Caution ahead!

The long-term effects of initial export intensity and geographic dispersion on INV development

Three indicators are typically used to signal international entrepreneurial activity: 1) how quickly a new venture enters foreign markets, 2) its extent of internationalization, and 3) the scope of markets or regions served. Many studies emphasize the first indicator, aka early internationalization, and how it influences firm behaviour over time. We argue that the initial levels of export intensity and geographic dispersion also have long-term effects, and these will be negative. To study this, we build on arguments regarding learning advantages of newness, absorptive capacity, and time compression diseconomies. We use latent growth curve modelling to assess 485 observations from 97 new ventures over the 1990-2015 period. The higher the firm's initial level of export intensity, the lower its rate of change, i.e., it slows and then declines. There is a much shorter effect for geographic dispersion and some evidence of a concentration strategy. Earlier internationalization is related to a higher initial geographic dispersion but does not impact initial export intensity or the long-term trajectory of either dimension. Implications are discussed.

Keywords:

Time compression diseconomies, learning advantages of newness, absorptive capacity, international entrepreneurship, growth curve model, early internationalization, export intensity, geographic dispersion.

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INTRODUCTION

For almost 30 years, researchers have studied firms that expand to foreign markets shortly after founding. As discussed by Oviatt and McDougall (1994, 2005), these firms are known as international new ventures (INVs). Some of the first research on INVs explores *how* they internationalize early in the life cycle (e.g., Bell, 1995; Coviello & Munro, 1995; 1997)[1]. Another stream of research explains *why* INV internationalization patterns evolve as they do. This includes studies highlighting the influences of the firm and its founders/managers (e.g., Acedo & Jones, 2007; Reuber & Fischer, 1997), or external influences such as geographic location (Fernhaber, Gilbert, & McDougall, 2008) or venture capitalists (Fernhaber & McDougall-Covin, 2009). This body of work provides a foundation for INV research on performance outcomes where some examine the influence of different firm-level orientations (Gerschewski, Rose & Lindsay, 2015; Kuivalainen, Sundqvist & Servais, 2007) or capabilities (Buccieri, Javalgi & Cavusgil, 2020; Zhou, Barnes & Lu, 2010). Others show the performance impact of factors like target market growth or technological turbulence (Efrat & Shoham, 2012).

For the purposes of our research, we are most interested in the defining dimensions of international entrepreneurship discussed by Zahra and George (2002a): 1) firm age at first

[1] We refer to the firms in our study as INVs. This reflects discussions from (e.g.) Crick (2009), Lopez, Kundu, and Ciravegna (2009), Jones, Coviello and Tang (2011), and Coviello (2015) regarding the distinction between 'born globals' and other types of internationalizing new venture. For example, Coviello (2015) points out that it is not clear in most IE research if the firms are 'born' with global intent or if their dispersion is actually global. Thus, we use the more general term: INV.

foreign market entry; 2) the extent or intensity of internationalization; and 3) the extent of geographic scope. The relevance of these variables can be seen in prior research. For example, Carr et al., (2010) find that early internationalization is associated with higher short-term sales growth and survival. Lee (2010) as well as Almodóvar and Rugman (2014) show how return on sales, over time, is influenced by the INVs ratio of foreign sales to total sales (aka export intensity). Schwens et al.'s (2018) meta-analysis finds that both export intensity and geographic scope positively influence performance. Yet others show how the speed of change in scope, diversity, or export intensity relate to performance (Hilmersson & Johanson, 2016; Sadeghi, Rose & Chetty, 2018). There is also increasing evidence that early entry to foreign markets can pose significant performance risk to INVs (Freixanet & Renart, 2020; Meschi, Ricard, & Tapia-Moore, 2017; Puig, Gonzalez-Loureiro, & Ghauri, 2018).

We see two patterns in the above studies: 1) mixed findings, and 2) recognition that separate from early internationalization, both export intensity and geographic scope are influential in INVs. Missing in these studies, however, is acknowledgement that the INV's *initial* levels of these dimensions might have later impact. This is surprising because a new venture's initial levels of export intensity and geographic scope represent important and identifiable 'events' (Jones & Coviello, 2005). Like firm age at time of internationalization, these two dimensions of international entrepreneurship vary across firms from the outset. They are also distinct (Cerrato & Fernhaber, 2018; Hashai, 2011; Hilmersson & Johanson, 2016; Sadeghi et al., 2018) and represent strategic decisions for the firm (Clark, Li, and Shepherd, 2018; Cuervo-Cazurra, 2011; Freeman, Deligonul & Cavusgil, 2013).

The lack of research on the potential influence of an INVs initial levels of export intensity and geographic scope is also notable given Jones and Coviello (2005) explain that these initial

events create the founding fingerprint for an INV. Therefore, because early events can have a lasting impact on later outcomes (Boeker, 1989; Hannan, 1998), we reason that an INVs initial levels of export intensity and geographic dispersion have the potential to influence their respective long-term rates of change and their development paths or trajectories. Yet, although these two dimensions are commonly examined in international entrepreneurship research, this is done without understanding what trajectory they may be on, or where, at a point in time, they are, in terms of evolution. We therefore argue that when prior studies assessed export intensity or geographic dispersion as outcomes, or when they were tested to understand their possible influence on other performance measures, it was done without an appropriate temporal context.

Following from the above, we ask: How are the long-term trajectories for a new venture's export intensity and geographic dispersion affected by their initial levels? [2] We examine these trajectories over time and, given the established interest in early internationalization, we also assess whether they are impacted by how soon INVs internationalize after founding. Because internationalization involves knowledge development (Johanson & Vahlne, 1977), our theorizing integrates three arguments related to learning: 1) learning advantages of newness (LAN) from Autio, Sapienza and Almeida (2000); 2) absorptive capacity (ACAP) from Cohen and Levinthal (1990); and 3) time compression diseconomies (TCD) from Dierickx and Cool (1989). We draw on research in these areas to propose that although a new venture has the potential to leverage LAN as it begins to internationalize, it needs to build ACAP to do so. Critically however, early internationalization can trigger TCD, and the resultant pressure may affect the INVs ability to leverage LAN and develop nascent ACAP. This means that the INVs efforts to sustain export

[2] Zahra and George (2002a) along with others (e.g. Cerrato & Fernhaber, 2018; Hashai, 2011) refer to geographic scope to capture the breadth of markets served. We use their terminology where appropriate. However, for our research, we use the term geographic dispersion because we capture both geographic breadth and diversity. This is discussed in the Method section.

intensity and geographic dispersion are likely to be comprised. We also expect that any growth in each dimension will slow until a point where, e.g., sufficient ACAP is developed to mitigate the potential of TCD.

To test these arguments, we use latent growth curve modelling on 485 observations from 97 Spanish new ventures. Our data extends from 1990-2015, providing insight from an extended time frame. The results confirm that the initial levels of export intensity and geographic dispersion impact their later rates of change and trajectories. However, they do so in different ways, and export intensity is more negatively affected than geographic dispersion. The timing of internationalization has little to no effect on either dimension or its respective trajectory. These results suggest that when studying the long-term behaviour of INVs, researchers incorporate 1) measures of initial export intensity and geographic dispersion; and 2) acknowledge their different evolutionary paths. From a practical perspective, the results caution founder/managers against getting caught in a type of 'speed trap' That is, early entry into foreign markets creates significant pressure on the firm. If it then rushes to establish high initial levels of export intensity, there will be a long-term negative effect on the growth of this important dimension. For geographic dispersion, the effect is shorter and less impactful, and based on our study of surviving firms, geographic concentration (rather than dispersion) may be the wisest strategy.

The paper begins with a review of relevant research, leading to our hypotheses. We then explain the methodology, present our results, and conclude with a discussion of our findings and the implications of this study.

THEORY

When a new venture internationalizes soon after founding, the firm and its founder/managers are likely to face liabilities associated with newness and smallness (Cerrato & Fernhaber, 2018; Stinchcombe, 1965), as well as foreignness (Patel, Criaco, & Naldi, 2018; Zaheer, 1995). The latter will be compounded if the venture's founder/managers lack prior experience with internationalization itself because their existing knowledge is less pertinent (Zhou & Wu, 2014). Following from the observations of Petersen, Pedersen, and Lyles (2008), founder/managers may simply be unaware of what they do not know about operating in foreign markets. How then, is it possible for a new venture to build export intensity and geographic dispersion, let alone do so shortly after founding? For insight, we begin with two concepts often applied in international entrepreneurship research: 1) LAN; and 2) ACAP. As we explain below, we view these concepts as complementary in terms of propelling knowledge development for the internationalization of INVs.

A Brief Overview of LAN and ACAP

The arguments underpinning LAN suggest that new ventures have cognitive, relational, and political flexibilities (Autio et al., 2000). These flexibilities are expected to allow founder/managers to overcome any lack of internationalization knowledge, lack of ties in foreign markets, and lack of organizational routines. In addition, Sapienza, Autio, George, and Zahra (2006) note that compared to more established firms, new ventures have structural flexibility. Together, these four flexibilities should promote more intense foreign learning efforts and processes (Sapienza, Sandberg & De Clercq, 2005). And, although Autio et al. (2000, p. 920) do not believe that "…learning advantages will automatically follow early internationalization," Brush (1992) argues if a new venture enters foreign markets soon after founding, it will adopt an

international identity that contributes developing capabilities for internationalization and exploring international opportunities. This suggests that the ability to leverage LAN is likely improved by early internationalization.

Empirical research on LAN is still emerging (cf Fernhaber, 2013; Hilmersson & Johanson, 2016; Hilmersson, Johanson, Lundberg & Papaioannou, 2017; Wu & Zhou, 2018), and most studies use it to explain why new ventures succeed when they internationalize early. This is an appealing argument but some scholars (De Clercq, Sapienza, Yavuz & Zhou, 2012; Zahra, 2005; Zahra, Zheng, & Yu, 2018) also reason that because LAN requires no prior knowledge, it is inconsistent with the underlying premise of Cohen and Levinthal's (1990) arguments regarding ACAP. That is, benefits accrue when new knowledge is related to prior knowledge. What then, is the role of ACAP in the internationalization of new ventures?

As Cohen and Levinthal (1990, p. 128) explain, "prior related knowledge confers an ability to recognize the value of new information, assimilate it, and apply it to commercial ends." This line of reasoning is framed by Zahra and George (2002b) as the firm's potential capacity to create knowledge and its realized capacity to use knowledge. Compared to LAN, the concept of ACAP is not specific to young or new ventures. It is, however, pertinent to research in international entrepreneurship because ACAP is required to build sustained competitive advantage (Cohen & Levinthal, 1990; Zahra & George, 2002b).

Cohen and Levinthal's (1990) arguments indicate that if founder/managers lack a rich stock of international knowledge or systems to serve foreign markets (as assumed by LAN), their INV presumably lacks ACAP for internationalization. Cohen and Levinthal (1990) also suggest that new knowledge needs to be acquired early. This means that the development of ACAP specific to a new venture and its internationalization will be constrained by how quickly learning

occurs. In turn, this challenge is made more difficult by the lack of (e.g.) prior knowledge. As reasoned by Zhou and Wu (2014) this means that new ventures are likely to struggle to acquire, integrate, and exploit knowledge relevant to internationalization.

What does this mean for INVs given they internationalize early? Keeping in mind that LAN does not accrue automatically (Autio et al., 2000; Sapienza et al., 2006; Zhou et al., 2010; Zahra et al., 2018), we follow Hughes, Morgan, Ireland, and Hughes (2014) to reason that despite the INV lacking relevant prior knowledge, some form of ACAP is necessary for it to leverage LAN. This point is also made by Wu and Voss (2015) and, although the initial 'newness' of an INV will fade, Hilmersson et al. (2017) suggest that LAN might be maintained over time, if the aspects of LAN that were initially viable are transformed to suit a more experienced INV. We build on this to suggest that for an INV to extend its LAN, ACAP is beneficial (as per Hughes et al., 2014; Wu & Voss, 2015). That is, emerging or nascent ACAP for internationalization helps the firm use its LAN. Turning this around, the flexibilities associated with LAN may also help build ACAP. For example, the structural flexibility of a new venture helps develop ACAP because the organization is flat, and information is shared quickly and easily across relevant decision-makers. Cognitive flexibility is also beneficial to ACAP because, as per Autio et al. (2000), there is less to unlearn. Thus, if founder/managers can take advantage of the flexibilities that come with a new firm, they can start to quickly build nascent ACAP to generate the benefits of LAN and support internationalization.

Implicit in the above arguments is that when a new venture internationalizes, a significant amount of management time, attention, and effort is required. Trying to build both internal and external resources is taxing (Freixanet & Renart, 2020), and perhaps not surprisingly, INVs face significant risk exposure (Cerrato & Fernhaber, 2018; Hashai, 2011; Shrader, McDougall &

Oviatt, 2000). Such challenges are compounded when internationalization occurs soon after founding because decisions and actions must occur swiftly. This leads to our final learning-related concept: TCD.

Time Compression Diseconomies

As observed in the strategy literature (Hawk & Pacheco-de-Almeida, 2018; Srikanth, Anand & Stan, 2021), greater understanding of the theoretical principle of TCD is long overdue. In describing the existence of TCD, Dierickx & Cool (1989) explain that diminishing returns (e.g., to capabilities, performance) can be expected when, all else being equal, the pace of a process increases. This makes TCD theoretically relevant to international entrepreneurship research because with early entry to foreign markets, the INVs initial window of time to leverage LAN and build ACAP is compressed. As a result, things happen quickly and founder/managers might struggle to devote the time or effort needed to learn from their new experiences and apply that knowledge through the organization (Freixanet & Renart, 2020; Meschi et al., 2017; Sadeghi et al., 2018). Similar arguments are made in the context of much larger internationalizing firms (Jiang, Beamish & Makino, 2014; Vermeulen & Barkema, 2002). In both circumstances, new international experiences may be too complex to fully recognize and absorb (Petersen et al., 2008) in a short period. As a result, learning is less efficient, and mistakes occur, with Srikanth et al. (2021) concluding that whenever experiential learning has a role, TCD can become a concern.

This discussion leads us to argue that for INVs, early internationalization can trigger TCD. In turn, TCD can limit the potential associated with LAN and impair the INVs development of nascent ACAP. Thus, not only might it adversely impact the development of new routines and capabilities appropriate to internationalization (García-García, García-Canal &

Guillén, 2017; Hilmersson & Johanson, 2016) it could lead managers to intentionally slow the firm's rate of growth to optimize existing resources (Hashai, 2011; Johanson & Kalinic, 2016). Like Sadeghi et al. (2018), we reason that allowing for TCD in our theorizing reflects the reality of INVs and complements the two other aspects of organizational learning theory in our study.

Hypothesis Development

We build two hypotheses that integrate LAN, ACAP, and TCD as they pertain to the long-term trajectories of export intensity and geographic dispersion. We assume these are independent dimensions of internationalization that present strategic alternatives for a new venture (as per Casillas & Acedo, 2013) and require managerial decision-making (Clark et al., 2018; Cuervo-Cazurra, 2011; Freeman et al., 2013).

Our first hypothesis argues that the INV's initial levels of export intensity and geographic dispersion will impact their respective long-term rates of change. At a general level, this reflects the argument that foreign market entry is considered an event (Jones and Coviello, 2005), and early events effect later outcomes (Boeker, 1989; Hannan, 1998). Similar arguments can be seen in Sapienza et al. (2006) as well as Wu and Zhou (2018), highlighting the importance of the firm's first foreign market location given it will have a lasting influence on further expansion and the firm's knowledge structure (Eriksson, Majkgård & Sharma, 2000; Johanson & Vahlne, 1977).

Consequently, the INVs initial levels of export intensity and geographic dispersion should establish the basis for their ongoing trajectories. Theoretically, if an INV has a high initial level of export intensity, it should continue to have high export intensity over time. If geographic dispersion is high, then it too will continue to be high over time. It should also be possible to

maintain these levels if the INVs founder/managers leverage LAN and develop nascent ACAP synergistically, or if they shift from LAN and early ACAP to benefiting from more fully developed ACAP over time (Wu & Voss, 2015)

Yet, despite the INV having the potential to benefit from LAN and ACAP, early internationalization means that everything occurs in a compressed time frame. Information processing and knowledge generation must therefore happen quickly. This challenges efforts to leverage LAN and build ACAP because the cognitive capacity of founder/managers is under pressure. So too is their ability to learn while they are trying to quickly move the new venture into international markets. This leads us to suggest that early internationalization can introduce TCD to the firm. In turn, TCD will adversely affect the trajectories for both export intensity and geographic dispersion, despite the potential benefits arising from LAN and nascent ACAP. This contrasts with what we might expect from arguments based solely on LAN and ACAP because the likelihood of TCD means that initial decisions regarding export intensity are unlikely to be optimal given there is so much to identify and absorb about new customers, suppliers etc. (Vermeulen & Barkema, 2002; Hilmersson & Johanson, 2016). Under the pressures created by TCD, there are also time and financial costs associated with building network relationships and generating revenue. Consequently, if the INV starts with a high level of export intensity, the likelihood of TCD suggests that this will be difficult to maintain over time, despite the potential for economies of scale and cost reductions (Schwens et al., 2018) and the ability to reduce the risks associated with serving only a domestic market (Cerrato & Fernhaber, 2018).

A similar situation is expected for geographic dispersion despite its potential to spread internationalization risk (Zahra et al., 2000; Patel et al., 2018), provide new sources of inputs and resources (Cerrato & Fernhaber, 2018), and offer a way to exploit competitive advantages across

more markets (Zahra et al., 2000). If the new venture has a high initial level of geographic dispersion because it enters multiple different markets shortly after founding, founder/managers could face greater uncertainty (Wu & Zhou, 2018). The INV could also experience increased coordination and governance costs (Schwens et al., 2018), adaptation costs (Fernhaber, 2013) and other logistics and service costs (Patel et al., 2018). As with export intensity, TCD will elevate the pressures created by these situations.

In summary, we argue that TCD is likely to occur with early internationalization. Because TCD places a significant load on the founder/managers' ability to leverage any LAN or to quickly build new ACAP, it will be difficult to sustain high initial levels of export intensity and geographic dispersion over time. Accordingly, we hypothesize:

H1: There is an inverse relationship between:

a) the initial level of export intensity and its later rate of change; and

b) the initial level of geographic dispersion and its later rate of change.

To this point, we have used Dierickx and Cool's (1989) argument that TCD refers to inefficiencies that occur when things move quickly, such as when a new venture internationalizes soon after founding. Although H1a-b signal the potential of TCD when an INV first establishes export intensity and geographic dispersion, the presence of TCD does not necessarily mean that the new venture is unable to leverage LAN and develop ACAP at some point. Instead, we reason that despite TCD, founder/managers will try to use their firm's nascent ACAP to extend LAN (Hilmersson & Johanson, 2016). In turn, this will mitigate the potential for TCD to have an enduring negative impact.

Like Hughes et al. (2014), we view ACAP as emerging routines that help the firm create and then use new internationalization knowledge. These routines help founder/managers quickly

act on incoming information, pivot to build new ties or ways of operating, or change the organizational structure. Such actions are facilitated by the flexibility associated with LAN and can help reduce the impact of TCD over time. ACAP will also become more fully developed and lasting, thus extending LAN (Hilmersson & Johanson, 2016), or replacing the need for it (Wu & Voss, 2015). This occurs because founder/managers learn by assessing the results of their initial actions relative to expectations (Casillas, Barbero & Sapienza, 2015), and develop the ability to assess and act on international opportunities. This leads founder/managers to reconfigure their resources and capabilities to achieve better future results (Lages, Sandy & Griffith, 2008; Jones & Coviello, 2005). Overall, our reasoning suggests that although TCD will slow the rate of change for export intensity and geographic dispersion, the adverse long-term influence will be countered by the benefits associated with LAN and newly-developing ACAP. Thus:

H2a: The effect of the initial level of export intensity on its later level will decrease over time.

H2b: The effect of the initial level of geographic dispersion on its later level will decrease over time.

METHOD

To test our hypotheses, we use data from Spain's longitudinal 'Survey on Business Strategies' (SBS). This study commenced in 1990 and our data cover the period of 1990-2015. One of the most important features of the SBS is its representativeness. All firms are selected with a stratified, proportional, and systematic sampling process using a random seed. To identify the firms for our study, we began by choosing new ventures that were: 1) included in the panel no later than three years after founding; and 2) had foreign sales activity no later than four years

after founding. Our decision regarding the latter cut-off was guided by two reasons. One is that certain data are only available every four years in the SBS database. The other is that past studies employ a range of definitions for 'early internationalization.' Some refer to firms that are less than three years old at time of first foreign market entry (Zhou & Wu, 2014); others use six years (Zahra et al. 2000). Autio et al.'s (2000) classic study involves firms with a median age at time of first internationalization of 4 years and a mean age of 5.4 years. As a result, we include new ventures that internationalized within four years of founding because they fit with other INV studies, and this allows our T1 data to match those that follow every four years. Together, the two age-related criteria ensure that our sample firms are INVs at T1 (when they first entered foreign markets), and all are 'early internationalizers' (as per Coviello, 2015).

The firms in our sample have less than 50 employees when they entered the database, i.e. when they first internationalized. Also pertinent is that the SBS' population of reference is manufacturing firms, like other studies in international entrepreneurship (Almodóvar & Rugman, 2014; Cerrato & Fernhaber, 2018; Puig et al., 2018; Wu & Zhou, 2018; Zhou & Wu, 2014). Approximately 30% of firms are from the technology sector, but the sample is spread across a wide range of manufacturing industries. Keeping in mind that our data ranges from 1990-2015, 1987 was the earliest founding year and 1997 was the latest. We include only firms that provided foreign sales data to the SBS for four consecutive periods of four years, post-internationalization, and separate from their first entry. This represents a minimum 20-year period of analysis for each firm. Our lengthy time frame is appropriate given Cool, Dierickx and Costa (2012) show the effects of TCD over 14-15 years. Thus, although TCD might be triggered in the short term, we allow for time to elapse such that the firm may (or may not) recover.

Our final sample consists of 97 firms yielding 485 observations for analysis. This is a balanced panel of firms that survived through all our observation periods. Given any firm with missing data was dropped, selection bias is possible. However, as we explain later, our analysis requires data to be collected from each firm in every period. In our post hoc analysis, we test our results with a shorter time frame, and allow for firms to internationalize within 10 years of founding. All results are consistent with the reported trajectories and have acceptable fit indices.

Variables

Our first variable is *time to internationalization*. Following Jones and Coviello (2005) and Autio et al. (2000), this is a measure of time lag captured by firm age at time at first foreign market entry. In our sample, the average time to internationalization is 2.56 years. Thus, our sample firms fit various definitions found in the international entrepreneurship literature.

Because venture age is not the only variable to consider (Jones & Coviello, 2005; Zahra & George, 2002; Zhou & Wu, 2014), we consider two others: 1) export intensity, and 2) geographic dispersion. Of note, the SBS uses yearly and four-yearly variables beginning in 1990. In terms of our constructs, export intensity data is available annually while geographic dispersion data is only available every four years. Given the latter, we use the four-yearly data for both constructs to ensure consistency. Additional details follow.

Export intensity is the extent to which the firm relies on foreign sales from any mode of market entry. The SBS provides data on 'export sales.' We measure export intensity with the ratio of foreign sales to total sales (FSTS), every four years beginning with the year of the firm's first foreign market entry. Using a relative measure such as this can present limitations given any variation in magnitude might be due to a change in either foreign sales or domestic sales.

However, relative measures are preferable to absolute values because they are more comparable (Brouthers & Nakos, 2005).

Geographic dispersion is a variable that acknowledges different outcomes are associated with a new venture serving regional vs. international vs. global markets (Almodóvar & Rugman, 2014; Patel et al., 2018). Rather than count individual countries, we follow others who use the Herfindahl index to examine (e.g.) market dispersion (Casillas & Moreno-Menéndez, 2014; Pangarkar, 2008; Santangelo & Stucchi, 2018), capital dispersion across shareholders (García-García et al., 2017), and product diversification (Lu & Beamish, 2001). Here, we assess percentage of sales over total sales in each of four geographic regions (European Union, OECD, Iberoamerica, Others), every four years. With the Herfindahl index, 1 reflects high concentration, e.g. a focus on one region, and we measure geographic dispersion with the following formula:

$$1\text{-}HHI = 1 - \sum_{1}^{4} mkt_i^2$$

We use regions to assess geographic dispersion because some scholars present concerns about using the number of markets a firm sells to (Almodóvar & Rugman, 2014; Casillas & Moreno-Menéndez, 2014; Santangelo & Stucchi, 2018). They argue in favor of a region or zone-oriented measure, reasoning that a country count presents misleading information by assuming countries to be of equal size. This approach also allows us to assess the extent to which regionalization vs. globalization is apparent. Although the SBS allows firms to report the markets they serve each year, this is restricted to just five countries. It is therefore an incomplete representation of geographic dispersion.

The controls include three variables that might provide alternative explanations for our results. Given past research shows that *technological intensity* influences a new venture's

internationalization path (Hashai, 2011), we control for firms belonging to any industry that the European Union considers technology-intensive (Technological Industry). We also follow others to control for *firm size* (e.g. Hilmersson & Johanson, 2016) because resource endowments may enable or restrict a firm's growth. This is measured by the log of employees at time of first foreign market entry (Log Initial Employees). Given *past performance* may influence future outcomes (Jones & Coviello, 2005), we control for the log of total sales (Log Initial Sales) at time of first foreign market entry. We note that the latter two controls show a high correlation (Table 1), but the VIF value did not reach the concerning value of 10 (O'Brien, 2007). We therefore include both as independent controls in order to provide more detailed information. Finally, because the general macroeconomic situation could also affect export intensity, we include variables related to GDP. Because we assess an evolutionary trajectory, we incorporate two time-invariant covariates: 1) the variation of GDP (GDP Variation**)** and its kurtosis (GDP Kurtosis**)** in order to reflect a possible high fluctuation in value. Table 1 presents descriptive data and the correlation matrix.

Insert Table 1 about here

Analytic Approach

In recent years, scholars have begun to use longitudinal databases to examine INVs. A variety of patterns are reported, ranging from linear (e.g. Carr et al., 2010; Sadeghi et al., 2018), to U-shaped (Fernhaber 2013; Hilmersson & Johanson, 2016; Sadeghi et al., 2018), to inverted U-shape (Fernhaber, 2013; Hilmersson & Johanson, 2016; Sadeghi et al., 2018), or M-curve (Almodóvar & Rugman, 2014; Lee, 2010). We note three issues arising from these studies. First,

a range of patterns are identified, and this indicates mixed results. Second, predicted paths are typically tested with panel data analysis/regression or survival/event history analysis. Such methods may be a consequence of the data being from a relatively short time frame. Third, researchers typically study (only) the influence of firm age at time of first foreign market entry. Yet, as we argue earlier, there are other potentially influential internationalization dimensions that can be measured at time of first foreign market entry. These dimensions (export intensity; geographic dispersion) are understudied in terms of how their initial levels might impact their later rate of change and long-term trajectories. There are, however, methodological implications for this type of research. In Vermeulen and Barkema's (2002, p. 644) study of foreign subsidiaries, for example, the regularity of internationalization was "measured through the kurtosis of the first derivative of the number of foreign ventures of the firm over time." However, kurtosis is a measure of the combined weight of a distribution's tails relative to the center of the distribution. Although it measures concentration in the change of number of subsidiaries (as per Vermeulen & Barkema's 2002 focus), it does not offer insight about the trajectory or how it emerges. Regarding other approaches such as computing simple differences or using residual change scores from regression analysis, Bergh and Fairbank (2002) argue that the former requires component variables to have high reliability, low correlation, and unequal variances. They also argue that the latter is not actually a measure of change. Rather, residual change scores measure whether a score is larger or smaller than the value predicted.

In this paper, we draw on Bergh and Fairbank (2002) to argue that identifying and examining INV trajectories is better accomplished with latent growth curve modelling. Although this technique has been used in other disciplines including marketing (Lessne & Hanumara, 1988; Jaramillo & Grisaffe, 2009; Palmatier, Houston, Dant, & Grewal, 2013) strategy (Revilla

& Fernández, 2013; Pierce & Aguinis, 2013), and management (Maurer & Qureshi, 2019), very few applications are found in international business other than Riaz, Rowe and Beamish's (2014) study of expatriate deployment levels.

We use latent growth curve modelling because of four important characteristics. First, it is appropriate for studying change where the same individual units are repeatedly assessed over time (Duncan & Duncan, 2004). Second, latent growth curve modelling provides a useful way to depict and understand the form or shape of change (Rogosa, 1998; Rogosa & Willett, 1985). For example, Palmatier et al. (2013) explain that this technique allows us to check whether relationships develop along a common trajectory such as an organizational life cycle. This relates to a third key characteristic of latent growth curve modelling outlined in Palmatier et al. (2013, p.18): it allows us to examine phenomena that change with time because of "the existence of continuous underlying or latent trajectories… [in which] the trajectory process is only observed indirectly using repeated measures (Bollen & Curran, 2006, p. 3). That is, latent growth curve modelling allows us to "isolate and test for the significance of unobserved growth constructs due to a common developmental process" (Palmatier et al., 2013, p. 18). Last but not least, latent growth curve modelling provides a way to map the form and type of change when there are three or more waves of data (Bergh & Fairbank, 2002) such as that found in the SBS.

Following from the above, we apply latent growth curve modelling to determine if the relationships for export intensity and geographic dispersion follow a common developmental path as described by latent growth parameters. Some refer to this as free (or optimal) latent growth modeling (Jaramillo & Grisaffe, 2009). This approach allows us to study the long-term influence of initial levels of export intensity and geographic dispersion, their rates of change over time, and their overall pattern of development.

Latent growth curve modelling can be approached from several statistical perspectives (Chou, Bentler & Pent, 1998) including hierarchical linear modelling (HLM) and structural equation modelling (SEM). The literature is mixed on the advantages of each (cf Shin, 2007). We chose SEM for our latent growth curve analysis because as found by Chou et al. (1998, p. 262), it has "a critical advantage over HLM in offering an overall goodness-of-fit test statistic to evaluate the appropriateness of the model" (see also Duncan & Duncan, 2004). Although SEM is challenged by unbalanced panels, ours is balanced given it includes only firms with data for all periods. Common method variance can also be a problem with survey data, but this concern is reduced in our study because the SBS collects data at different points in time and assures anonymity. Pertinent too is that the potential for common method variance can be minimized by using latent growth curve modelling (Williams, Edwards, & Vandenberg, 2003).

We use SEM with AMOS v 25 (Ferrer, Hamagami & McArdle, 2004; Schumacker & Lomax, 2004) and we analyze different specifications of the latent growth curves to identify the export intensity and geographic dispersion trajectories of INVs. A key characteristic of latent growth curve modelling is that trajectory identification is a sequential approach requiring the evaluation of different shapes to find the best fit. As Duncan and Duncan (2004) explain, a regression curve is fit to the repeated measures of each firm. This curve is not necessarily linear. Then, the analysis shifts to the parameters for the curve. Duncan and Duncan (2004, p. 335) also note that: "…the modelling task involves identifying an appropriate growth curve form which will accurately and parsimoniously describe individual [firm] development …" Thus, the intercept and slope are latent variables that need to be identified, as well as the loadings of the slope over the repeated measures (i.e., over time).

When reading the results, it is important to recognize that using SEM for growth modelling is not the same as for typical SEM analysis. Namely, rather than test a causal relationship between variables, the purpose of SEM in latent growth curve analysis is to understand the shape of the curve. These curves describe the observed pattern of change with respect to time (Duncan & Duncan, 2004). In our analysis, we start by considering a linear trajectory and then introduce variations that, from the literature, are posed as possible curve shapes. For example, Fernhaber (2013) suggests a curvilinear evolution of foreign expansion that follows a quadratic approach. To take advantage of the possibilities that our methodology offers, we then assess numerous unspecified models to allow the evolutionary paths to emerge from the data. This lets us accommodate the possibility of different trajectories, as suggested by Jones (1999) and Vissak (2010). Once the shapes/curves/trajectories are identified for export intensity and geographic dispersion, we introduce control variables. We then evaluate the significance of the effects over the intercept and slope of the growth curves.

RESULTS

Our analysis is presented in two phases. Phase I identifies the long-term trajectories for export intensity and geographic dispersion. Phase II quantifies if and how the initial level of each dimension influences its later rate of change and trajectory We also assess the potential for earlier internationalization to have a conditioning effect on these results.

Phase I: Trajectories for Export intensity and Geographic Dispersion

Latent growth curve analysis considers two latent variables in the model: 1) the intercept (or starting point); and 2) the slope (or rate of change). In the initial model for export intensity

(see Table 2), we start by assuming linear growth and we fix the weights of the slope to the points of time in which the information was gathered. Thus T1 = year of initial entry to foreign market(s); T2 = four years after initial entry; T3 = eight years after initial entry; T4 = 12 years after initial entry; T5 = 16 years after initial entry. In our sample of INVs, T1 occurs within four years of new venture founding. The linear growth path is the simplest that can be implemented with latent growth curve analysis, followed by the quadratic. The most common approaches range from linear to polynomial. Jointly with linear and quadratic, and due to the limitations of degrees of freedom in the model, we use 'unspecified' growth functions (Tisak & Meredith, 1990). This is acceptable when: 1) the shape of the trajectory is unknown; and 2) data can determine the curve shape (Duncan & Duncan, 2004). Because we have five points of time, we use a strategy that changes the number of fixed weights. This means that we fix either two or three points of time to identify the model (see Table 2, Models 3-6).

Table 2 about here

For export intensity, the best overall fit index is seen in Model 3 from Table 2. This is an 'unspecified' model because it leaves the weights free (i.e., unspecified) for T2 and T3. As such, it does not assume a predetermined shape as would have been the case if, for example, we had tested for a specific path. Of note, the evaluation of model fit involved analysis of commonly used indices (cf Byrne, 2009; Wu, West, & Taylor, 2009). The Comparative Fit Index (CFI), ranges from 0 to 1, with value of .9 suggested as an adequate fit level. The Tucker-Lewis Index (TLI) ranges from no fit (0) to a perfect fit (1). The Root Mean Square Error of Approximation (RMSEA) and Standardized Root Mean-Square (SRMR) are measures of the error in the model.

Thus, the lower the number, the better. As seen in Table 2, Model 3 has a CFI of .990, a RMSEA of .050, and a SRMR of .0246. These results are consistent with suggested individual threshold levels noted above, as well as the Hu and Bentler (1999) two-index approach.

Following from the results of Table 2, Figure 1 shows the latent growth curve for export intensity, and it compares the sample means with the estimates obtained by our model. It shows the level of export intensity over time and signals the model's goodness-of-fit. The best model for export intensity is curvilinear, although as implied above, it is not a clean fit with the quadratic model. The fixed effect is seen in the mean of the latent variables (intercept and slope). The mean intercept (initial level) of export intensity is 26.171 and the mean slope is 0.045 (where slope refers to rate of change). However, the random effects that represent the variance of the individual trajectories (capturing between-firm variability in the intercepts and slopes) is quite different. We find that the variance of the intercept is 459.66 while variance for the slope is 2.23. This indicates a large difference in initial levels of export intensity across the sample of INVs. For slope, the rate of change is more consistent within the sample.

Figure 1 about here

Next, we present the results for geographic dispersion, beginning with two general patterns. In terms of the geographic zones served at time of first foreign market entry, 71% of the sample firms sold to Europe, 11% sold to each of Latin America and the OECD, and 7% sold to the Rest of the World. If we consider the number of zones served, 38% of firms served one zone in T1, 31% served two zones, 19% served three zones, and 12% served all four zones.

Turning to the results of the latent growth curve analysis (Table 3; Models 7-12), many different fit indices meet the selection threshold, and the best values are not associated with any one model. From Table 3, the quadratic model (Model 8) seems to show the best fit indices: CFI=.998; RMSEA=.022; SRMR=.0334.

Table 3 about here

Figure 2 shows that when we use the quadratic approach to model geographic dispersion (based on the results of Table 3), the shape resembles the right half of a quadratic equation. As noted by Haans, Pieters & He (2016, p. 1182), if the "confidence interval is within the data range, one can be reasonably sure that there exists a U-shaped curve. If its lower or upper bound is outside the X-range, then maybe only one half of the curve is revealed by the data." Keeping in mind that we plot geographic dispersion as 1-HHI, Figure 2 depicts decreasing levels of this dimension. Figure 2's trajectory has a mean intercept of 0.734 with a variance of 0.01. The mean slope is -.109 with a variance of -0.01 while the slope-squared presents values of .005 and .000, respectively. This indicates that for geographic dispersion, there is little difference across the sample for either initial levels, or within the sample over time.

Figure 2 about here

Phase II: Testing the Effects of Initial Levels

Having identified the long-term trajectories for both export intensity and geographic dispersion, we now establish a relationship between 1) the initial level for each dimension; 2)

time to internationalization; and 3) the latent variables for intercept and slope (see Table 4). The new models show good fit indices. In the export intensity model, we obtain CFI=.999; TLI=.998; RMSEA=.007; SRMR=.0209. In the geographic dispersion model, we obtain CFI=.999; TLI=.991; RMSEA=.024; SRMR=.0174.

Table 4 about here

H1a-b hypothesizes that the initial levels of export intensity and geographic dispersion will affect the slope of their respective curves such that later change rates will slow. We consider the first points of export intensity and geographic dispersion as time-invariant variables with an effect over the intercept and slope of the curve. The next step is to evaluate the direction and significance of these relationships.

As seen in Table 5, the initial level of export intensity has a positive effect on the intercept (β=.520; p=.000) and a negative effect on the slope (β=-.032; p=.019). Both results are significant. This means that the higher the export intensity at time of first foreign market entry, the lower the change rate in the curve. This supports H1a. However, there are no significant effects in the geographic dispersion model and thus, H1b is not supported. Table 5 also indicates that earlier entry to foreign markets does not significantly affect the intercept or slope for export intensity. There is a small positive effect on the intercept of geographic dispersion, but no effect on slope.

Table 5 about here

We then test the models with our control variables as per Nielsen and Raswant (2018). No difference is found for the significance of the primary variables (see Table 5). Log Initial Employees has a negative and significant effect on slope for export intensity (β=-.630; p=.046). This indicates that if the new venture is larger at time of first foreign market entry, export intensity has a lower rate of change over time.

Turning to H2a and H2b, we expected that the effect of the initial levels of export intensity and geographic dispersion would diminish with time. Despite the lack of support for H1b regarding geographic dispersion, our first step is to calculate the regression weights for both dimensions over each period (Table 6). There are acceptable fit indices for both export intensity (CFI=.996; TLI=.985; RMSEA=.048; SRMR=.0210) and geographic dispersion (CFI=.992; TLI=.928; RMSEA=.07; SRMR=.0219). When the models are re-run with control variables, our results continue to hold. Log Initial Employees is significant (consistent with the earlier analysis) and again, has a negative effect on the slope for export intensity (β=-.660; p=.046).

Table 6 about here

Our second step is to test H2a-b by examining the regression weights of the initial levels of export intensity and geographic dispersion, on each of the time points analysed. We do the same for firm age at time of first foreign market entry.

For export intensity, there is a significant effect through all periods, except the last. Further, Table 6 shows a coefficient decrease of .551 from T2 (β=.566; p=.000) to T5 (β=.012; p=.944). This indicates a decrease in the effect of the initial level of export intensity over time. It also reveals the extended length of that effect. These results support H2a. For geographic

dispersion, a significant effect occurs in the first period of internationalization (from T1 to T2) but not later. This provides some support for H2b although the effects are more evident for export intensity than geographic dispersion. The latter results also help explain why H1b was not supported: the initial level of geographic dispersion has an effect but only for a short period of time. Finally, regardless of how early the INVs in our study internationalized (within the first year or up to four years post-founding), there is no significant effect on either dimension, for all time points considered.

Additional Analysis

To check our findings, we conducted further analysis. Given our selection criteria, the sample presents a possible survival bias. We therefore re-analysed the data with a shorter period (four points in time rather than five). This also allowed us to conduct the latent growth curve analysis with a larger sample (130 vs. 97 firms). In a separate analysis, we allowed for first foreign market entry to occur within the first 10 years of founding (rather than four years) and across five points in time. This provided a sample of 131 firms. We used firm age at entry as a control in these tests. Both sets of results were consistent with the results we report earlier and have acceptable fit indices.

We also used the Bollen-Stine bootstrapping model to evaluate fit indices with 1000 samples (Bollen & Stine, 1993). The obtained p-values are .231 for export intensity and .423 for geographic dispersion. As per Kim and Millsap (2014), these reflect good model fit and the bootstrapping results support our findings.

Given the arguments that export intensity and geographic dispersion present a trade-off decision for managers (Cerrato & Fernhaber, 2018; Hashai, 2011; Shrader et al., 2000), we

combined and set different linkages between both curves (covariate, direct effect, etc.). No convergence of models was achieved, and we could not demonstrate (at least, with our data) that the trajectory of one dimension was related to the trajectory of the other.

Finally, we recognize potential concerns regarding omitted variable bias. According to Tarka (2018, p. 329): "…the effects of omitting an important variable in the SEM model (either exogenous or endogenous) depend on the form of the tested SEM models, the role of the omitted variable in the model, and the pattern of relationships between the excluded variables and the variables included in the models." In our situation, it is unnecessary to test for the possible omission of variables because the purpose of latent growth curve analysis is to understand the shape of the curve and not to test a causal relationship between variables (as seen in other SEM analyses). The closest approach would be a sensitivity analysis that compares model fit, with and without time-invariant covariates (Tarka, 2018). In our analysis of both cases, model selection remains the same and has adequate fit indices.

DISCUSSION

This research identifies and assesses long-term trajectories for the export intensity and geographic dispersion of INVs. Our longitudinal analysis shows distinct paths for these two dimensions. Keeping in mind that our method let us identify a pattern without prior knowledge of the trajectory, the best fit for export intensity is a non-quadratic yet curvilinear path. This differs from the results for geographic dispersion which fit the quadratic and present as an inverse j-curve (or the right side of an inverted-U). Next, the initial level of an INVs export intensity, i.e., at the start of internationalization, negatively impacts its rate of change and trajectory over an extended period. There is also a negative effect associated with the initial level

of geographic dispersion, but it is much shorter in duration. Earlier internationalization is slightly associated with higher initial geographic dispersion for INVs, but it has no influence on the initial level of export intensity, nor either long-term trajectory.

We argue that although INVs can benefit from LAN and develop nascent ACAP to support LAN (Hughes et al., 2014; Wu and Zhou, 2018), they still face the management and resource challenges that come with rapid efforts to build international relationships and sales. This is because entering foreign markets soon after founding can initiate TCD (Hilmersson & Johanson, 2016; Johanson & Kalinic, 2016; Sadeghi et al., 2018). We suggest that TCD helps explain our findings for export intensity, i.e., the higher the INVs initial level of export intensity, the lower the long-term rate of change. These diminishing returns-- as per Dierickx & Cool's (1989) TCD-- happen over an extended period (e.g., at least 12-16 years after the INVs first foreign market entry). This suggests the ability to use LAN and build ACAP to support export intensity, earlier or later, is challenging.

Important too is that our results differ for geographic dispersion. Although the initial level of this dimension has a negative effect on its trajectory, the effect is short-term. There is also some indication of later geographic concentration. One explanation for this again relates to TCD. That is, the pressures experienced with quickly entering new markets and rapidly building viable relationships might cause founder/managers to focus their ongoing efforts on fewer, closer markets. If, however, these markets are regional rather than global, new information and experiences may be easier to absorb (Vermeulen & Barkema, 2002; Wu and Zhou, 2018). Thus, the INV might be able to generate ACAP despite experiencing TCD. We also note that in this situation, an INV is less likely to need LAN because if the new market is somewhat like earlier markets, pre-existing knowledge is useful. That is, it helps the INV apply its related routines

successfully and build new ACAP (Zahra et al., 2018). Finally, if we consider the findings of Hashai (2011), our findings might reflect efforts to pursue a dominant path. That is, increase export intensity while improving operational efficiency through geographic concentration (rather than dispersion).

These findings offer three contributions. First, as seen above, we integrate three learning-related concepts (LAN, ACAP, and TCD) to help understand the INVs trajectories for export intensity and geographic dispersion. We see these concepts as complementary. Our findings also reinforce the need for researchers to recognize that widely used concepts such as LAN or ACAP do not always provide a full explanation on their own. As seen here, by using Diercikx and Cool's (1989) TCD arguments to complement those pertaining to LAN and ACAP, we get a richer understanding of INV phenomena. Our study therefore adds to the emerging international entrepreneurship research informed by TCD (Hilmersson & Johanson 2016; Johanson & Kalinic, 2016; Sadeghi et al. 2018) and complements that focused on LAN and/or ACAP (Fernhaber, 2013; Hughes et al. 2014; Wu & Voss, 2015; Zhou & Wu, 2014). This point of complementarity also underlines arguments that it is inappropriate to rely on a single theory or framework in internationalization research, and calls for taking a broader, more integrated perspective when theorizing (Coviello & McAuley, 1999; Gerschewski et al., 2015).

Second, we demonstrate the need for researchers to consider the firm's initial levels of export intensity and geographic dispersion when they study INVs. Here, we show differential effects and argue that explicitly accounting for such results might help explain the different INV development paths found in prior studies. This also suggests that emphasizing the role of early internationalization tells only part of the story because as found here, it has little to no impact on the initial levels of export intensity and geographic dispersion, and no impact on their long-term

trajectories. The results also suggest that for studies on speed of change (e.g., Hilmersson & Johanson, 2016; Hilmersson et al., 2017; Sadeghi et al., 2018) or how export intensity and geographic dispersion influence performance (e.g., Almodóvar & Rugman, 2014; Fernhaber, 2013; Lee, 2010), scholars should acknowledge that these two dimensions each have their own rate of change and pattern of development. This reinforces the need for longitudinal research on INVs and situating research in a time-sensitive context.

Finally, there is an additional, methodological contribution to international entrepreneurship research: we demonstrate how latent growth curve modelling can assess changes in the long-term trajectories of INVs, as well as the length of various effects. Rather than test predicted patterns with regression-based approaches or survival analysis, latent growth curve models consider multiple analytic paths, including those that freely emerge from the data. Thus, researchers can assess both predicted and unspecified paths to determine the best fit.

Managerial Implications

In terms of practical implications, our comments are derived from a cross-sector of Spanish manufacturing INVs that survived over many years. Although we cannot speculate on what might differentiate survivors from non-survivors, the fact that the INVs in our study survived suggests that their approach to internationalization was successful.

We know from past research that when planning for internationalization, founder/managers make decisions about entry timing, international sales targets, and which markets to enter. Based on our findings, founder/managers should be aware that the actions stemming from these initial decisions help underpin their new venture's later development patterns. For example, if the INV's founder/managers decide to 'hit the ground running' with

high export intensity, this level of activity will be difficult to sustain. This is due to a variety of pressures that come with early internationalization; pressures that limit the advantages associated with being a new firm. Thus, although the INV might be flexible in terms of business operations, relationships, and political influences, and the founder/managers' decisions might not be swayed by cognitive biases, the fact that it internationalized early means that time for making important decisions is compressed. This can restrict the ability to build new routines to support high or increased levels of export intensity over time.

Our results suggest that this negative effect can last many years for export intensity. As seen here, the highest levels of export intensity are likely to be experienced within the first few years of internationalization. After that, they will slow and then decline. Thus, if high export intensity is a long-term organizational goal, or one pursued by (e.g.) investors, founder/managers need to be aware of the risks it presents. On the more positive side, the pressure caused by early entry to foreign markets has a much less pronounced effect on geographic dispersion. We suspect this is because the INVs in our study shifted from early efforts to increase geographic dispersion (perhaps reflecting an initial intent to sell more globally) to serving fewer regions over time. This signals the benefits of manufacturing INVs pursuing a long-term concentration strategy to focus their learning efforts and resultant knowledge more efficiently.

There are also implications for stakeholders outside the INV. As noted above, investors may be involved and with investors come performance expectations. Accelerators and incubators may also support INVs. They too have performance expectations and should be aware of the potential for new ventures to fall into a type of speed trap; one where decisions and actions are compromised because of the pressure that comes with moving quickly into international markets. In this case, training and mentoring should be developed to support INVs in their earliest phase

of internationalization so that they are in stronger position to leverage the advantages of being young and flexible, and capable of building systems to create and use international knowledge. A similar suggestion is made for export promotion programs given their potential to positively impact a firm's strategy, competitive advantage, and outcomes (Leonidou, Palihawadana, & Theodosiou, 2011). Those managing export promotion programs should understand the likely trajectories of the firms they support, and where those firms are in their development path. For example, if the INV will benefit from a long-term strategy of market concentration rather than diversification (such as those in our study), policy-makers and support agencies should assist it in doing so.

Boundary Conditions and Research Implications

Certain boundary conditions associated with this research pertain to firm type and the nation of study. Our sample is restricted to manufacturing firms from a single country (Spain), and they survived over an extended period. This is consistent with other TCD research (e.g., Vermeulen & Barkema, 2002) but it means that our results may be influenced by economic shifts during that time. Although we control for variation in GDP and its kurtosis, other shifts include, for example, changes to the structure of the European Union and resultant market access. Thus, we agree with Hilmersson et al.'s (2017) suggestion that it is prudent to contextualize future research by considering the period when internationalization occurs. Also, despite having long-term data, we could only assess geographic dispersion every four years. It would be preferable to use annual data for both export intensity and geographic dispersion as this would allow us to better assess the regularity or rhythm of expansion patterns (cf Vermeulen & Barkema, 2002) and account for changes that might occur more frequently.

Although we use LAN, ACAP, and TCD to frame our arguments and explain our results, there are other influences to consider. In terms of external factors, the work of De Clercq, Zhou, and Wu (2016) suggests market turbulence is relevant as is perceived level of uncertainty faced by the firm (see also Efrat & Shoham, 2012). Their impact is even more likely if the new venture enters its first market(s) with a high export intensity or geographic dispersion. Either situation will tax LAN, restrict the development of ACAP, and make TCD more likely. Thus, future research could incorporate market turbulence or perceived uncertainty. Another consideration pertains to the organizational itself. New ventures are assumed to be tight on (e.g.) financial, relational, and human resources. This means they lack organizational slack and as such, TCD might be more acute, LAN could be harder to achieve, and ACAP harder to build. With time however, one would expect the level of slack to change. Because we know that slack can influence internationalization (Kiss, Fernhaber, & McDougall-Covin, 2018) longitudinal research on the role of organizational slack in INVs could be informative.

We also recognize the importance of managers in this type of research because they need to intentionally develop an environment for international learning and support a proactive learning effort (De Clercq & Zhou, 2014). Our research made this assumption, but we did not test for founder/manager influences. Because the experiences of managers are likely to define their mindset for internationalization (Zahra, 2005), understanding their prior domestic experience and prior shared experience is pertinent (cf. Bruneel, Clarysse & Autio, 2018). The former is likely to hinder LAN while the latter is beneficial to it. The same applies to ACAP and these experiences are likely to have a differential influence on the potential for TCD to occur. In a related vain, we note that Bruneel et al.'s (2018) finding regarding prior shared experience likely reflects Bai, Lu, and Zhou's (2020) argument that internal social capital is the internal

learning mechanism for LAN. Future research could therefore examine these characteristics in terms of how they pertain to LAN, ACAP, and TCD, over time. Another consideration is aspiration level (Greve, 2002). The decisions of founder/managers may reflect their aspiration levels (or those of others, e.g., investors). If export intensity or geographic dispersion are perceived as too low (or too high) relative to aspirations, the next decision will account for this. Aspiration levels could therefore influence our results and we encourage future research to study them, and the pace of their adjustment when considering managerial influences on long-term internationalization patterns of INVs.

We control for technological intensity, firm size, past performance, and GDP, but not all firms are 'created equal'. For example, the long-term performance of a firm pursuing a first-mover advantage may be different from one using a follower strategy. This may influence our findings. A fully digitalized firm may also have patterns different from those of the manufacturers in our study given (e.g.) their potential for initial geographic dispersion is much higher (Coviello, Kano, & Liesch, 2017; Monaghan, Tippmann, & Coviello, 2020). Understanding the long-term trajectories of these firms would be informative.

On the issue of refining our analysis, we use the concepts of TCD, ACAP and LAN to frame our arguments and as such, they are not directly measured. Like others, we look for evidence of (e.g.) TCD by asking: if time is compressed, do diseconomies appear? For example, Srikanth et al (2021) show that faster accumulation of experience (time compression) leads to shallower learning curves (a diseconomy). However, TCD is not measured *per se.* In contrast, ACAP is measurable by proxies (e.g., R&D intensity as per Tsai, 2001) or Likert scales (Flatten, Engelen, Zahra, & Brettel, 2011; Jansen, Van Den Bosch & Volberda, 2005). So too is LAN, as seen in De Clercq, Sapienza, and Zhou's (2014) measurements of four operational flexibilities

(relational, structural, cognitive, and political) using Likert scales. Accordingly, it would be helpful to integrate ACAP and LAN measures into future research, complementing our event-based assessment with managerial perceptions. Further, we examine geographic dispersion by region, but there are alternative ways to measure this variable. These include Blau's Index as per Wu and Zhou (2018) or inter-vs. intra-regional diversification as seen in Patel et al. (2018). We also note that our research does not consider traditional financial and market performance measures. Addressing these data-dependent points could be useful in future studies.

Finally, using SEM to assess growth curves imposes some restrictions. Therefore, a multilevel approach might be useful to help understand other influences and capture change within the intervals used in this study. An additional possibility could involve conducting latent class analysis to identify how clusters of firms emerge if the variance of the intercept and slope are high. This could reveal clusters displaying different trajectories over time. Regardless, we show the potential of latent growth curve modelling for examining internationalization trajectories. Given the various curves identified in past research (ranging from linear to an M curve), it would be worthwhile to re-run those analyses using this technique. Finally, the use of latent growth curve modelling is not restricted to firm type and is therefore relevant to research on other types of internationalizing organization.

Table 1: Descriptive data and correlation matrix

	MEAN	S.D.	MIN	MAX	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
LOG INITIAL SALES	13.966	1.92	10.9	20.415															
LOG INITIAL EMPLOYEES	4.413	1.7	.69	9.117	.928**														
TECHNOLOGICAL INDUSTRY	.29	.46	0	1	.294**	.301**													
AGE AT ENTRY	2.56	2.02	0	4	-.191*	-.217*	-.135	1											
EXPORT INTENSITY T1	25.9	26.35	.1	92.5	.156	.243**	.156	-.309**	1										
EXPORT INTENSITY T2	33.6	27.899	0	99.7	.164	.223*	.220*	-.166	.611**	1									
EXPORT INTENSITY T3	35.6	28.652	0	96.6	.193*	.261**	.201*	-.249**	.516**	.780**	1								
EXPORT INTENSITY T4	37	28.898	.1	97	.256**	.352**	.248**	-.230**	.532**	.766**	.797**	1							
EXPORT INTENSITY T5	30.1	31.016	0	98.3	.218*	.250**	.161	-.149	.345**	.580**	.618**	.702**	1						
GEOG DISPERSION T1	.171	.15	0	.569	-.311**	-.384**	.057	.123	-.241**	-.213*	-.253**	-.239**	-.092	1					
GEOG DISPERSION T2	.217	.16	0	.588	-.178*	-.182*	-.001	.105	-.224**	-.168	-.122	-.217*	-.132	.359**	1				
GEOG DISPERSION T3	.276	.24	0	1	-.200*	-.209*	-.062	.092	-.244**	-.280**	-.260**	-.315**	-.243**	.287**	.543**	1			
GEOG DISPERSION T4	.337	.3	0	1	-.079	-.103	-.148	.032	-.300**	-.294**	-.319**	-.230**	-.020	.178*	.326**	.370**	1		
GEOG DISPERSION T5	.490	.38	0	1	.079	.042	-.015	-.032	-.034	-.021	-.059	.044	.321**	.099	.167	.055	.440**	1	
GDP Kurtosis	-1.386	.44	-2.04	-.04	.027	-.068	.121	.086	-.005	.022	.027	.045	.029	.040	-.021	-.023	-.087	-.118	1
GDP Variation	11.1	.01	11.00	11.145	-.107	-.151	-.137	.092	-.079	-.159	-.108	-.192*	-.113	.043	.111	.160	.120	.078	.399**

Table 2: Global fit indices for export intensity

MODEL		Chi-Sqr	d.f.	Sig.	RMSEA	CFI	TLI	SRMR
1	Linear	46.913	29	.019	.069	.976	.962	.0427
2	Quadratic	26.739	17	.062	.066	.987	.965	.0225
3	Unspecified T2-T3	30.432	23	.137	.050	.990	.980	.0246
4	Unspecified T2-T3-T4	35.313	26	.105	.052	.987	.978	.0425
5	Unspecified T3-T4	35.445	25	.080	.057	.986	.975	.0391
6	Unspecified T4-T5	36.045	27	.114	.51	.988	.980	.0549

NOTE: Unspecified T3-4-5 did not reach convergence and is not reported.

Table 3: Global fit indices for geographic dispersion

MODEL		Chi-Sqr	d.f.	Sig.	RMSEA	CFI	TLI	SRMR
7	Linear	48.993	25	.003	.086	.944	.900	.0571
8	Quadratic	18.041	17	.386	.022	.998	.994	.0334
9	Unspecified T2-T3-T4	36.347	22	.028	.071	.967	.932	.0421
10	Unspecified T3-T4	37.354	23	.030	.069	.967	.935	.0426
11	Unspecified T4-T5	68.718	23	0	.124	.894	.794	.0693

NOTE: Unspecified T2-T3 and Unspecified T3-T4-T5 did not reach convergence and therefore, are not reported.

Table 4: Means and intercepts of the models

	Export intensity (II)			**Geographic dispersion (GD)**		
	Estimate	Standard Error	P	Estimate	Standard Error	P
Intercept	21.662	5.192	.000	.296	.783	.705
Slope	-.936	.703	.183	-.119	.178	.503
Slope Sqr				.010	.010	.281
Age at Entry	2.557	.177	.000	2.557	.177	.000
Initial Export intensity	25.868	2.302	.000			
Initial Geographic Dispersion				.263	.024	.000
Technological Industry	.290	.040	.000	.290	.040	.000
Log Initial Employees	4.414	.148	.000	4.414	.148	.000
Log Initial Sales	13.967	.168	.000	13.967	.168	.000
GDP Kurtosis	-1.388	.039	.000	-1.388	.039	.000
GDP Variation	11.015	.001	.000	11.015	.001	.000

Table 5: Regression weights on intercept and slope for export intensity and geographic dispersion

	Export intensity			**Geographic dispersion**		
Path	Est.	S.E.	P	Est.	S.E.	P
Initial Level -> Intercept	.520	.106	.000	.621	.270	.382
Initial Level -> SLOPE	-.032	.014	.019	-.091	.070	.192
Initial Level -> SLOPE SQR				.004	.003	.217
Age at Entry -> SLOPE	.028	.096	.768	.012	.028	.661
Age at Entry -> SLOPE SQR				-.091	.070	.192
Age at Entry -> Intercept	-.351	1.066	.742	.004	.003	.021
Technological Industry-> SLOPE	-.522	.448	.243	-.026	.030	.390
Technological Industry-> SLOPE SQR				.001	.002	.566
Technological Industry-> Intercept	7.552	4.747	.112	.100	.130	.441
Log Initial Employees -> Intercept	6.609	3.397	.073	.035	.097	.719
Log Initial Employees -> SLOPE	-.630	.316	.046	-.001	.022	.972
Log Initial Employees -> SLOPE SQR				.000	.001	.803
Log Initial Sales -> Intercept	-3.605	2.932	.219	-.027	.084	.751
Log Initial ales -> SLOPE	.475	.264	.072	-.003	.020	.868
Log Initial Sales -> SLOPE SQR				.001	.001	.573
GDP Kurtosis -> Intercept	2.029	5.384	.706	-.031	.145	.833
GDP Kurtosis -> SLOPE	-.246	.484	.611	.017	.033	.605
GDP Kurtosis -> SLOPE SQR				-.001	.002	.411
GDP Variation -> Intercept	-16.831	170.865	.335	2.379	4.808	.621
GDP Variation -> SLOPE	10.189	15.657	.515	-.045	1.116	.968
GDP Variation -> SLOPE SQR				-.003	.057	.957

Table 6: Regression weights over time for initial export intensity and geographic dispersion

	Export intensity			Geographic dispersion		
Path	Est.	S.E.	P	Est.	S.E.	P
T1-> T2	.566	.072	.000	.320	.085	.000
T1-> T3	.385	.099	.000	.184	.129	.154
T1-> T4	.454	.112	.000	.128	.154	.406
T1-> T5	.012	.167	.944	.261	.184	.157
Age at Entry -> Export intensity T2	.078	.892	.931	.006	.011	.579
Age at Entry -> Export intensity T3	-599	.913	.512	.003	.010	.784
Age at Entry -> Export intensity T4	-.371	.996	.710	-.003	.012	.775
Age at Entry -> Export intensity T5	.158	1.026	.878	-.005	.019	.791
T2-> T3	.191	.111	.086	.250	.361	.489
T3-> T4	.098	.161	.542	.186	.484	.701
T4-> T5	.723	.291	.013	-.347	.512	.497
Technological Industry->SLOPE	-.492	.448	.272	-.24	.030	.415
Technological Industry->SLOPE SQR				.001	.002	.610
Technological Industry-> Intercept	7.173	4.683	.126	.096	.130	.460
Log Initial Employees -> Intercept	6.461	3.550	.069	.034	.097	.728
Log Initial Employees ->SLOPE	-.689	.336	.040	.000	.022	.992
Log Initial Employees ->SLOPE SQR				.000	.001	.782
Log Initial Sales -> Intercept	-3.888	3.028	.199	-.025	.084	.767
Log Initial Sales ->SLOPE	.520	.277	.060	-.004	.019	.841
Log Initial Sales ->SLOPE SQR				.001	.001	.549
GDP Kurtosis -> Intercept	2.037	5.266	.699	-.033	.144	.818
GDP Kurtosis ->SLOPE	-.249	.477	.602	.018	.032	.585
GDP Kurtosis ->SLOPE SQR	-159.643	167.243	.340	-.001	.002	.394
GDP Variation -> Intercept				2.353	4.773	.622
GDP Variation ->SLOPE	9.791	15.507	.528	-.035	1.105	.975
GDP Variation ->SLOPE SQR				-.003	.057	.954

Figure 1: Sample and estimate means of the export intensity model

	T1	*T2*	*T3*	*T4*	*T5*
SAMPLE	25.868	33.595	35.619	36.981	30.05
ESTIMATES	26.177	33.142	35.372	36.501	30.739

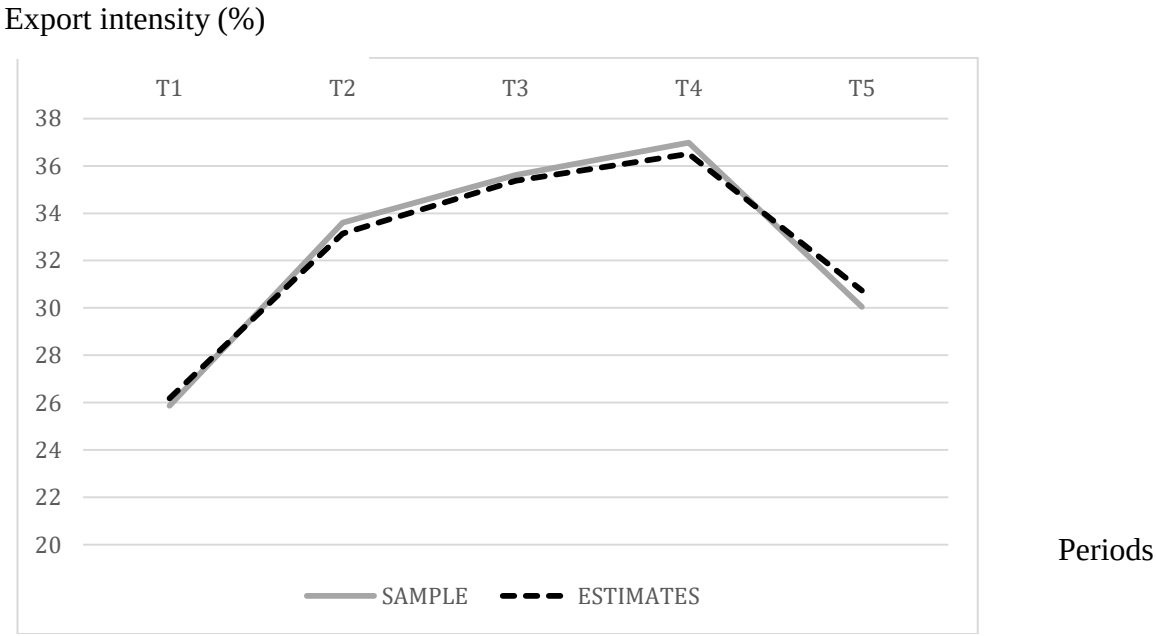
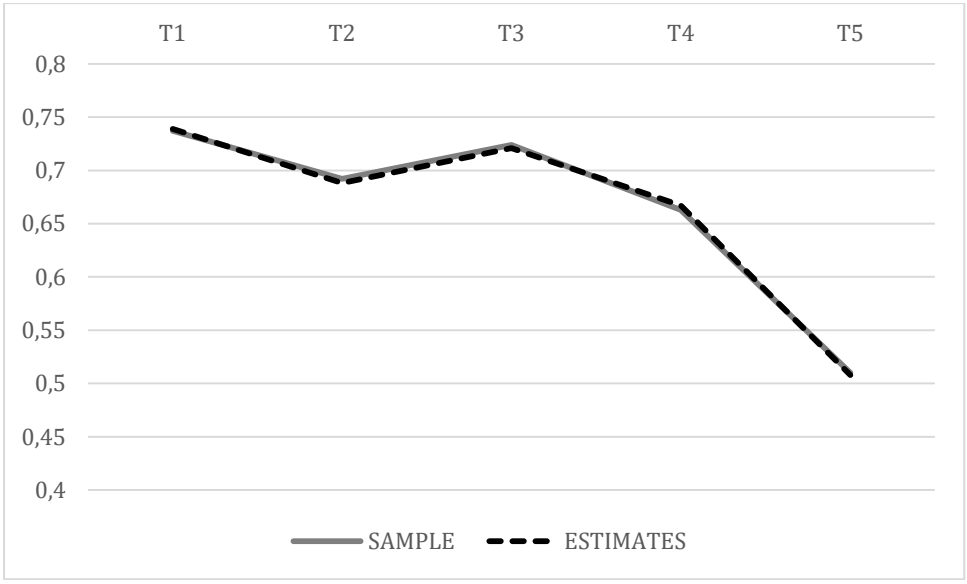


Figure 2: Sample and estimate means of the geographic dispersion model

	T1	*T2*	*T3*	*T4*	*T5*
SAMPLE	.737	.692	.724	.663	.510
ESTIMATES	.739	.688	.721	.667	.508



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