the nature of competition has become global, and customers have come to expect it is a norm rather than exception (Bloodgood et al. 1996). In such environments, a lack of international presence could be a recipe for failure, and conversely, internationalization can be viewed as an "unconditional strategy for surviving" (Puig et al. 2014: p.653). Based on evidence from manufacturing firms, Puig et al. (2014) argue that internationalization can provide rewards for new ventures such as market knowledge, as well as improved products and processes which can ultimately increase their chances of survival. This narrative tells a more complicated story of entrepreneurs choosing to jump not only to grasp opportunities, but also to avoid the sharks. Nevertheless, the self-selection problem still applies, and not accounted for in the Puig et al. study.

This study aims to present concrete evidence for the first time on the survival benefits of internationalization for all new ventures, and thus to further contribute to the ongoing discussion about the effects of internationalization on new venture survival. Unlike Puig et al. (2014), our study is not limited to manufacturing firms, and unlike Shaver (1998) and Mudambi and Zahra (2007) who account for self-selection, our study is not about comparing modes of entry, but rather international entry vs. not internationalizing at all. To shed light on the role of internationalization on the survival of new ventures, we compare their rate of failure with their counterparts that have remained domestic. Furthermore, we see value in such a comparison, as past survival analyses have focused on comparing early internationalizers with other

firms based on their speed of internationalization (Mudambi and Zahra 2007), scope of internationalization (Sleuwaegen and Onkelinx 2014), or longevity of internationalization (Sui and Baum 2014), but not international activity in itself.

In order to better study the distinction between the preparedness vs. unpreparedness logics that sometimes muddies this debate, we investigate the role of firm age at internationalization on the survival chances of firms that internationalize. Firm age at internationalization, experience of managers and fungibility of resources have been argued to moderate the internationalization-survival relationship (Sapienza et al. 2006) among other competencies such as knowledge intensity and networking capability (Coeurderoy et al. 2011). We specifically aim to avoid methodological limitations of past studies, by leveraging the potential outcomes framework or counterfactual model of causal inference (Morgan and Winship 2007), taking self-selection into consideration using an endogenous switching approach (Clougherty et al. 2016).

We start with a brief theoretical review of research on post-internationalization survival of new ventures. Based on established theories, namely internalization theory (Buckley and Casson 2009; Rugman and Verbeke 2003) from international business and the dynamic capabilities view from strategic management, together with recent finding of research on international entrepreneurship, we argue for a positive effect of internationalization on survival and also a positive effect of internationalizing earlier rather than later on survival. We test our hypotheses using the unique Kauffman firm survey data of more than 4900 US-based new ventures composed of both domestic and international new ventures, tracked for eight consecutive years.

2 Theoretical review

Following a call for research on the effect of internationalization on the survival of new ventures (Zahra 2004), the past few years have seen a growing number of studies on the matter (see Puig et al. 2014 for a good review).

There are risks and rewards attributed to internationalization. The risks of internationalization are often attributed to the two forces known as liabilities of newness and liabilities of foreignness (Zahra 2005). The two forces act to increase mortality of new ventures, due to the fact that they face increasing amounts of pressure after internationalization to create new routines and dynamically adapt their capabilities to the new environment (Al-Aali and Teece 2014; Sapienza et al. 2006). This resource-intensive process and the liabilities of foreignness, meaning the need to compete with local competitors without the required relational and experiential knowledge (Johanson and Vahlne 1977), appears as a shock to the international new venture and therefore increases its chances of mortality. Therefore, the reason for higher chances of failure after internationalization is risks due to lack of adequate resources and experience to overcome liabilities of foreignness and newness (Carr et al. 2010; Fernhaber and Li 2013). However, these arguments imply a rather blind approach to internationalization, whereas if we consider the fact that new ventures self-select into internationalization, we might at least concede that they weigh these risks against an attractive set of rewards.

Accordingly, an alternative set of arguments presents a variety of rewards associated with internationalization. Comparing international new ventures (INVs), i.e., firms that start internationalization almost immediately after start, with sequential internationalizers, who slowly increase their level of commitment to international markets according to their experiential knowledge, Mudambi and Zahra (2007) find no evidence of higher failure rates for INVs after controlling for self-selection. Puig et al. (2014) argue that internationalization opens new opportunities for the new venture in terms of market expansion and capability development (Lu and Beamish 2001). Studies comparing the performance of international new ventures with domestic new ventures show a higher growth rate for INVs (Mcdougall et al. 2003; Westhead et al. 2001). Zahra et al. (2000) present another benefit for internationalization in that INVs can diversify and expand their target markets through internationalization and hence be less dependent on the conditions of domestic markets and also less prone to their volatility. Given the differing perspectives, we do not see a consensus from past research on the internationalization-survival relationship for new ventures.

Below, we hypothesize that for firms that internationalize, the benefits are more likely to outweigh the costs, because the decision to internationalize is a deliberate strategy taken by entrepreneurs who consciously calculate and anticipate the ramifications of their strategy. In other words, we hypothesize a net positive effect of internationalization after accounting for self-selection.

2.1 Survival after deliberate internationalization

Internationalization provides new ventures with growth and learning opportunities that would not emerge if they continued their domestic operations.

Expansion into international markets helps new ventures take advantage of the scalability of their valuable resources, specifically knowledge-based capabilities (Prashantham 2005). New ventures that have invested into creating a valuable pool of knowledge-based capabilities can increase their survival chances by expanding their operations across various markets and enjoy higher scales that will help reimburse those investments. As industries get crowded, the increasingly fierce competition from incumbents pushes new ventures to pursue new markets outside their domestic environment (Buckley and Ghauri 2004; Puig et al. 2014) that can be critical in their ability to compete. Access to new markets is a form of portfolio diversification, or from an evolutionary perspective, a form of increasing an organism's "requisite variety" in order to increase its adaptability to environmental volatility.

From an institutional theory point of view, internationalization can be viewed as a legitimating activity (Delmar and Shane 2004) in an increasingly globalized economy. If the legitimacy of the firm is taken to be the extent to which it is perceived to be adhering to accepted principles, rules, norms, standards, and ways of doing things (Aldrich and Fiol 1994), new ventures by virtue of being new suffer from a legitimacy gap (Hannan and Freeman 1984). By internationalizing, new ventures demonstrate their capability to participate as a global player in the market, thus signaling legitimacy to stakeholders. This in turn is likely to yield survival benefits (Meyer and Rowan 1977).

The legitimating effects of internationalization are likely to be more critical to survival if internationalization is high at the population level (Hannan and Freeman 1984). Fernhaber and Li (2010) find that new venture internationalization is partially an imitative adaptation to the internationalization of other firms in the venture's home country industry. Indeed, they found both the degree of internationalization and the performance benefits of internationalization to be greater for new ventures, when there is a higher level of internationalization in their home country industry.

Another set of benefits come from learning advantages that internationalization can have for new ventures. International entry connects new ventures with unique networks of suppliers, customers, and competitors (Prashantham and Birkinshaw 2015). The capabilities gained in international markets can be further used in handling core business issues in domestic markets opportunities (Sapienza et al. 2006). Internationalization needs the new ventures to be strong in adapting their capabilities to new market conditions (Verbeke 2003). The literature on "imprinting" also has it that the firms' decision to internationalize early in their life cycle imprints a self-reinforcing path dependence in capability development. Therefore, early internationalization "imprints an ability for successful adaptation (Sapienza et al. 2006: p. 920)." Although they attribute these positive effects to growth rather than survival, the capability for adaptation is virtually synonymous with survival from an evolutionary perspective (Nelson and Winter 1982).

On the other hand, core arguments predicting a higher chance of failure for new ventures picture them as unprepared rookies who find it overwhelmingly difficult to meet the urge to adapt to a new environment. Despite all its benefits for new ventures, internationalization has been described to be too much of a risk for unprepared novices who do not have the experiential knowledge and abundance of resources to come to their rescue (Johanson and Vahlne 1977; McDougall et al. 1994; Sapienza et al. 2006). What is important to consider though is that the decision to have international activity, mostly through international sales, is not one that is made without considering the possible risks that threaten firm longevity, or one made without taking into account the capabilities of the firm to overcome those threats. That is when we adjust for the endogeneity of their *decision to internationalize*; we can go beyond this unpreparedness assumption and explore the role of internationalization on survival, treating internationalization as a deliberate strategic decision rather than a blind random treatment. In doing so, the preparedness logic trumps the unpreparedness logic in predicting the survival consequences of internationalization.

Similar to our approach in this paper, Patel et al. (2016) find that when the endogeneity of the new venture's internationalization decision is controlled for, international sales in the same region decrease the likelihood of failure. The core benefits they see in interregional internationalization is the opportunity these firms gain through scope economies by having a broader market base, without having to increase their costs

significantly. These benefits, of course, cannot be observed if we treat internationalization as an incident that happens to some random set of firms. The reason is that to be able to start exporting outside the borders, firms need to be *prepared*, in terms of the capabilities that are required in an international stage, such as superior knowledge advantages or marketing capabilities (Grøgaard and Verbeke 2012). Therefore, we argue that an international presence through exports demonstrates in itself a decision made by the new venture's managers, based on an understanding of, and reliance on their capabilities to actively engage in international markets. Although being exposed to all the risks of internationalizations for new ventures might be overwhelming, we argue that their preparedness to take on those challenges helps them flourish the benefits of internationalization, which at the end of the day results in a lower chance of failure for them, had they remained purely domestic. Following these arguments on the benefits of internationalization as opposed to domestic operations for new ventures, we hypothesize as follows:

H1 After the endogeneity of a firm's internationalization decision is considered, new ventures that have internationalized have higher chances of survival than those who have not.

2.2 The moderating effect of age at internationalization

The benefits discussed earlier for deliberate internationalization are not homogenous across all firm ages. Both scale and learning benefits can be better leveraged if internationalization is sooner initiated. Mortality rates are higher in the first years after establishment (Schueffel et al. 2011). They tend to become lower when firms age. This implies that the benefits of internationalization are more critical in the first years after establishment. Also, arguments from the "learning advantages of newness" have it that younger firms can more easily adapt their routines to match the requirement of new international environments, as they are not locked into old routines that should be first unlearned before new knowledge can be assimilated (Autio et al. 2000). Our discussion on learning benefits of internationalization, which relies on the capability of firms to imprint adaptability, among other learning benefits, also implies that these benefits can be better leveraged earlier in the firm's life cycle.

Nevertheless, the earlier the internationalization strategy is employed, the more likely it is that the "unpreparedness" arguments would apply if we do not account for endogeneity.

The conflicting directions of the unpreparedness forces and positive effects of internationalization may explain why previous studies have found inconsistent results regarding the effect of age and timing of internationalization (Khavul et al. 2010; Zhou and Wu 2014). Thus, after adjusting for endogeneity, we predict that overall, the sooner the firm starts its international pursuit, the greater the effect of internationalization on the probability of survival. Due to data limitations and consistency with the potential outcome framework, we separate new ventures into a treatment group of late internationalizers and a control group of early internationalizers (who do so in the first 3 years after inception). Therefore, we hypothesize as follows:

H2 After the endogeneity of firm's internationalization decision is considered, new ventures that internationalize late will have lower survival chances compared to new ventures that internationalize early.

3 Method

3.1 Data

We used the Kauffman Firm Survey (KFS) panel data for this study. The longitudinal panel version of the KFS consists of 3140 US firms all established in 2004. After a baseline survey in 2004, seven follow-up waves at roughly annual intervals were conducted for a total of 8 years of data. The data includes those firms that responded to the survey in every survey wave from the first one to the last (or to the one they exited), or have responded to all follow-ups and stated a temporary shutdown at the seventh follow-up. The sampled firms were chosen from the Dun and Bradstreet database. The final sample is a stratified one that oversamples businesses in high/medium-tech industries (Farhat and Robb 2014). To account for this oversampling, probability weights are provided in the final database, which we use to remove selection bias. Table 1 presents some quick summary count statistics about the subgroups in the total sample, together with their weighted counts.

The KFS includes a question on the current operating status of the firm and in case the firm is no longer in

Table 1 Simple statistics, technology, and gender ownership sampling strata (adapted from Farhat & Robb, 2014)

Subgroup	Un-weighted		Weighted	
	N	%	*N*	%
High-tech, woman owned	103	2.1	190	0.3
High-tech, not woman owned	602	12.2	1123	1.5
High-tech total	705	*14.3*	*1313*	*1.8*
Medium-tech, woman owned	271	5.5	2026	2.8
Medium-tech, not woman owned	1058	21.5	7649	10.4
Medium-tech total	*1329*	*27.0*	*9675*	*13.2*
Non-tech, woman owned	513	10.4	14,366	19.6
Non-tech, not woman owned	2381	48.3	47,924	65.4
Non-tech total	*2894*	*58.7*	*62,290*	*85.0*
Total	*4928*	*100.0*	*73,278*	*100.0*

business, provides data on the reason it went out of business. This reason can be either the business stopped operations permanently, merged into another company, or was acquired. We also have data about the international activities of firms in the sample. This information, together with detailed information on individual and business level characteristics and of course the longitudinal nature of the database, makes it an excellent source to analyze the survival of young international firms. We used the private, confidential version of the database provided by the National Opinion Research Center (NORC) to gain access to more detailed characteristics than the publicly available database. Table 2 provides data on survival of firms in the database.

Due to increasing importance of international activities of new ventures, the administrators of the survey started asking about international activities of firms starting from the third follow-up survey in 2007. Respondents were asked whether they had any sales outside of the USA and for the percentage of their foreign sales to their total sales. Table 3 provides summary statistics on the number of firms that internationalized and their degree of internationalization. We did not include data for the first 3 years in our analysis, as it would introduce a huge amount of missing observations for the internationalization variable. Therefore, the sample size in our analysis when the internationalization variable is included is 2330.

3.2 Econometric analysis

We want to assess the causal effect of internationalization on survival, taking into account the issue of selection-based endogeneity bias common to most studies of strategies and their outcomes (Hamilton and Nickerson 2003). Following the discussion by Clougherty et al. (2016), we note that since we observe survival/failure data for both internationalized and domestic new ventures, the particular type of endogeneity bias here is that of self-selection rather than sample-selection. In self-selection scenarios, the selection of firms into the mutually exclusive treatment and control groups is deliberately chosen by the firm rather than being randomly assigned. Since this self-selection occurs by anticipating the outcome of the choice, the treatment variable (internationalizing vs. not) is endogenous.

Previous approaches to handling self-selection in the empirical literature have been varied, with researchers applying a mix of Heckman-type methods using the inverse Mills ratio (IMR), two-stage least squares (2SLS) with instrumental variables, and switching regression procedures (Shaver 1998, Mudambi and Zahra 2007, Hamilton and Nickerson 2003). In order to allow for comparability with past research, we use a two-stage Heckman selection model (Heckman 1974, 1979), where we predict our treatment variable (whether or

Table 2 Survival and reason for going out of business

	2004	2005	2006	2007	2008	2009	2010	2011	Total
Stopped operation		260	247	188	213	141	133	128	1296
		8.3%	7.9%	6.0%	6.8%	4.5%	4.2%	3.6%	41.3%
Sold or merged		43	36	36	25	23	20	17	200
		1.4%	1.1%	1.1%	0.8%	0.7%	0.6%	0.5%	6.4%
Remaining firms in survey	3140	2837	2554	2330	2092	1928	1775	1630	
		90.4%	81.3%	74.2%	66.6%	61.4%	56.5%	52.4%	

Table 3 Statistics of firms with international sales

	2007	2008	2009	2010	2011
International sales (0/1)	326	327	299	294	249
Percentage of international firms	14.0%	15.6%	15.5%	16.6%	15.3%
Level of international commitment (foreign sales/total sales)					
Less than 5%	6.7%	7.1%	7.3%	7.7%	6.8%
5–25%	4.5%	5.3%	5.1%	5.2%	4.8%
26–50%	1.2%	1.4%	1.2%	1.6%	1.8%
51–75%	0.7%	0.7%	0.9%	0.8%	0.9%
76–100%	0.8%	1.1%	1.0%	1.1%	0.9%

not a firm has internationalized) using a first-stage generalized estimation equations (GEE) regression and calculate the inverse Mill's ratio. We then insert the calculated IMR in the second-stage regression using survival analysis with the Cox Proportional Hazard Model (Cox 1972).

However, moving beyond past approaches, we take advantage of the powerful potential outcomes framework or counterfactual model of causal inference (Morgan and Winship 2007). The potential outcomes framework, sometimes also called the counterfactual approach to causality, extends the well-established approach to causal inference in experimental designs to the statistical analysis of non-experimental observational data (Imbens and Rubin 2015; Morgan and Winship 2007; Wooldridge 2010). The potential outcomes framework approaches the question of "Does X cause Y" by breaking it down to the two sub-questions of "If X were "Not X" what would Y be?" and "If "Not X" were X, what would Y be?" (Morgan and Winship 2007). Recognizing that in non-experimental observational data the researcher does not control the manipulation of X and is thus not afforded the ability to randomize, the potential outcomes framework builds on the idea that there is nevertheless an underlying assignment mechanism that assigns individuals to either the X or "Not X" groups. Information about this assignment mechanism may then be used to calculate average causal effects also known as average treatment effects (ATE), often further decomposed into average treatment effect on the treated (ATET) and average treatment effect on the not treated (ATENT). In our context, our treatment variable is firm internationalization, and we measure the effect of this treatment on the complete sample (ATE), as well as subsamples of internationalized (treated) and non-internationalized (not treated) firms.

Estimating these effects relies on comparing observed quantities (the expected value of the outcome for those who were treated) with unobserved quantities (the expected value of the outcome for those who were not treated had they been treated) which have a counterfactual nature. In contexts where endogeneity is a problem, with the help of an instrumental variable, an assignment mechanism approximating randomization may be achieved, although caution needs to be exercised in interpreting the results because they will depend on how the particular instrumental variable manipulates the endogenous independent variable, and the extent to which individuals "comply" with the instrumental variable in terms of the impact on values of the endogenous independent variable (Morgan and Winship 2007; Wooldridge 2010).

Within the counterfactual approaches, researchers must decide between the endogenous treatment model and endogenous switching model (Claugherty et al., 2016). In the endogenous treatment model, the effect of the treatment variable on the outcome equation is modeled as an intercept, keeping the coefficient of other determinants of the outcome constant. Whereas in the endogenous switching model, the coefficient of all determinants of the outcome are allowed to vary between the treatment and control groups. We argue that since internationalization is a deliberate strategy taking into account a variety of firm and environment characteristics, the effect of such characteristics on post-internationalization survival is likely to vary between treatment and control groups. Thus, in this study, we favor the endogenous switching approach, which produces two different sets of coefficients for the predictors of outcome for the treatment and control groups (here internationalized vs. purely domestic firms).

The counterfactual inference approach allows us to estimate several quantities of interest: the potential outcome means (*PO means*) of treatment and control groups, the average treatment effect (ATE) as a measure of the overall causal effect of the treatment across individual firms and the average treatment effect on the treated (ATET) as well as the average treatment effect on the not treated (ATENT). As pointed out by Shaver (1998), these distinct estimates allow us to better understand the different (observed and potential) effects of internationalizing and not internationalizing for both

those who did and those who did not internationalize. To calculate these effects, we use the potential outcomes framework as explained above, using Stata's *eteffects* command to estimate the probability of closure, incorporating probability weights and cluster-robust standard errors.

For the treatment model, we followed the suggestion by Ndofor et al. (2011) on the preference of using maximum likelihood estimation of generalized estimation equations (GEE), as compared to both fixed-effect and random effects estimation methods, to estimate parameters of panel data analyses. This is relevant in our study for two reasons. The first reason is that GEE does not require the dependent variable to be normally distributed. Our International Sales variable is highly skewed and using methods for normalizing it, significantly disturbs observations. The second advantage of using GEE is that it has no restrictions in terms of assumptions on correlations in within-subject responses (Ndofor et al. 2011). In our model, there is no reason to believe that our variables follow any particular correlation patterns (remain constant over the years or change).

3.3 Variables

3.3.1 Dependent variable

We define closure for a firm in our sample as whether or not the firm went out of business in the observation year (closure = 1 indicates closure and closure = 0 indicates survival). In line with the recent entrepreneurial exit literature that cautions against counting mergers and acquisitions of new ventures as failures, we coded cases of mergers and acquisitions as well as non-response as missing so that they are not entered into the analysis.

3.3.2 Treatment variables

Our main treatment variable is a binary indicator of whether or not the firm has had any international sales until the observation year. This measure is consistent with extant research on internationalization of new ventures (Fernhaber and Li 2010; McDougall and Oviatt 1996; Reuber and Fischer 2002).

For our second hypothesis, the treatment variable is a binary indicator of whether the firm was a later internationalizer whose first international activity was in 2008–2011 or an early internationalizer (who internationalized in the first 3 years after inception, i.e., 2004–2007). This binary indicator was chosen over a continuous variable for age at entry, because lack of data on the years before 2007 makes it difficult for us to establish the precise inception of international activity, and also because a binary treatment variable is more compatible and comparable with the potential outcomes framework applied to our first hypothesis.

3.3.3 Instrumental variables

Most approaches to dealing with endogeneity rely on identifying endogenous equations by using strong instrumental variables (IVs) as predictors of the endogenous treatment. In other words, the set of predictors in the treatment equation must include at least one variable that explains a significant portion of the variation in the treatment variable, but does not have any other independent effect on the outcome variable. Models that fail to incorporate strong IVs produce unstable and uninterpretable results (Certo et al. 2016; Hamilton and Nickerson 2003). Nevertheless, IV estimation is not without complications of its own. Especially in the potential outcomes framework, ATE values need to be interpreted with caution as local average treatment effects (LATE), meaning that they are sensitive to the particular variance of the endogenous treatment that is manipulated by the particular instrument chosen (Morgan and Winship 2007).

In the KFS, respondents were asked if their firm provides a service, a product, or both. We use this data to create a binary variable indicating whether or not a firm has a product. We argue that being product vs. service oriented makes a firm much more likely to have international sales, while not having any other independent effect on survival. Service-based ventures are normally more embedded in local markets and need extensive adaptation and recombination of human skills to meet the specific requirements of international entry (Grøgaard and Verbeke 2012; Rugman and Almodovar 2011). We find strong correlations between this IV and our treatment variable in all of our first-stage models. At the same time, being service or product oriented does not have a clear theoretical effect on the survival of the firm.

In addition, we preformed statistical checks using instrumental variable regressions (Stata's *ivreg2* command) to ensure that we do not have a weak instruments or endogenous instruments problem (Clougherty et al. 2016). The variable appears to be a good instrument as

the mean p value for the Kleibergen-Paap Lagrange Multiplier is 0.0435 (below the 0.05 threshold), indicating no problem of underidentification. In addition, the Kleibergen-Paap Wald F statistics is 18.636, which is above Stock and Yogo's 10% threshold of 16.38 (Clougherty et al. 2016; Stock and Yogo 2005) and indicates that we do not have a weak instruments problem.

With similar reasoning, we argue that our *have product* variable is a reasonable instrument for our age at internationalization treatment as well, as the same logic has it that purely service-based companies would require more time, experience, and information to be able to adjust their services to the international stage, but this variable does not have a direct effect on survival. As for the statistical checks, the mean p value for the Kleibergen-Paap Lagrange Multiplier is 0.0539 (slightly over the 0.05 threshold), indicating a weak passing of the underidentification test. The Angrist-Pischke chi square statistics for underidentification, however, shows a p value of 0.0005 and hence, no problem of underidentification. The Kleibergen-Paap Wald F statistics is 9.57, which is close to the rule of thumb threshold of 10 (Clougherty et al. 2016), which again shows no great concern for weak instruments.

3.3.4 Control variables

Consistent with extant research, we condition on a set of observable control variables that can potentially have an effect on *international sales* or *survival*, aka our treatment and outcome variables. We rely on past studies from international entrepreneurship and strategy literature and control resource endowments of the firm, individual characteristics of the entrepreneurs, and industry characteristics (Mudambi and Zahra 2007; Oviatt and McDougall 2005; Zucchella et al. 2007). We include these control variables both in the treatment and outcome regression estimates, although there does not seem to be consensus on whether or not all the control variables for the outcome model also need to be included in the treatment model (Caliendo and Kopeinig 2008: 38–39).

We measure resource endowments through human resource (HR) slack and financial slack. The reason we used the slack notion instead of the absolute value is that for resources to be effective in internationalization, they need to be fungible in order for entrepreneurs to be able to transfer them across borders (Sapienza et al. 2006; Sui and Baum 2014; Verbeke and Yuan 2013). We measure HR Slack as the inverse of employee productivity of the firm, compared to the industry (Datta et al. 2005; Ferlic 2008; Lecuona and Reitzig 2014; Mishina et al. 2004). We therefore measure HR slack as follows:

$$\text{HR } Slack = \frac{\text{No.}of\ Employees}{Sales} - \left[\frac{\text{No.}of\ Employees}{Sales}\right]_{\text{ind}}$$

To measure Financial Slack resources, we use Bourgeois and Singh's (1983) definition of available slack, measured as follows:

$$Financial\ Slack = [Cash \text{ and } Securities - Current\ Liabilities] / Total\ Revenue$$

Knowledge intensity is included in the model due to extant evidence on its role in internationalization decisions (Autio et al. 2000; Baum et al. 2011; Fernhaber and Li 2010; Li et al. 2013). We measure knowledge intensity by dividing the number of employees in R&D to the total number of employees. The KFS also provides a *credit risk* rating for the firms, based on the firms' credit score risk class (higher means higher risk), which we control as it can potentially affect both internationalization and survival. We further add in our model the managers' past experience by measuring the average number of years of past experience of the top management (Manolova et al. 2010; Westhead et al. 2001). In addition, we control for past entrepreneurial experiences of the top management, by adding a variable, which we name *Other Business*, that equals one if any of the firm founders had start-up experience before founding their current firm, and zero if they did not. We also include in our estimation models entrepreneur characteristics such as immigrant status, gender, and level of education (Hashai 2011; Robson et al. 2012; Verbeke et al. 2014). We control for firm size by using the number of employees. We use the logarithm of this amount to account for the skewness of firm size.

As discussed above, firms might internationalize in an effort to gain legitimacy in competing with incumbents in their industry. Therefore, we predict that the level of internationalization in an industry would have a role in the firms' decision to internationalize. To measure this, we calculate the average level of internationalization of each industry at the two-digit NAICS code using data from the survey of business owners (SBO)

provided by the US Census Bureau (Census Bureau 2007) to provide a reliable source of data from a representative sample of firms. The benefit of using SBO is that we have data from a large sample of firms, with a higher potential to represent the whole population of firms in the industry. It is interesting though to note that the industry averages calculated using SBO are highly correlated with the ones calculated from KFS itself ($\rho = 0.846$). We also control for the industry effects by using a dummy variable for the firm being in a high-tech industry (Mudambi and Zahra 2007) (Table 4). Table 5 provides descriptive statistics and pairwise correlations between our model variables.

Table 4 Variables

Variable name	Description/measurement
Closure	Equals 1 if the firm has gone out of business in the observation year, and 0 for survived firms. Missing for M&A exits.
International sales (1/0)	Equals 1 if firm has any international sales in its life cycle
Late vs. early internationalization	Equals 1 if firm has internationalized in 2008–2011 for the first time and 0 if the firm has internationalized in 2004–2007 for the first time. Missing for non-internationalized firms.
Knowledge intensity	Number of R&D employees divided by total employees
Human resource slack	The ratio of employees/sales compared to the industry average
Financial slack (ln)	Amount of available cash minus short term debt as a percentage of sales (natural logarithm)
Credit risk	The risk of credit default for the business based on five ranges of credit scores.
Firm size (ln)	Natural logarithm of total employees
Managers work experience	Number of years of experience, averaged for top management team
Other business	Equals 1 if any of the managers had another entrepreneurial experience before starting this firm
Female owned	Equals 1 if the principal owner is female
Majority immigrant founders	Equals 1 if majority of founders are immigrants
Founders average education	Average years of higher education for top management
Industry technology level	Equals 1 if industry is high-tech, 0 otherwise
Industry average internationalization	Average percentage of firm internationalization in the industry, based on data from Survey of Business Owners (2007)
Have product	Equals 1 if firm provide a product or product-service mix, and 0 if the firm is provides only services. Missing if the firm provides no products or services.
Traded/local industry	Equals 1 if industry is identified as a "traded" industry, 0 if "local" as defined and specified by Delgado et al. (2015)

4 Analysis and results

We begin the analysis of the effect of internationalization on survival by estimating the treatment model (Table 6 column A) in order to use the predicted values of the treatment in a 2SLS-style second-stage outcome model (column C) and to calculate the IMR for the Heckman-based analyses in columns D, E, and F. For comparison, a single-stage outcome model that does not account for endogeneity is reported in column B.

Thinking back to the distinction between the preparedness perspective and unpreparedness perspective, it is noteworthy that our findings in the treatment model (column A) support the notion that new ventures self-select into internationalization when they are prepared to do so, and when the legitimacy benefits of doing so are likely to be high (i.e., when their peers are internationalizing). We find that HR slack, firm size, founders' education, technology level, and industry average internationalization are all highly significant predictors of internationalization, along with our instrumental variable. This confirms the findings of international entrepreneurship theories on the role of firm and entrepreneurs' idiosyncratic capability endowments on the decision of new ventures to internationalize (Bloodgood et al. 1996; Dai et al. 2014; Oviatt and McDougall 2005). Besides we see the predictions we had based on institutional theory that firms follow their peers in the decision to internationalize are supported. In other words, internationalization is not a passive incident in the life cycle of a firm, but an active decision made by new ventures which is enabled by their idiosyncratic capabilities. The only coefficient inconsistent with the preparedness logic is the positive coefficient for credit risk.

Moving on to the outcome models, we see that in a model that does not control for endogeneity (column B), a significant effect of internationalization is observed, such that internationalized firms have a 48.7% lower hazard of closure than domestic firms (0.513 compared

Table 5 Descriptive statistics, pairwise correlations

		Mean	Std. dev.	1	2	3	4	5	6	7
1	International sales (1/0)	0.215	0.410	1						
2	Early Internationalization	0.646	0.478	–	1					
3	Knowledge intensity	0.114	0.185	0.0864*	−0.0015	1				
4	Human resource slack	0.400	2.277	−0.0731*	−0.1273*	0.0199*	1			
5	Financial slack (ln)	−0.018	3.969	0.0534*	−0.0566*	0.0224*	0.3509*	1		
6	Credit risk	3.015	0.919	−0.0233*	0.0485*	0.0347*	0.0340*	0.0580*	1	
7	Other business	0.472	0.499	0.0723*	−0.0422	0.0833*	−0.0052	−0.0171*	−0.0464*	1
8	Firm size (ln)	1.007	0.907	0.1235*	0.0094	0.0532*	0.1640*	−0.0856*	−0.1184*	0.1376*
9	Managers work experience	13.066	10.234	0.0052	0.0219	−0.0333*	0.0138	−0.0140	−0.0466*	0.0846*
10	Female owned	0.187	0.390	−0.0271*	0.0008	−0.0294*	0.0033	0.0291*	−0.0022	0.0154*
11	Majority immigrant founders	0.0758	0.265	0.0706*	0.0084	−0.0078	0.0321*	−0.0058	−0.0015	−0.0280*
12	Founders average education	6.467	1.994	0.1188*	0.0134	0.0169*	−0.0266*	−0.0094	−0.0970*	−0.0057
13	Industry technology level	1.095	0.293	0.0736*	−0.0131	0.0263*	−0.0036	0.0019	−0.0246*	0.1196*
14	Industry average internationalization	0.109	0.102	0.2040*	−0.0584*	0.0690*	−0.0312*	0.0037	−0.0254*	0.0400*
15	Have product	0.483	0.500	0.1727*	−0.0769*	0.0823*	−0.0122	0.0332*	−0.0099	0.1377*
16	Traded/local industry	0.587	0.492	0.1955*	−0.0076	0.0513*	−0.0314*	−0.0127	−0.0431*	0.1747*

	8	9	10	11	12	13	14	15	16
1									
2									
3									
4									
5									
6									
7									
8	1								
9	0.0566*	1							
10	−0.0915*	−0.1084*	1						
11	0.0545*	−0.0486*	−0.0717*	1					
12	0.0429*	−0.009	0.0171*	0.0731*	1				
13	0.0511*	0.0333*	−0.0139	0.0048	0.0192*	1			
14	0.0276*	−0.0224*	0.0340*	0.0402*	−0.0276*	0.2451*	1		
15	0.0665*	−0.0618*	0.0180*	−0.0019	−0.0799*	0.0723*	0.3802*	1	
16	−0.0308*	0.0488*	−0.0271*	0.0625*	0.1833*	0.0930 *	0.02841*	−0.004	1

*$p < 0.5$

Table 6 Estimation results for H1, choice model, and survival analysis

	(A) Choice model	(B) 1-Stage survival	(C) Heckman predicted	(D) Heckman Mills ratio	(E) Heckman int. sales = 0	(F) Heckman int. sales = 1
Estimation model	GEE binomial[a]	Cox. prop. haz.[b]	Cox. prop. haz.	Cox. prop. haz.	Cox. prop. haz.	Cox. prop. haz.
Dependent variable	International sales	Failure hazard	Failure hazard	Failure hazard	Failure hazard	Failure hazard
International sales (1/0)		0.513**		0.925		
		(−2.79)		(−0.08)		
Knowledge intensity	0.118	1.363	1.260	1.369	1.250	2.722
	(0.812)	(0.85)	(0.61)	(0.86)	(0.54)	(1.14)
Human resource slack	−0.087**	1.1497*	1.234**	1.155*	1.156*	1.045
	(−3.346)	(2.12)	(2.60)	(2.14)	(2.17)	(0.16)
Financial slack (ln)	−0.011†	1.002	1.009	1.003	0.998	1.067
	(−1.674)	(0.09)	(0.43)	(0.15)	(−0.09)	(1.34)
Credit risk	0.066*	1.327***	1.275**	1.328***	1.329***	1.429
	(2.207)	(4.54)	(3.43)	(4.52)	(4.16)	(1.63)
Other business	0.159	1.140	1.002	1.129	1.049	2.416†
	(0.784)	(1.01)	(0.01)	(0.92)	(0.34)	(1.85)
Firm size (ln)	0.153***	0.719**	0.626***	0.713**	0.752**	0.426*
	(3.678)	(−3.45)	(−4.16)	(−3.44)	(−2.76)	(−2.02)
Managers work experience	−0.003	0.988†	0.991	0.988†	0.990	0.960†
	(−0.434)	(−1.73)	(−1.35)	(−1.80)	(−1.35)	(−1.78)
Female owned	−0.039	0.993	1.053	0.100	0.959	1.509
	(−0.215)	(−0.04)	(0.32)	(−0.00)	(−0.24)	(0.85)
Majority immigrant founders	0.365	0.697	0.512†	0.648	0.667	0.555
	(1.215)	(−1.22)	(−1.90)	(−1.39)	(−1.19)	(−0.66)
Founders ave. education	0.188***	0.981	0.854	0.970	0.958	1.185
	(4.173)	(−0.60)	(−1.52)	(−0.81)	(−0.90)	(0.51)
Industry technology level	0.611**	0.995	0.617	0.878	0.964	0.715
	(2.951)	(−0.02)	(−1.21)	(−0.46)	(−0.11)	(−0.33)
Industry ave. int'l	2.508***	1.074	0.081	0.849	0.716	3.537
	(3.668)	(0.10)	(−1.30)	(−0.19)	(−0.28)	(0.22)
Have product	0.272**					
	(3.075)					
International sales (predicted)			2.007			
			(1.30)			
Mill's ratio				1.329	1.684	0.755
				(0.60)	(0.52)	(−0.14)
Constant	−4.257***					
	(−11.961)					
No. of observations	7569	7594	7574	7569	5884	1685
F (df)		5.38 (13)	5.17 (13)	5.19 (14)	3.23 (13)	3.46 (13)
Wald chi^2 (df)	149.76 (13)					
p value	0.000	0.000	0.000	0.000	0.000	0.000

Coefficient significance levels: ***$p < 0.001$, **$p < 0.05$, and †$p < 0.1$

[a] z-statistics in parentheses for column A

[b] t-statistics in parentheses for columns B to F

to 1). However, once endogeneity is corrected for using either predicted treatment levels (column C) or the IMR (column D), the effect of internationalization on survival is no longer significant. This is similar to the results reported by Mudambi and Zahra (2007) and Shaver (1998). Columns E and F suggest that some of the determinants of survival, such as credit risk, HR slack, and work experience, differ among internationalized and domestic firms.

4.1 Potential outcomes and the endogenous switching model

We rely on Stata's *eteffects* command for our main analysis. This command uses a probit model for estimating both the treatment and outcome equations. Columns G, H, and I in Table 7 test hypothesis 1 with internationalization taken as the treatment, while columns J, K, and L pertain to the test of hypothesis 2 taking early vs. late internationalization as the treatment. The treatment model in column G is similar to that of column A as expected, and the results in columns H and I are in line with those in columns E and F, again providing some reassuring triangulation.

Estimated ATE, ATET, and ATENT values are provided in Table 8. For our first hypothesis, we have a statistically significant ATE (−0.0335***), indicating that the overall average treatment effect of the internationalization treatment is a reduction in closure rate. However, when we attempt to decompose this effect to ATET and ATENT values, only the ATENT is statistically significant (−0.0458***). The interpretation of ATENT is that for those firms that did not internationalize, the estimated potential outcome had they internationalized would have been significantly lower closure rates.

For our second hypothesis, we find the overall ATE to be insignificant, but the ATET to be statistically significant (0.0225***). The interpretation of ATET here is that for late internationalizers, the difference in outcome compared to the estimated potential outcome had they internationalized early is a higher closure rate.

4.2 Robustness of results

We took a variety of steps to check for robustness. First, since instrumental variable methods can be sensitive to the particular instruments chosen, we repeated our estimations by adding as well as substituting another instrumental variable, namely a binary indicator of whether or not the firm's industry is classified as *traded*. Local industries have a primary focus of serving local customers, whereas traded industries sell across regions and countries (Delgado et al. 2015; Porter 2003). Some industries are by nature more local than others (Delgado et al. 2015: 11); whereas, there is no particular reason that chances for survival would be different in such industries independently of internationalization. Using both *traded* and *have product* as our instruments does not qualitatively change the results of our treatment effects analysis, as to the survival of internationalized firms. It should be noted however that with this arrangement, we have both an underidentification (Kleibergen-Paap Lagrange multiplier with a p value of 0.1039 above the 0.05 threshold) and a weak instruments problem (Kleibergen-Paap Wald F statistics 19.85, at the margin of the Stock-Yogo 10% threshold of 19.93). Moreover, using multiple instrumental variables in a potential outcomes framework creates a mixture-of-LATEs problem, rendering the interpretation of the effects more difficult (Morgan and Winship 2007, p. 212).

We also tried a substitute for our treatment variable. Instead of using a binary indicator for whether or not a firm has internationalized, we tried using the percentage of international sales data captured in a range variable with five indicators for different ranges of internationalization level, i.e. international sales to total sales. Since this is no longer a binary treatment variable, we were unable to run the *eteffects* command, but the results from *ivreg2* are in line with our first hypothesis. We used a Heckman two-stage model, where we project internationalization level at the first stage and calculate the predicted value for internationalization level and then run the second-stage survival analysis with the predicted value for internationalization level as a separate regressor. The results show a positive effect of internationalization level on survival, meaning higher levels of internationalization increase the chances of survival for new ventures. These results are in line with our predictions and findings in this study.

4.3 Limitations

Our study has a number of limitations. First, we do not have data about internationalization of firms in the KFS up until the third year of operation. This creates a left censoring problem in our survival analysis, as we can only observe internationalization for firms that have survived until 2007 (third year of operation), which we

Table 7 Estimation results for H1 and H2, endogenous switching model

	(G) Treatment	(H) Outcome int. sales = 0	(I) Outcome int. sales = 1	(J) Treatment	(K) Outcome early int. = 0	(L) Outcome early int. = 1
Estimation model	Probit[a]	Probit	Probit	Probit	Probit	Probit
Dependent variable	International sales	Failure prob.	Failure prob.	Early int'l	Failure prob.	Failure prob.
Knowledge intensity	0.425**	−0.146	0.519	0.181	1.339*	−0.145
	(2.95)	(−0.76)	(1.22)	(1.13)	(2.39)	(−0.26)
Human resource slack	−0.102**	0.062†	−0.031	−0.162**	0.050	0.152
	(−3.42)	(1.86)	(−0.27)	(−2.68)	(0.13)	(0.50)
Financial slack (ln)	−0.013†	0.015	0.022	−0.011	0.036	0.031
	(−1.74)	(1.55)	(0.96)	(−0.87)	(0.62)	(0.81)
Credit risk	0.026	0.139***	0.201**	0.042	0.106	0.217*
	(0.94)	(4.59)	(3.01)	(1.54)	(0.68)	(1.96)
Other business	0.103	0.003	0.376*	−0.023	0.404	0.317
	(1.54)	(0.05)	(2.20)	(−0.49)	(1.53)	(1.53)
Firm size (ln)	0.186***	−0.203***	−0.332*	0.024	−0.132	−0.542***
	(5.65)	(−4.22)	(−2.36)	(1.06)	(−0.93)	(−3.66)
Managers work experience	−0.001	−0.006†	−0.021**	−0.001	−0.024†	−0.019†
	(−0.39)	(−1.86)	(−2.72)	(−0.58)	(−1.79)	(−1.89)
Female owned	−0.082	0.068	0.191	0.017	0.334	0.203
	(−0.93)	(0.95)	(1.04)	(0.26)	(1.11)	(0.85)
Majority immigrant founders	0.239*	−0.229†	−0.022	−0.043	0.171	−0.238
	(2.04)	(−1.70)	(−0.08)	(−0.58)	(0.48)	(−0.67)
Founders ave. education	0.103***	−0.019	0.102†	0.007	0.015	0.086
	(6.04)	(−1.02)	(1.78)	(0.57)	(0.27)	(1.51)
Industry technology level	0.239*	0.001	−0.206	−0.021	−0.203	−0.340
	(1.99)	(0.01)	(−0.83)	(−0.38)	(−0.52)	(−1.17)
Industry ave. int'l	1.861***	−0.258	1.608	−0.109	1.152	1.140
	(4.90)	(−0.47)	(1.13)	(−0.38)	(0.64)	(1.01)
Have product	0.398***			−0.138*		
	(5.97)			(−2.05)		
Constant	−2.568***	−1.763***	−3.757*	0.236	−4.744	−2.181
	(−13.10)	(−8.00)	(−2.06)	(1.64)	(−1.11)	(−1.08)
No. of observations	7506	7506	7506	1665	1665	1665

Coefficient significance levels: ***$p < 0.001$, **$p < 0.05$, and †$p < 0.1$

[a] z-statistics in parentheses

handle using Stata's *stset* command for our survival analyses and by removing all observations before 2007 in other analyses. Still, all of our results are conditional on firms having survived until 2007. Second, because we do not have internationalization data for the first 3 years, we cannot measure a reliable continuous age at entry variable and can only test a binary indicator for early vs. late internationalization. This binary indicator makes an assumption that those firms which—in our limited data—seem to begin internationalization in the 2008–2011 period, did not temporarily internationalize before 2007, and stop on or before 2007. We consider this to be an

Table 8 Local average treatment effect (LATE) values testing H1 and H2

Treatment:	Outcome: closure	
	Internationalization	Late vs. early entry
Potential outcome mean of not receiving treatment for all firms	0.0401*** (9.69)	0.0060** (3.15)
Average treatment effect (ATE) on all firms (for receiving vs. not receiving treatment)	−0.0335*** (−3.78)	0.0408 (0.19)
Potential outcome mean of not receiving treatment for treated firms	0.0107 (0.71)	0.000 (0.03)
Average treatment effect on the treated (ATET)	0.0096 (0.62)	0.0225*** (4.96)
Potential outcome mean of receiving treatment for untreated firms	0.0026 (0.26)	0.0898 (0.15)
Average treatment effect on the not treated (ATENT)	−0.0458*** (−4.42)	0.0732 (0.12)

z statistics in parentheses

Coefficient significance levels: ***$p < 0.001$, **$p < 0.05$, and †$p < 0.1$

admissible assumption because the observed patterns of internationalization in this data typically show that once a firm has international sales, it usually continues to have international sales in subsequent years. Third, although we can interpret the overall effect and the direction of impact of internationalization on survival, interpreting the coefficients of our probit regressions is not straightforward. This is one of the limitations of treatment effects models when the outcome variable is binary. Finally, the interpretation of LATEs in a potential outcome framework with instrumental variables must be approached with caution as they are sensitive to the particular instruments chosen (Morgan and Winship 2007).

5 Discussion and conclusions

The research on the antecedents of internationalization is often done independently from the research on its consequences (Jones et al. 2011).Yet, as we have argued here, theories on the consequences of new venture internationalization involve implied assumptions about the antecedents as well. One line of argument tells a story of unprepared novices making a risky move, and thus predicts negative consequences. Another line of argument tells a story of prepared entrepreneurs making a strategic decision, and thus predicts positive consequences. This gives rise to an important theoretical and empirical endogeneity problem in the study of the consequences of internationalization. The only way to overcome this problem is to account for the fact that new ventures self-select into internationalization. This is what we have aimed to do in this paper using a potential outcomes or counterfactual inference approach with an endogenous switching model of self-selection.

Our results go against the old "unpreparedness" theory of post-internationalization survival of new ventures, aka process theory, in three ways: First, our first-stage regressions paint a picture of ventures self-selecting into internationalization when they are ready and are likely to gain legitimacy benefits from doing so. Second, after controlling for this self-selection, we find a positive average treatment effect of internationalization on survival, and third, we find evidence that early internationalization is better for post-internationalization survival than late internationalization.

While we would like to claim that these results support the new theory of new venture internationalization, aka the International New Venture framework (Oviatt and McDougall 1994), such a claim would go against the most prominent theoretical integration of the old and new theories to date, which is the model of Sapienza et al. (2006). Sapienza and colleagues retain the arguments of the old theory for *survival*, but apply the arguments of the new theory for *growth*. In contrast, we have found indication that the new theory applies to survival just as well.

Our paper is one of the first to provide concrete evidence for the survival benefits of internationalization of new ventures. In doing so, we provide a strong impetus to theoretically "unchain" the new theory from the shackles of the old. We believe that our results should invite researchers in international entrepreneurship to admit that many of the benefits of internationalization foreseen by the International New Venture framework (Oviatt and McDougall 1994) apply to survival just as well as growth, despite the tenuous distinctions made by Sapienza et al. (2006).

In the end, however, whether or not we admit positive survival effects as a consequence of new venture internationalization should be a question settled not by theoretical debate, but empirically, and by the quality and quantity of evidence that accumulates over time in future studies. In this study, we have only taken an early step that can be further explored in future research.

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