The Earliness of Exporting and Creeping Sclerosis? The Moderating Effects of Firm Age, Size and Centralization.

1. Introduction

The *earliness of internationalization* refers to a firm's *initial* foreign market entry and it captures the drive of many entrepreneurial firms to pursue international opportunities early in their life cycles (Cavusgil & Knight, 2015). Whether newness of internationalization represents a liability or an advantage for internationalizing firms in the medium-long run is still a controversial issue in the literature (Autio, 2017; Zahra, Zheng, & Wu, 2018). The Learning Advantages of Newness (LAN) approach (Autio, Sapienza, & Almeida, 2000) has emphasized the importance of the earliness of internationalization to firm performance, though Zhou and Wu (2014) identified key moderators of this relationship and Zahra et al. (2018) highlighted the importance of several contingent factors for LAN. We extend this approach and agree that research on internationalization should look beyond the earliness concept (Reuber, Dimitratos, & Kuivalainen, 2017: 412) together with their suggestion that research should be contextualized (412) "…specifying how situational features influence the occurrence or meaning of the phenomenon under study." We address this suggestion with a cross-country analysis, (419) "…studying the phenomenon in its diverse manifestations."

While early studies (Autio et al. 2000; Knight & Cavusgil, 2004) focused on export sales as a measure of international performance in relation to the earliness of internationalization, most subsequent studies have analyzed overall general firm performance in terms of a wide diversity of measures, e.g. profitability, sales growth and innovation (Fernhaber & Li, 2010; Zhou & Wu, 2014). It is explained later that only two recent studies on the earliness of internationalization have analyzed its impact specifically on international, rather than general performance, and they do not permit comparisons with earlier studies.

This study is intended to fill the gap identified by Zhou & Wu (2014: 140), who conceded that a weakness of their study was that it was (140) "…related to overall performance outcomes." With an average export intensity of firms in our study of only 36% of total sales, the impact of internationalization on overall firm performance is inevitably diluted by domestic operations, but recent studies have continued to use general performance measures in studies of the effect of the earliness of internationalization, e.g. Tobin's Q (Garcia-Garcia, Garcia-Canal, & Guillen, 2017) and total return on assets (Hilmersson & Johanson, 2016) in studies best regarded as being complementary to this one, focused as it is on export performance.

This study therefore extends the earliness of internationalization theme within the LAN approach by revisiting the emphasis of a seminal paper by Autio et al. (2000) on *exporting* as a key performance metric for judging the effectiveness of early internationalization. Following the subsequent plea of Autio (2017: 212) for LAN studies focusing on outcomes rather than process, our key research question is, *does early exporting have consequences for post-entry export performance?*

Our paper claims, therefore, to contribute theoretically to the IB literature by revisiting export performance in relation to the earliness of internationalization so as to capture the consequences of early exporting of which little is known (Autio, 2017; Cavusgil & Knight, 2015; Coviello, 2015). In this context, we report an empirical exploration into some of the LAN's boundary conditions of early entry highlighted by Zahra et al. (2018: 16). In particular, it embraces the *liabilities of ageing* (Carr, Haggard, Hmieleski, & Zahra, 2010; Sorensen & Stuart, 2000; Zhou & Wu, 2014) and *of size* (Li, Qian & Qian, 2012) in relation to the LAN concept on which earliness/performance relationships have been based. Furthermore, we recognize the general importance of managerial decision-making (e.g. Aharoni, Tihanyi, & Connelly, 2011; Ahi, Baronchelli, Kuivalainen, & Piantoni, 2017; Child & Hsieh, 2014; Gabrielsson & Gabrielsson, 2014) and the particular strength of early internationalizing firms in having decentralized structures, i.e. "…less hierarchical structures than older firms…" (Zahra et al., 2018: 17). In other words, we claim to contribute to theory by highlighting a more nuanced *liability of centralization* effect in relation to these relationships. These three variables are introduced because they are capable of diluting the impact of entrepreneurs' initial global visions on sustained exporting. As a final contribution we test our hypotheses using a sample of firms across five areas in four EU countries in order to mitigate the possible effects of heterogeneous national cultural dimensions (Dimitratos, Petrou, Plakoyiannaki, & Johnson, 2011).

The paper is structured as follows: first, we discuss and present working hypotheses based on a theoretical foundation; second, we present our data and methods; third, we report the main research findings; and, fourth, we discuss the results, presenting our concluding remarks, limitations and avenues for future research.

2. Theoretical Foundation and Hypotheses

2.1 The Learning Advantages of Newness (LAN)

Time lies at the heart of most IB research, although Chetty et al. (2014) note that time can itself "cause" nothing. Nevertheless, we continue to identify the earliness of internationalization as the age of the firm at first foreign market entry (Autio et al., 2000) to maintain comparability with the overwhelming majority of the literature. Exporting is the focal dimension of internationalization in this paper, as the dominant foreign entry mode for SMEs (Knight & Cavusgil 2004: 133). With its origins in the behavioral theory of the firm and its emphasis on bounded rationality, satisficing and rules-of-thumb (Cyert & March, 1963), early internationalization theory (e.g. Johanson & Vahlne, 1990) stressed gradual, incremental and risk-spreading approaches of resource-constrained firms towards international involvement. Faced with the liability of foreignness, mature firms were not expected to conduct a rigorous analysis of each potential export market and its associated uncertainties, but preferred to dip their toes gently in the water, exporting tentatively with small transactions in countries that happened to be adjacent, with which they would be familiar. Subsequently, they were expected to extend their commitment and geographical scope gradually, as international knowledge accumulated. Rapid internationalization may be too hurried, premature and risky, with export decisions based on too little knowledge of foreign markets as a result of "time compression diseconomies" (Vermeulen & Barkema, 2002: 639). In addition, "unlearning" obsolete routines developed during early internationalization may be difficult (Autio et al., 2000: 912). In the end, speed may be the enemy of sustained internationalization.

However, Oviatt & McDougall (1994) challenged this gradualist perspective, leading to the emergence of international entrepreneurship (IE) as a sub-discipline within IB. IE was based on less mature firms, risk-taking rather than spreading, and on empirical findings that many firms internationalized early and quickly owing to LAN identified by Autio et al. (2000) in a paper considered to be "one of the most compelling studies" (Oviatt & McDougall, 2005: 547), and used as a benchmark for this study. With LAN, dynamic early entrepreneurs are seen as eschewing gradualism in favor of flexibility and openness with new foreign partnerships, and as being capable of pursuing internationalization from the outset.

Subsequently, Casillas, Moreno, Acedo, Gallego, & Ramos (2009) proposed that (318), "…a firm's degree of internationalization relates positively to its rate of international learning and therefore to the speed of its internationalization process". In other words, rapid internationalizers may enjoy LAN, securing first-mover advantages with positive long-lasting consequences (Mohr & Batsakis, 2017). In addition, Acedo & Jones (2007: 237) suggested that, "…rapid internationalization is associated with a global mindset or orientation (Harveston, Kedia, & Davis, 2000; Nummela,

Saarenketo, & Puumalainen, 2004), or an entrepreneurial orientation (Covin & Slevin, 1991)." Such a global mindset or mission (Knight & Cavusgil, 2004: 137) revealed at early internationalization in terms of higher levels of proactivity and lower perceptions of risk (Acedo & Jones, 2007: 247) may have a persistent and positive effect on exports, reinforcing LAN. Casillas, Moreno & Acedo (2012) proposed and confirmed that (468), "…companies with a more rapid internationalisation process will progress simultaneously and further…" through all three dimensions of export commitment "…extent, entry mode and scope…" (465). Shaker et al. (2017: 17) summarized the basis of LAN as being new firms entrenched in fewer existing routines, with less centralization, and new ventures having fewer embedded ties with domestic partners and customers. Rather than speed being the enemy of subsequent internationalization, the IE perspective would challenge gradualism by proposing "the earlier the better".

The extant empirical evidence on the performance effects of the earliness of internationalization has been as mixed as its theorization since early, seminal papers (e.g. Autio et al., 2000) associated speed of internationalization with subsequent exporting outcomes, but the majority of more recent papers address the *determinants* of speed rather than its *consequences* for sustained internationalization. For example, Casillas & Moreno-Menéndez (2014: 85) "…attempt to explain the speed of international operations in terms of learning acquired in the course of past international activities", and Ramos, Acedo, & Gonzalez (2011: 560) "…explain the possible effect of sectoral technological intensity on internationalisation speed." Casillas & Acedo (2013) therefore conclude that (23) "…despite the growth of interest in the role of time in international management, reflected in the number of papers which take the factor into account, it is still an underexplored concept, with most studies merely considering it as a dependent variable…", and Hilmersson & Johanson (2016) report that (67) "…few studies treat speed as an independent variable."

Where the consequences of internationalization speed have been investigated, general (rather than internationalization-specific) performance measures have mostly been employed, and Trudgen and Freeman argued that (2014: 555) "…the BG [born global] literature has applied an arbitrary mix of financial performance, operational performance, and overall effectiveness measures as performance measures (Huit et al., 2008)." As examples, Mohr & Batsakis (2017) focus on general firm profitability while Meschi, Ricard, & Moore (2017) examine (279) "… the effect of age at internationalization and pace of internationalization on the survival of small and medium-sized enterprises." Khavul, Pérez-Nordtvedt, & Wood (2010) found no evidence of any significant positive or negative relationship between international speed and self-reported, general performance

scales. This was confirmed more recently by Zhou & Wu (2014) who found that earliness was positively associated with performance in terms of overall sales growth but not profitability. The latest empirical evidence has suggested that "…early internationalization is better for post-internationalization survival than late internationalization" (Fariborzi & Keyhani, 2018: 621) but Trudgen & Freeman (2014: 569) reported that rapid internationalization slows BG progression through the early international entry-development phase.

However, export, rather than general, performance has been applied only to a limited extent in this literature. Here, the *negative* influence of premature internationalization on subsequent internationalization has been reported (Vermeulen & Barkema, 2002: 640), but only in the context of large Dutch MNEs with an average workforce of 14,000. Furthermore, Wu & Zhou (2018) did find that earliness and subsequent internationalization were not positively associated, but their dependent variable was the geographical scope of internationalization, rather than export sales. Chetty et al. (2014) did use international performance measures (in terms of the earliness of exporting and of regular exporting) and again reported an insignificant (negative) effect of earliness, although their multidimensional speed measure and composite performance measures did lead to the conclusion that "…earlier internationalizing firms outperform 'late internationalizers' (647)."

With this diversity of results using different performance and internationalization speed measures, this paper returns to the earlier, seminal LAN papers by Autio et al. (2000) and Knight & Cavusgil (2004) which found that the early initiation of internationalization was positively associated with faster international sales growth. Thus, we go with the LAN approach and propose:

HP1: There is a positive relationship between a firm's earliness of exporting and its export performance.

2.2 Firm Age

As a second dimension of time, firm age has been widely analyzed and employed as an independent or control variable in studies of early internationalization. It is not inconceivable that knowledgeable founders with high entrepreneurial orientation, who have been able to cope with the high intensity in the selection process during the earlier part of the life cycle, may continue to pursue internationalization successfully over time. As firms mature, however, their founders' knowledge may become inflexible and obsolete in the face of change (Henderson, Miller, & Hambrick, 2006), and firms may continue to employ routines that were developed domestically or

during early internationalization that may impede their subsequent international learning, i.e. firms may develop "sclerosis"[1].

Bruneel, Yli-Renko, & Clarysse (2010) indicated that the positive effect on subsequent internationalization outcomes of founders' initial knowledge declines over time. Love, Roper, & Zhou (2016), who distinguished between firm's age and experience, argued that (806) "…firm's age may be linked to sclerotic thinking, inflexibility and an inability to change strategy and/or behavior". They reported that a firm's age negatively affects a SME's exporting performance.

In other words, in the context of our study, LAN may conceivably be mitigated by the liability of ageing (Sorensen & Stuart, 2000; Zhou & Wu, 2014). This liability runs counter to the process notion of incremental extension and improvement, and a negative moderation of firm age between early internationalization and firm performance has characterized empirical studies (e.g. Zhou & Wu, 2014). Thus, HP1 represented the LAN, while HP2 predicts its decline over time:

HP2: A firm's age moderates negatively the relationship between a firm's earliness of exporting and its export performance so that the greater (lower) the firm's age, the weaker (stronger) any positive relation between the earliness of exporting and export performance.

2.3 Firm Size

Like firm age, size is often employed as a control variable in IB research, but we propose it as an independent variable in its own right because up to 60% of firms are reported to progress through a sequence of growth stages which are configurations of age, size and structure (Levie & Lichtenstein, 2010: 331) that cannot be represented by age alone, and care must be taken to separate the influences of firm age and size, particularly in relation to the studies of centralization that follow below. Although there is no consensus on the number of growth stages (Zupic & Giudici, 2016: 201) they are confirmed by empirical studies (e.g. Ingley, Khlif, & Karoui, 2016) and motivate our treatment of size as an independent variable.

As with firm age, however, the size of a firm may have an ambivalent impact on any relation between the earliness and export performance. For example, size may imply market power and a relative abundance of resources, available as support for internationally-oriented entrepreneurs through economies of scale and scope, thus moderating positively any earliness/performance

[1] Sclerosis is a medical term denoting the hardening of a body's structures, usually arteries, with age.

relationship based on LAN. At the same time however, size can produce a cumbersome, complex organization, the obverse of LAN in smaller, more flexible firms.

The inconsistency (and often insignificance) of the signs on size coefficients as control variables in earliness/performance (or survival) studies (Carr et al., 2010; Chetty et al., 2014; Garcia-Garcia et al., 2016; Faribozi & Keyhani, 2018; Hilmersson & Johanson, 2016; Musteen, Francis, & Datta, 2010; Zhou & Wu, 2014; Wu & Zhou, 2018) would leave us with the double-edged sword of an ambivalent impact. However, Li et al. (2012), tested a non-linear U-shape relationship between size and early internationalizers, and found that when size increases, firms "…lose the organizational advantages of nimbleness, flexibility and responsiveness, and gain disadvantages of bureaucracy and inertia" (542). Relying on this "liability of size" phenomenon, therefore, we propose:

HP3: A firm's size moderates negatively the relationship between a firm's earliness of exporting and its export performance, so that the greater (smaller) the firm's size, the weaker (stronger) any positive relation between the earliness of exporting and export performance.

2.4 Centralization

Centralization, or "…the extent to which decision-making is concentrated in the top levels of the organization" (Caruana, Morris, & Vella, 1998: 18) is argued to provide an influence on any earliness/performance relationship that is not captured by firm age and size alone. It contrasts with decentralization that "…tends to promote participative decision making and push decision making authority to lower levels of the firm" (Martin, McKelvie, & Lumpkin, 2016: 756). This view is supported by (Zahra et al., 2018: 25) who propose that flat organizational structures in new firms facilitate knowledge sharing and learning. They go on to assert that flat structures are usually characterized by high autonomy, low centralization of authority, and low formalization with few rules, facilitating open communication, rapid and frequent information sharing, participative decision making, consensual conflict resolution, and risk-taking among employees and managers.

On the other hand, the centralization of decision-making may take two forms in relation to internationalizing firms, though their effects may be similar. First, centralization may result where the founder (or founding group) in a new firm retains personal control of most strategic and operating decisions. In particular, family firms have been described as being control-oriented (Martin et al., 2016: 757), with family owners often reluctant to decentralize and delegate authority, and often criticized for their unwillingness to professionalize management (Majocchi, D'Angelo, Forlani, & Buck, 2018). Second, as the new firm passes through growth stages (Levie

& Lichtenstein, 2010), it may indeed admit professional managers to head up functional departments, but may develop "hierarchical centralization" which Ji & Dimitratos (2013: 994) found to affect negatively international decision-making effectiveness in the context of entry mode choice.

Each of these forms of centralization, embodied in founders or in a bureaucratic headquarters, brings similar costs through restricted channels of communication. Central decision-makers are likely to be distanced from operational reality, and internationalization brings complexity. Centralization tends to be reflected in additional hierarchical levels, top-down management, and restrictive channels of communication that may impede entrepreneurship. Caruana et al. (1998) reported that (25) "…entrepreneurship in established companies should be expected to originate not at the top, but from the frontline employees who most directly interact with customers, distributors, suppliers, technologies, and other elements of the external environment. Sustainable entrepreneurship is driven by individuals and teams, not by centralized authority".

Without the participation of functional heads, strategic decisions may become rigid and lack diversity, relying on routines that were established at earlier levels of internationalization, or based on the domestic market (Zhou & Wu, 2014). Central strategists may lack feedback on earlier strategies, and miss, for example, the knowledge that an export manager may accumulate through links with customers, potential customers and other export managers.

Besides these negative implications of centralization, it must be conceded that centralization can also bring some advantages of coordination (Love, Priem, & Lumpkin, 2002) and scale economies across different export products and markets if they share commonalities. As with other influences on the earliness/performance relationship, therefore, outcomes may be empirically estimated but not conclusively predicted, and centralization has been found in the majority of empirical studies (e.g. Caruana et al., 1998; Love et al., 2002; Martin et al., 2016; Musso & Francioni, 2013) to have had a negative influence in an IB context. It is tautologous to propose that *over*-centralization will have a negative impact, but on the basis of the balance of empirical work we can propose a "liability of centralization" as a result of a centralized firm's strategic inflexibility across international boundaries (Wu & Zhou, 2018), with its roots in formalized, ritualized routines that might impede firms from seizing international opportunities (Carr et al., 2010).

Following previous research (Zhou & Wu, 2014; Wu & Zhou, 2018), we argue that the link between the earliness and export performance is contingent upon a firm's rigidity following centralization. In other words, the moderating, negative effects of the liabilities of venture age and size on the relationship between earliness of exporting and post-entry export performance, as hypothesized in HP2 and HP3, would be more prominent for ventures with a centralized decision-making structure:

HP4(a): The moderating negative effect of a firm's age on the relationship between the earliness of exporting and its export performance is greater (lower) for firms featuring a centralized (decentralized) decision-making structure.

HP4(b): The moderating negative effect of a firm's size on the relationship between the earliness of exporting and its export performance is greater (lower) for firms featuring a centralized (decentralized) decision-making structure.

Based on the literature reviewed and hypotheses developed, we propose the following research model for which we seek empirical validation.

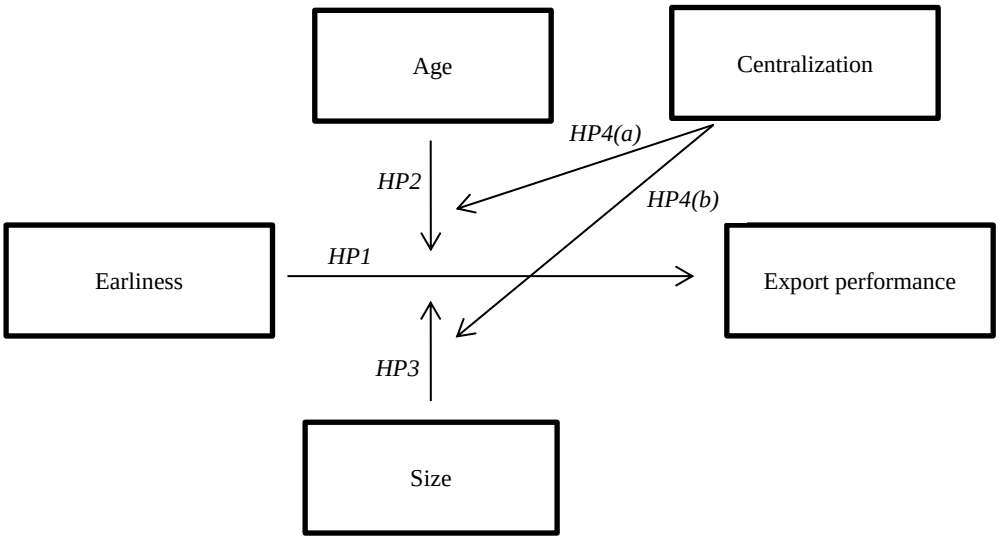

Figure 1 - Research Model.

3. Methodology

3.1 Data and Sample

To test our working hypotheses this study uses data from the first edition of the survey "The performances of European firms: A benchmark analysis" published in 2016 by Assolombarda

Confindustria Milano, Monza and Brianza. This survey built on the EFIGE project, sponsored by the European Commission (Altomonte & Aquilante, 2012), and comprised firm level data from five European regions, namely Lombardia (Italy), Baden-Württemberg and Bayern (Germany), Cataluña (Spain) and Rhône-Alpes (France). The sample is composed of 644 companies with more than 10 employees – *Italy (Lombardia)*=241; *Spain (Cataluña)*=103; *Germany (Baden-Württemberg)=99; Germany (Bayern)=100; France (Rhône-Alpes)=101* – and data refer to manufacturing industry at four technological levels, i.e. high, medium-high, medium-low and low-tech. Table 1 shows the sample distribution by country and technological level. The original dataset contained around 120 qualitative variables obtained through the administration of a questionnaire, including: (a) business structure, production and organization; (b) labor force and training; (c) investments, innovation and R&D; (d) internationalization; (e) finance and relationships with banks; (f) market and competition; (f) bureaucracy. The survey covered the period 2011-2013 and data were triangulated with accounting information available from the EFIGE project so to reduce common method bias, thus offering the advantages of archival data claimed by Barnes, Dang, Leavitt, Guarana, & Uhlmann (2018), i.e. it embraces a range of different socio-political contexts across the EU and offers a large sample with statistical power not limited to a single source.

Table 1 - Distribution of the Sample.

		Country					
		Italy (Lombardia)	Spain (Cataluña)	Germany (Baden-Württemberg)	Germany (Bayern)	France (Rhône-Alpes)	Total
Sector							
	High technology	10	5	5	6	4	30
	Medium - high technology	72	23	33	27	20	175
	Medium - low technology	99	32	35	36	49	251
	Low technology	60	43	26	31	28	188
	Total	241	103	99	100	101	644

3.2 Variables and Measures

Dependent variable. In line with the objectives of the study, our dependent variable measures export performance as the ratio of foreign to total sales or export intensity (*Export performance)* in 2013. This has been used extensively (e.g. Lu & Beamish, 2001) as a measure of internationalization.

Independent variables. Our main independent variable is *Earliness* of exporting and refers to how early a firm enters its first international market. As reported by Zhou & Wu (2014: 132) "…it is typically the short length of time between venture founding and its first sales across borders".

Autio et al. (2000) refer to it as the venture's age at first foreign market entry. Chetty et al. (2014) refer to it as "time to internationalization". Prior research (e.g. Autio et al., 2000; Musteen et al., 2010; Zhou & Wu, 2014) measured earliness as the years between foundation and the year the firm entered its first international market, i.e. lateness. For a positive measure, therefore, we estimated 100 minus the difference between the year the firm was established and the year it entered its first export market.

Independent/Moderating variables. As part of our research design, the variables firm *Age* (firm's years in business) and *Size* (number of employees) are used as independent and moderating variables as well as control variables (see Method sub-section, below). Our third variable measuring *Centralized decision-making structure* is a dummy variable that takes the value "1" where the CEO/owner takes most decisions in every area or "0" where managers feel they can take autonomous decisions in some business areas. This variable is used to split our sample.

Control variables. Accessing foreign markets generates additional costs and consequently only innovative and high-productivity firms may be able to afford to export (Golovko & Valentini, 2011). According to this literature supporting the notion that innovation and productivity promote foreign sales, we control for firm's *R&D intensity* (R&D employees to total employees) and *Productivity* (log of value-added per employee). We also control for *Export Commitment* (a dummy variable taking the value of "1" if a regular and ongoing exporter, "0" if sporadic) as previous research (Bell, McNaughton, Young, & Crick, 2003; Dominguez & Mayhofer, 2017; Johanson & Vahlne, 1977; Sleuwaegen & Onkelinx, 2014) reporting the dynamic nature of internationalization behavior highlighted the need to control for it. Finally, we control for technological levels in four industries and nation-specific effects including country dummies. All the control variables are lagged two years to account for potential reverse causation. A two-year period was considered sufficient for the control variables studied. Other studies that investigate export determinants (Shinkle & Kriauciunas, 2010) lag the variables by just one year.

3.3 Method

To test our hypotheses we used a simple ordinary least squares (OLS) regression with probability weights as provided in the database in order to account for potential oversampling. Employing the widely used *StataSE14 software*, we ran a series of OLS regression models in Table 3 using a hierarchical approach. In model 1, export performance was regressed on the study's control variables including firm's size and age. In model 2, we added the earliness measure. Following

Zhou & Wu (2014), before introducing interaction terms, we mean-centered predictor and moderating variables prior to the creation of interaction terms, in order to reduce the potential problem of multicollinearity (Aiken and West, 1991). In model 3, the interaction term (firm's age by earliness of exporting) was added and in model 4, we added the other interaction term (firm's size by earliness of exporting). In Table 4 we split our sample, distinguishing firms with centralized *vs* decentralized decision-making structures. In models 1 and 2, we regressed both the interaction terms (firm's age by earliness of exporting and size by earliness of exporting) only for firms with a centralized decision-making structure. In models 3 and 4, we regressed both the interaction terms (firm's age by earliness of exporting and size by earliness of exporting) only for firms with a decentralized decision-making structure In Table 5, as part of our robustness check, we regressed the interaction terms only in family firms (see 4.2 below).

4. Results

4.1 Main Findings

Table 2 shows the mean values, standard deviations, and correlations for all the variables used in the regressions. The low value of all the indices suggests that multicollinearity was no cause of concern. As a further test, we also calculated Variance Inflation Factors (VIFs) for all the variables. The average VIF value was 2.59 for our baseline model 1, 2.71 for model 2 with a maximum of 3.9 for our models with interaction terms. All the VIF values were well below the usual thresholds of 10 reported in the literature (Studenmund, 1992), confirming that multicollinearity was not a concern for our analysis.

Table 2 - Means, Standard Deviations and Correlations.

	Mean	S.D.	Obs	1	2	3	4	5	6	7	8
1. Export (Y/N)	.6770	.4679	644								
2. Export performance	36.35	28.34	412		1						
3. Earliness	83.62	20.70	436		0.1538*	1					
4. R&D intensity	8.11	13.67	644		0.1221*	0.0637	1				
5. Productivity	4.41	.6096	617		0.1362*	0.0855	0.0306	1			
6. Size	65.72	201.48	644		0.1481*	-0.0895	-0.0349	0.0493	1		
7. Age	42.34	30.38	644		0.0028	-0.7542*	-0.0791*	-0.0537	0.1867*	1	
8. Export commitment	.8211	.3837	436		0.4446*	0.0456	0.0165	0.1062*	0.1054*	0.1061*	1
9. Centralized decision-making structure	.7624	.4259	644		-0.0051	-0.0013	-0.0379	0.0129	-0.0313	-0.0170	-0.0598

Note: *** p<0.01, ** p<0.05, * p<0.1

Table 2 highlights that firms in our sample are on average 42 years old and on average employ 65 employees (compared with n=92 for Zhou and Wu, 2014). Seventy-six percent of firms in our sample present a centralized decision-making structure. Moreover, almost 68% of them export, with exports averaging around 36% of total sales. They started exporting on average within sixteen years of foundation. Eighty-two percent of our exporting firms are regularly committed to exporting, i.e. they have been regular exporters since their first exports and are still continuing exporters at the time of data collection.

Table 3 shows the results of regressions estimating the effects of the earliness measure on export performance, as well as the moderating effects of firm's age and size plus the same effects only in firms with a centralized decision-making structure.

Table 3 - Results of OLS Regression: Earliness of Exporting (and interactions with Age and Size) on Export Performance.

VARIABLES	Model (1)	Model (2)	Model (3)	Model (4)
Spain (Cataluña)	-4.445	-2.980	-2.242	-2.988
	(4.335)	(4.375)	(4.354)	(4.372)
Germany (Baden-Württemberg)	-7.082	-8.458*	-8.459*	-8.338*
	(5.118)	(5.029)	(5.027)	(5.043)
Germany (Bayern)	-8.002**	-6.978*	-6.677*	-7.112*
	(3.652)	(3.623)	(3.647)	(3.622)
France (Rhône-Alpes)	-11.06**	-9.930**	-9.780**	-9.961**
	(4.323)	(4.402)	(4.409)	(4.386)
Medium-high	0.806	1.346	1.657	0.909
	(6.610)	(6.413)	(6.296)	(6.391)
Medium-low	-6.259	-5.765	-5.394	-5.802
	(6.724)	(6.552)	(6.449)	(6.528)
Low	-17.08**	-15.91**	-15.54**	-16.02**
	(6.977)	(6.775)	(6.684)	(6.748)
R&D intensity	0.0142	0.0166	0.00542	0.0126
	(0.176)	(0.174)	(0.175)	(0.175)
Productivity	0.534	0.553	0.591	0.391
	(2.638)	(2.596)	(2.555)	(2.602)
Export commitment	28.65***	26.98***	26.04***	26.91***
	(2.214)	(2.241)	(2.295)	(2.241)
Age	-0.0710	0.105	0.109	0.106
	(0.0532)	(0.0964)	(0.0983)	(0.0961)
Size	0.0183***	0.0162**	0.0158**	0.0132**
	(0.00651)	(0.00688)	(0.00647)	(0.00562)
Earliness		0.299***	0.411***	0.305***
		(0.111)	(0.127)	(0.110)
Earliness*Age			-0.0032*	
			(0.00169)	
Earliness*Size				-0.00048***
				(0.000181)
Observations	390	390	390	390
R-squared	0.285	0.304	0.309	0.308

Note: Robust standard errors in parenthesis; *** p<0.01, ** p<0.05, * p<0.1

HP1 predicts that firm's earliness of exporting is positively associated with its export performance, and the coefficient for the earliness measure in the regression function with the dependent variable of export performance (Model 2) was statistically significant ($\beta = 0.30$, $p < 0.01$). Thus, HP1 was strongly supported.

HP2 states that firm's age moderates the relationship between the earliness measure and export performance, such that the relationship becomes weaker as the firm gets older. In the regression function with export performance as the dependent variable in Model 3 of Table 3, the coefficient on the interaction was statistically significant ($\beta = -0.0032$, $p < 0.1$), indicating that there is a moderating effect of firm's age. Consistent with our prediction, the positive impact of the earliness of exporting on export performance diminishes as firms age. Thus, HP2 is supported though weakly.

HP3 states that firm size moderates the relationship between the earliness measure and export performance, such that the relationship becomes weaker as the firm gets bigger. In the regression with export performance as the dependent variable in Model 4 of Table 3, the coefficient on the interaction is statistically significant ($\beta = -0.00048$, $p < 0.01$), indicating that there is a moderating effect of firm's age. Consistent with our prediction, the positive impact of the earliness of exporting on export performance diminishes as the firms become bigger. Thus, HP3 is strongly supported.

HP4(a) predicts that the moderating effect of firm's age on the relationship between the earliness measure and export performance is greater for firms featuring a centralized decision-making structure. As shown in Model 1 of Table 4, the coefficient of the interaction term between the earliness of exporting and firm's age had the expected negative sign but was only weakly significant ($\beta = -0.0035$, $p < 0.1$). The contribution of the earliness measure to export performance decreases as firms get older and this sclerosis is greater for firms featuring a centralized decision-making structure, but our HP4(a) is only weakly supported.

HP4(b) predicts that the moderating effect of firm size on the relationship between the earliness measure and export performance is greater for firms featuring a centralized decision-making structure. As shown in Model 2 of Table 4, the coefficient of the interaction term between the earliness of exporting and firm's size is statistically significant ($\beta = -0.00048$, $p < 0.05$). The contribution of the earliness of exporting to export performance decreases as firms get bigger and

this is exaggerated for firms featuring a centralized decision-making structure. Thus, our HP4(b) is supported.

Table 4 - Results of OLS Regression: Earliness of Exporting (and interactions with Age and Size) on Export Performance among firms with a Centralised vs Decentralised decision making structure.

	Centralized		Decentralized	
VARIABLES	Model (1)	Model (2)	Model (3)	Model (4)
Spain (Cataluña)	-3.046	-4.231	-3.876	-3.854
	(5.016)	(5.027)	(9.113)	(9.076)
Germany (Baden-Württemberg)	-9.217	-9.237	-14.60	-13.84
	(5.821)	(5.859)	(8.777)	(8.874)
Germany (Bayern)	-7.620*	-7.966**	-8.076	-7.299
	(3.920)	(3.855)	(8.325)	(8.126)
France (Rhône-Alpes)	-6.796	-6.769	-24.37***	-24.43***
	(5.030)	(4.977)	(8.735)	(8.266)
Medium-high	-9.435	-10.35	14.11**	14.26**
	(8.454)	(8.653)	(6.216)	(6.238)
Medium-low	-15.62*	-16.36*	9.660	9.586
	(8.630)	(8.767)	(7.221)	(6.869)
Low	-25.54***	-26.00***	-5.373	-5.695
	(8.933)	(9.077)	(8.028)	(8.088)
R&D intensity	-0.0594	-0.0555	0.417	0.384
	(0.180)	(0.178)	(0.303)	(0.303)
Productivity	-1.391	-1.921	6.331	6.423
	(2.796)	(2.864)	(4.174)	(4.063)
Export commitment	26.61***	27.51***	22.95***	23.04***
	(2.616)	(2.488)	(5.593)	(5.664)
Age	0.148	0.142	0.0115	0.0249
	(0.108)	(0.106)	(0.198)	(0.198)
Size	0.0125**	0.0107**	0.0400**	0.0245
	(0.00595)	(0.00456)	(0.0187)	(0.0249)
Earliness	0.463***	0.343***	0.116	0.143
	(0.148)	(0.119)	(0.244)	(0.244)
Earliness*Age	-0.0035*		0.000185	
	(0.00210)		(0.00248)	
Earliness*Size		-0.00048**		-0.000441
		(0.000216)		(0.000578)
Observations	290	290	100	100
R-squared	0.314	0.313	0.397	0.395

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

4.2 Robustness Check

In order to ensure the robustness of our findings we ran models from 1 to 4 in Table 3 using a Tobit regression model in order to consider the high percentage of observations at the lower limit for our dependent variable (Bowen & Wiersema, 2004; Greene, 2002). Results obtained with a Tobit regression did not present substantial changes (not reported here for parsimony, but available on request).

Furthermore, as decision-making can be investigated at the levels of both firm and entrepreneur (Gabrielsson & Gabrielsson, 2013), we believe that the family firm context is appropriate to capture

the CEO's "narcissism" as an individual level characteristic (Oesterle, Elosge, & Elosge, 2017) that could lead to a firm's centralized decision-making structure. Previous studies (e.g. Hsu, Chen, & Cheng, 2013; Nummela, Saarenketo, Jokela, & Loane, 2014) reported cases of decision-making being centralized around the CEO, and that family firm owner-managers are less inclined to delegate (e.g. Martin et al., 2016). We therefore ran additional OLS regression models with a sample of family firms with a family CEO (Model 1 and 2 in Table 5). Family firms, where the family controls the business through significant involvement in ownership and managerial positions (Sciascia & Mazzola, 2008), often featuring an owner-manager centralized decision-making structure as a cause of rigidity (Gallo & Garcia Pont, 1996; Papadakis, 1998). Our discriminatory variable of family firms is a self-declared measure with a family CEO widely used in the extant literature (e.g. Majocchi et al., 2018).

Table 5 - Robustness results for Family Firms

	Family Firms	
VARIABLES	Model (1)	Model (2)
Spain (Cataluña)	-4.831	-5.685
	(5.159)	(5.199)
Germany (Baden-Württemberg)	-7.021	-7.205
	(5.881)	(5.940)
Germany (Bayern)	-5.796	-6.479
	(4.060)	(4.018)
France (Rhône-Alpes)	-3.899	-4.473
	(5.629)	(5.677)
Medium-high	-4.700	-5.786
	(8.648)	(8.996)
Medium-low	-12.73	-13.51
	(8.536)	(8.859)
Low	-18.24**	-18.96**
	(9.024)	(9.321)
R&D intensity	0.233	0.251*
	(0.145)	(0.147)
Productivity	0.195	0.00138
	(2.846)	(2.901)
Export commitment	24.85***	25.97***
	(2.672)	(2.601)
Age	0.0787	0.0772
	(0.112)	(0.108)
Size	0.0176**	0.0121*
	(0.00713)	(0.00662)
Earliness	0.498***	0.349***
	(0.139)	(0.124)
Earliness*Age	-0.0039**	
	(0.00175)	
Earliness*Size		-0.00042**
		(0.000202)
Observations	273	273
R-squared	0.341	0.333

Note: Robust standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

As in our main models, we included only firms with export sales, so our sample may be non-

random and our results may suffer from sample selection issues since firms without export sales, for some unobserved reasons, may have decided not to export. These unobserved reasons may have biased our results so we used the Heckman model, estimating two equations to enhance robustness of our empirical findings. The first equation was a Probit model that predicts whether a certain action is taken or not (in our case, a firm's decision to export) and includes all the control variables above with the exception of the variable *Export Commitment* as it is observable only in exporting firms. Moreover, we added another variable that is assumed to affect the probability of exporting (negatively), but it is assumed not to influence export performance. This variable was the self-declared measure "family firms with a family CEO" because prior literature reported that the involvement of family members in ownership and management of the business negatively influences the likelihood of initial international entry (Cerrato & Piva, 2012: 634; Evert, Sears, Martin, & Payne, 2018) given their greater focus on domestic markets (Gallo & Garcia Pont, 1996). Moreover, being a family- managed firm does not itself positively influence selling abroad (Fernandez & Nieto, 2006) but may rather be the result of a hiring professionals, educating family managers (D'Angelo et al., 2016; Majocchi et al., 2018) or a niche product strategy (Hennart, Majocchi, & Forlani, 2017). Therefore, we considered our self-declared measure of family firm with a family CEO affecting the probability of exporting (negatively), but not influencing export performance.

The second equation was a regression model of the export performance dependent variable and all the original independent and control variables. Moreover, we included *Lambda*, an additional variable that represents the self-selection impact, calculated by the first selection equation. The Heckman two-step test revealed that the *Lambda* of the new equation was insignificant, suggesting an absence of selection bias. This indicates that there is not a correlation between the error terms of the primary equation and the error terms of the selection equation, and selection bias does not seem to have significantly influenced our results.

The two-stage estimator method outperforms an OLS method only if selection bias is severe (Stolzenberg & Relles, 1997: 503). In this study, sample selection bias was not significant and the regression coefficients did not substantively differ between the two-step estimator and the OLS models (results not reported but available on request). Consequently, we relied on the hierarchical OLS regression results.

5. Discussion and Conclusions

With the acceleration of globalization, the phenomenon of early internationalization grew exponentially (Cavusgil & Knight, 2015) and previous studies have stressed how many firms have been able to internationalize early and quickly because of their LAN (Autio et al., 2000). In this study, we looked retrospectively at those firms who had their first international sales a relatively short period after their founding, and at the effect that this action had on their export performance years later. Therefore, and to maintain comparability with earlier studies, we incorporated time as a primary conceptual dimension to understand entrepreneurial internationalization (Jones & Coviello, 2005). Besides the earliness of exporting, we did this by considering two other time-related variables, i.e. age and size of venture, as we looked at their moderating effects on the estimated relationship between earliness of exporting and post-entry export performance, i.e. we investigated the firm's ability to retain LAN over time as they get older and bigger. Over a range of firms and countries in EU, we confirmed the liabilities of age and size.

Cavusgil & Knight (2015), commenting on their decade award-winning article, emphasized that the organizational characteristics (culture, posture, structure and strategies) are salient in advancing early internationalization research. Recently Zahra et al. (2018: 17) has remarked that the advantages of newness, are contingent on several environmental, organizational, and strategic variables, and particularly the advantages of decentralization. In this article we therefore gave prominence, not only to the moderating effect of firm age and size, but also to the role played by the firm's decision-making structure in the context of the earliness/exporting relationship.

Since internationalization, even in the relatively straightforward case of exporting, is a continuous learning process that often requires networks with local distributors and suppliers in foreign markets to manage upstream and downstream partners in a value chain (e.g. Coviello, 2006; Freeman, Edwards, & Schroder, 2006; Hashai, 2011; Johanson & Vahlne, 2009; Yeoh, 2004; Zhou, Wu, & Luo, 2007), a decision-making structure concentrated at the top level of the organization (in a single founder or at headquarters) may impede information exchange, resulting in less interaction, participation, willingness and commitment by middle managers to contribute to the decision-making process (Papadakis, 1998). This centralization of decision-making may lead to the homogeneity of ideas and an information block that may limit a firm's ability to retain its LAN over time by capturing, processing, and applying new knowledge (Cohen & Levinthal, 1990). Furthermore, this limitation may increase as they get older and bigger. Centralization is likely to affect a firm's strategic decisions, including internationalization (Hsu et al., 2013), particularly in

small firms where actor-dependent entrepreneurial decisions are often reflected at firm level in the form of formalized, ritualized routines (Martin et al., 2016: 757). Our results demonstrate the significance of centralization in exaggerating the sclerotic liabilities of size (and, to some extent, age), impeding their LAN. Interestingly, centralization significantly reinforces the liability of size, presumably because the expanding firm has problems handling size and complexity, leading to sclerosis. On the other hand, the effect of centralization on the liability of age is only weakly significant, possibly supporting the notion that time "causes" nothing (Chetty et al., 2014) and may not add to complexity.

5.1 Theoretical Contribution

Our first claimed contribution relates to the confirmation of the central (and widely tested) earliness/internationalization hypothesis (HP1) first proposed by Autio et al. (2000: 913) in the context of export, rather than general performance. "The earlier the better" appears to be the appropriate maxim, thanks to the LAN. However, exporting sclerosis does set in, as the age and size of firms significantly affect the earliness/exporting relationship (HP2 and HP3).

The LAN perspective has emphasized the role of entrepreneurs, their prior international experiences and capabilities, and the *ex-ante* learning processes associated with early internationalization. Following Zhou & Wu (2014), we tested and found support for the liabilities of aging and sizing, revealing *ex-post* contingencies that might impede the learning process as firms get older and bigger. One of these contingencies is the presence of a centralized decision-making structure (HP4a and HP4b) which can be seen as a source of internal opposition (Love et al., 2002) to the continuous process of learning (Cohen & Levinthal, 1990). This is our second claim to theoretical novelty, i.e. centralization (featured also in family firms) does exacerbate the sclerotic effects of size, though only weakly in relation to age, amplifying their negative moderating effects on the earliness/exporting relationship.

Third, our study tests the earliness/exporting relationship, and the interactions proposed, in the context of four EU countries and five regions with different formal institutions and dimensions of national culture (Dimitratos et al., 2011; Majocchi, Dalla Valle, & D'Angelo, 2015), at the same time addressing sample bias concerns. Moreover, our study demonstrates in the academic world of IB, where survey response rates continue to decline, that there is an alternative to massive new empirical exercises, whether in the form of quantitative databases or extensive interview schedules.

Archives exist and remain under-exploited but can yield valuable results provided that there is no reason to suspect that underlying relationships have changed.

Managerial Implications

On the face of it, our study provides encouragement for the founding entrepreneur and the slogan "internationalize now, the earlier the better". This remains valid, even for firms with a centralized decision-making structure or of a family nature. Most firms cannot avoid getting older and larger, diluting their LAN, but centralization may be avoidable and is likely to impede firms anxious to mitigate the effect of size, and thus complexity, on the relationship between LAN and export performance.

5.3 Limitations and Future Research Directions

Our research admittedly has limitations but they also represent interesting avenues for future research. First, the data at our disposal are of a cross-sectional nature. Cross-section analyses are standard practice, though causality cannot be addressed. However, reverse causation does not seem likely with our research design and the nature of our independent variable and main interactions. Nevertheless, further studies could employ longitudinal data. Second, we employed a dummy variable for centralization which may over-simplify decision processes. Although beyond the scope of this study, further research could employ a scale or analyze different functional types of decisions (e.g. Martin et al., 2016) to give a better indication of the effects of centralization. Third, we extend the boundary conditions of Autio et al. (2000). Their observations were based on the Finnish electronics industry while we provide an analysis augmented by additional variables based on 644 manufacturing firms (ranging from high to low-tech industries) across five regions of the EU. Perhaps our augmented approach could also be applied to a study that emphasized depth rather than breadth, re-focused on high-tech firms.

Despite these limitations, we believe that we extend prior internationalization research. Beside the liability of aging, we further reveal the liability of size, and the more nuanced "liability of centralization", as boundary conditions to retain LAN (Zahra et al., 2018). In other words, whatever the rationale behind the initial international entry decision (Child and Hsieh, 2014), LAN is not path-dependent but subject to liabilities that, in turn, affect their relationship with export performance. While exporting is a performance measure directly linked to internationalization and its earliness, an associated weakness of this approach is that it makes no estimate of the impact of internationalization on overall firm performance.

Further research aimed at improving our understanding in terms of the relationship between the LAN and subsequent export performance may open up further organizational contingencies (Cavusgil & Knight, 2015), business models (Autio, 2017) or critical events (in terms of governance, strategy, processes, products/services) occurring in the period between first exporting and export performance years later. Meanwhile we would support earlier, seminal studies (e.g. Autio et al., 2000) in concluding that "the earlier the better" is a good maxim for would-be internationalizing firms, but that the LAN is subsequently weakened by the liabilities of age, size and centralization.

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