Impact of Business Group Affiliation on SME

Internationalization: Blessing or Curse?

Abstract

The purpose of this study is to examine how business group affiliation influences internationalization of SMEs. We analyze this impact considering SME affiliation with both domestic and international business groups by using a sample of 14,513 European SMEs. Our findings show that the international involvement of SMEs affiliated with business groups is significantly higher than for stand-alone SMEs. However, our findings demonstrate that the type of business group (i.e. domestic versus international) moderates the impact of business group affiliation on the international involvement of SMEs. Consequently, our findings suggest that business group affiliation provides advantages for SME internationalization only if it provides access to international inter-firm networks thus acting as a compensatory mechanism for liability of outsidership and liability of newness in foreign markets. In such cases, business group affiliation is a major resource capital that equipoises the somewhat limited financial resource provision for SME internationalization.

Impact of Business Group Affiliation on SME Internationalization: Blessin or Curse?

The increasing involvement of firms in foreign markets has become an important growth strategy for small- and medium-sized enterprises (SMEs) in the context of dynamic global economic linkages (Hsu, Chen, & Cheng, 2013; Puig, González-Loureiro, & Ghauri, 2014). SME internationalization has not only turned to be an important source of business growth but it has also accounted for a number of positive outcomes for small firms such as improved performance and enhanced survival rates (Hilmersson, 2014; Lee, Kelley, Lee, & Lee, 2012; Puig et al., 2014). In addition, internationalization has been able to spread the risk exposure of SMEs by reducing their dependency on any single market and providing opportunities for market diversification (Zahra, Ireland, & Hitt, 2000). Consequently, an increasing number of studies have sought to explain why some SMEs pursue international expansion and not others and explore their degree and speed of internationalization (Cerrato & Piva, 2012).

Diverse conjunctions of home and host country contexts in internationalization require available firm-level resource and institutional capital that meet the needs of operating in a specific host country as this defines the firm-level learning and adaptation required for successful international operations (Child & Marinova, 2014). It is often argued that SMEs are more resource-constrained compared to larger firms, as they tend to possess far fewer tangible and intangible resources such as machinery, buildings and land as well as access to financial and human resources is somewhat limited (Knight & Kim, 2009). As a result, international expansion is more complex and challenging for SMEs (Paul, Parthasarathy, & Gupta, 2017). Thus, resource deficiency is likely to restrain SMEs ability to initiate, develop and maintain business activities in foreign markets as

well as their ability to increase commitment to internationalization (Ripollés, Blesa, & Monferrer, 2012). Thus, firms seeking to expand their business abroad must rely on alternative means for finding, accessing and acquiring the necessary resources for internationalization to compensate for such constraints (Masango & Marinova, 2014; Hennart, Majocchi, & Forlani, 2019).

The advantages and disadvantages of business group affiliation have been acknowledged and studied in the context of family and holding conglomerates, yet mostly in the context of big internationalizing firms, i.e. MNEs (Yaprak & Karademir, 2010). More recently, this focus has become of interest to scholars interested in SME internationalization as research on understanding how SMEs compensate for resource limitations in internationalization has moved beyond clusters and niche market positioning (Holmes, Hoskisson, Kim, Wan, & Holcomb, 2018). A business group refers to "a set of firms which, though legally independent, are bound together by a constellation of formal and informal ties, and are accustomed to taking coordinated action" (Khanna & Rivkin, 2001, pp. 47–48). Thus, a business group is a particular type of inter-firm network of a set of closely affiliated firms (Cuervo-Cazurra, 2006). Such an inter-firm network can provide access to important resources and competencies, by facilitating sharing, combining, and complementing of firm-specific resources within the business group (Granovetter, 1995; Yaprak & Karademir, 2010). Thus, business groups can be used to build capabilities and acquire tangible and intangible scarce resources necessary for operating in international markets (Purkayastha, Manolova, & Edelman, 2018).

While some studies confirm that business group affiliation can enable internationalization by providing affiliates with internal markets and intragroup learning (Gaur, Kumar, & Singh, 2014; Purkayastha et al., 2018), other studies show that business group affiliation has a negative impact on firm internationalization (Carney, Gedajlovic, Heugens, Van Essen, & Van Oosterhout, 2011;

Gaur & Delios, 2015) or no impact (Cerrato & Piva, 2012; Nam, Liu, Lioliou, & Jeong, 2017). While these contradictory findings may be context dependent, still the impact of business group affiliation on the internationalization of SMEs remains underexplored thus making it difficult to say whether a positive or a negative effect prevails (Cerrato & Piva, 2012).

The mixed empirical findings indicate that more attention should be paid to potentially moderating variables and to the different types of business groups as the effects of business group affiliation may depend on the business group network characteristics (Mahmood, Zhu, & Zajac, 2011; Shukla & Akbar, 2018). The purpose of this study is to examine the impact of business group affiliation on the internationalization of European SMEs, considering how the geographical diversity of the business group network moderates the relationship between business group affiliation and SME internationalization. Thus, we explore the differential impact of domestic and international business group affiliation on the internationalization of SMEs. By doing so, we contribute to the ongoing debate on the role of business groups in the internationalization of firms by providing evidence highlighting the likelihood of business group affiliation to support and boost SME internationalization.

The paper proceeds as follows. First, we present the theoretical foundation and the research hypotheses. Second, we introduce and discuss the research methodology employed in the study, including the data collection, measurement and data analysis. Third, we report the results of the empirical analysis before we conclude with a discussion of the main findings, as well as the managerial implications and directions for future research.

Theoretical background

Internationalization and network linkages

SME internationalization is frequently examined from a network perspective and network theory have by now become one of the dominant paradigms in the theory of internationalization (Ruzzier, Hisrich, & Antoncic, 2006). These studies generally highlight the importance of network linkages in the internationalization process, in particular for SMEs (Coviello, 2006; Fernhaber & Li, 2013; Musteen, Francis, & Datta, 2010; Sharma & Blomstermo, 2003). In this study, we draw upon the revised Uppsala internationalization process model that incorporates business network theory in order to examine the impact of business group affiliation on SME internationalization (Johanson & Valne, 1977; Johanson & Vahlne, 2009). A number of studies have demonstrated that the revisited Uppsala model can be used to analyze and explain firms' internationalization behavior (Galkina & Chetty, 2015; Oehme & Bort, 2015; Santangelo & Meyer, 2011; Schweizer, Vahlne, & Johanson, 2010; Sui & Baum, 2014). The two core arguments are that (1) markets are basically networks of relationships where firms are linked to each other in various, complex, and invisible patterns and (2) network relationships offer potential for learning and for building trust and commitment, which are considered important ingredients and necessary conditions for firm internationalization (Johanson & Vahlne, 2009). Thus, the revisited Uppsala model shares the assumptions of the original model that learning and knowledge are fundamental to firm internationalization but also views internationalization as a network phenomenon because firms are not stand-alone units, but ones embedded within interpersonal and inter-firm networks of connected relationships (Johanson and Mattson, 1988). Hence, the main argument in the revised Uppsala model is that networks and network position matter for firm internationalization as the

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opportunities and constraints faced by a firm in the internationalization are (at least partly) determined by the firm's access to and position in relevant networks that act as important conduits of information and knowledge (Kontinen & Ojala, 2011; Mathews & Zander, 2007). Several studies have found that SMEs rely on their network relationships to learn about internationalization, to select their internationalization mode, to acquire information about new markets or to access resources in order to internationalize (Chetty and Wilson, 2003). For example, network linkages can provide SMEs with information and knowledge relevant to their internationalization and enable them to reduce information asymmetry to overcome knowledge gaps (Ellis, 2011; Zhou, Wu, & Luo, 2007). This is important, as knowledge gaps has been identified as a key barrier to internationalization, particularly for SMEs (Leonidou, 2004). Thus, networks can facilitate the flow of information relevant to internationalization which, in turn, can help firms "discover, create, actualize, and develop international market opportunities" (Chandra & Wilkinson, 2017, p. 692). Against this background, we suggest that networks are important for identifying opportunities and obtaining resources needed for SME foreign market expansion (Johanson & Vahlne, 2006).

Network linkages provide firms with access to readily available or jointly constructed knowledge that is confined to network insiders (Vahlne & Johanson, 2017). An important implication of this is that knowledge about entrepreneurial opportunities is private to the network and shared between the parties involved (leaving aside the possibility of unwanted dissipation). Thus, relationships give partners access to an extended knowledge base" (Vahlne & Johanson, 2017, p. 1090). To gain access network benefits, the firm must first become an "insider", which can be achieved through direct and indirect interactions (Chandra & Wilkinson, 2017) and gain the trust of other network parties. Thus, as Johanson and Vahlne (Johanson & Vahlne, 2009, p. 1411) argue, "insidership in relevant network(s) is necessary for successful internationalization, and so

by the same token there is a liability of outsidership." Thus, the internationalization process can be seen as a process of building "insidership" positions in relevant networks, where the company commits resources to establish, develop and maintain relationships (Yamin & Kurt, 2018).

Network characteristics and firm internationalization

The role and impact of networks on firm internationalization is determined by the characteristics of the network. Some networks are more likely to provide firms with the knowledge, resources and skills necessary for firms to identify, develop, and exploit international opportunities (Bembom & Schwens, 2018; Chandra & Wilkinson, 2017). Two network characteristics are likely to influence the ability of networks to facilitate firm internationalization: (1) network diversity and (2) relational embeddedness (Musteen, Datta, & Butts, 2014). Network diversity is associated with the heterogeneity of network partners. In the context of firm internationalization, the geographical diversity of network partners is particularly important, as geographically diverse networks are more likely to provide foreign market knowledge and help firms identify international opportunities (Ellis, 2011; Musteen et al., 2010). Thus, networks where firms are geographically concentrated are less likely to provide network members with information and support needed for internationalization, while the information, experience, and support is more likely to be available in networks that are internationally diverse (Johanson & Mattson, 1988). In contrast, relational embeddedness refers to the strength of network ties, which is based on the relationship intensity and frequency of social interaction. Thus, the geographical dispersion of network ties can enhance or constrain a firm's ability to obtain knowledge about foreign markets and opportunities therein. Relational embeddedness is also likely to contribute to differences in the impact of networks on firm internationalization. Relational embeddedness can be expected to influence the breadth of

foreign market knowledge available to firms within the network (Musteen et al., 2014). In addition, relational embeddedness – and the trust that emanates from such close network ties – motivates network members to exchange information more freely and frequently (Inkpen & Tsang, 2005). It could therefore influence firm's ability to recognize, develop and exploit international opportunities. Firms can gain access to resources of other firms within a network by building relationships and trust. Thus, networks that are characterized by a high degree of trust, such as networks with high relational embeddedness, are more likely to enable firms to acquire the resources and skills necessary for exploiting international opportunities from inside the network (Chandra & Wilkinson, 2017). Consequently, we argue that networks can be instrumental in facilitating internationalization, when the networks are characterized by geographical dispersion of network ties and by trust and commitment emanating from relational embeddedness.

Hypothesis development

Business group affiliation and SME internationalization

Whereas business groups are widespread in emerging economies such as Brazil, Chile, China, India, South Korea, Mexico, Turkey and Eastern Europe, where they help affiliated firms to cope with immature institutions and market imperfections (Khanna & Rivkin, 2001; Khanna & Yafeh, 2007), business groups also exist in more developed economies, such as Western and Southern Europe, Japan and Korea (Granovetter, 1995; Lamin, 2013). For example, Belenzon, Berkovitz, and Rios (2013) identify more than 26,000 business groups in Western European countries. Their names vary from *chaebols* in Korea, *grupos* in Spain, *Keiretsus* in Japan to *guanxiqiye* in China and Taiwan. Although there is not a single uniform definition of a business group, most scholars

agree that business groups are a set of legally independent firms bound together through a constellation of enduring formal and informal ties. (Khanna & Rivkin, 2001; Purkayastha, Kumar, & Lu, 2017). They are not short-term strategic alliances as affiliated firms have high degree of commitment and involvement. We define business groups is a unique organizational form that falls between markets and hierarchies, where a set of legally independent firms pursuing mutually beneficial objectives and operating under somewhat unified entrepreneurial guidance going beyond alliances among otherwise independent firms, but falling short of constituting a fully integrated organizational structure (Cuervo-Cazurra, 2006; Guillén, 2000; Holmes et al., 2018). Hence, in business groups there is no unilateral right or ability to control other firms in the group (Smångs, 2006).

A business group is conceptualized as "a portfolio of heterogeneous resources" (Yiu, Bruton, & Lu, 2005, p. 186) embedded within the inter-firm network (Lavie, 2006); Yiu, Bruton, & Lu, 2005, p. 186), and including knowledge, experience and information, among others (Gulati, Nohria, & Zaheer, 2000; Lamin, 2013). Firms in the business group can then tap into this portfolio of heterogeneous network resources and use them to their advantage. Thus, we conceptualize a business group as an inter-firm network of internationalization knowledge and network ties that firms affiliated with them can take advantage of to explore and exploit international opportunities (Elango & Pattnaik, 2007).

Scholars have recently started debating the advantages and disadvantages of business groups for firm internationalization (Holmes et al., 2018). Existing studies suggest that business group affiliation confers benefits and disadvantages for internationalization simultaneously. Business groups create internal markets such as labor, trade and capital markets, which can both create and destroy value (Holmes et al., 2018). As business groups are larger than individual firms,

they can absorb more risk in the internationalization process (George & Kabir, 2012). Business groups can offset challenges associated with liabilities of foreignness and newness by leveraging network resources to acquire relevant knowledge about foreign markets and internationalization (Manikandan & Ramachandran, 2015; Purkayastha et al., 2017). Business groups may also act as a reputation-enhancing mechanism, which may help firms affiliated with them build legitimacy in foreign markets and therefore serve as a catalyst for affiliates as they engage in internationalization, including exporting (Khanna & Rivkin, 2001; Mukherjee, Makarius, & Stevens, 2018). The high relational embeddedness increases the motivation and willingness of member firms to share and combine resources within the network that can support exporting. Thus, we propose that:

Hypothesis 1a: Business group affiliation is positively associated with export propensity.

Hypothesis 1b: Business group affiliation is positively associated with export intensity.

The moderating impact of business group characteristics

Previous studies provide conflicting results regarding the impact of business group affiliation on firm internationalization. While some studies suggest that business group affiliation can fuel internationalization by providing advantages such as internal markets and intragroup learning, other studies found that business group affiliation constrained firm ability to internationalize. According to Yiu, Brutton, and Lu (2005) "the value-creating potential of a business group is largely dependent on how business groups are able to acquire resources and generate capabilities necessary to prosper" (Yiu et al., 2005, p. 185). Thus, the values created will vary depending on the type of resources and capabilities that business groups are able to obtain. In relation to the context of this study, this means that the potential of business groups to fuel internationalization depends on their ability to acquire and provide resources and capabilities needed for

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internationalization. We argue that the impact of business group affiliation on firm internationalization depends on the business group network characteristics. So far, only a few studies have explored how the business group network characteristics may enable or inhibit internationalization of entire business groups (e.g. Chen & Jaw, 2014; Tan & Meyer, 2010). These studies suggests that the mechanisms through which information and resources are shared may vary based on the network types (Mahmood et al., 2011). Thus, separation of the business group network types may enhance the understanding of the flow of resources and information within business groups and its subsequent effect on firm internationalization (Shukla & Akbar, 2018).

In this study, we suggest that impact of business group affiliation on firm internationalization may differ depending on whether the business group is international or purely domestic. Domestic business groups are by definition bounded by the domestic market and therefore unlikely to help affiliated firms with relationship building beyond the domestic market (Prashantham & Birkinshaw, 2015). In domestic business groups, trading relationships between domestic affiliates may also reduce the incentive for affiliates to export (Hundley & Jacobson, 1998). In contrast, international business groups create a geographically diverse network, which has a greater reach and can be expected to increase the extent to which affiliates come into contact with international knowledge and help affiliates to create, identify and enact a wider set of international business opportunities (Musteen et al., 2010). This is supported by Granovetter (1995), who suggests that geographically diverse ties are likely to assist firms in connecting them to a wider set of international business opportunities. Thus, international business groups can be expected to provide affiliates with access to information about international opportunities, which are not available to domestic or geographically concentrated networks, such as domestic business groups (Musteen et al., 2010). In addition, affiliation to international business groups can also help

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firms overcome liability of foreignness, due to legitimacy spillovers (Elango, 2009; Gulati, 1999). Hence, we propose that:

Hypothesis 2a: The impact of business group affiliation on export propensity is stronger for SMEs affiliated with international business groups compared to SMEs affiliated with domestic business groups.

Hypothesis 2b: The impact of business group affiliation on export intensity is stronger for SMEs affiliated with international business groups compared to SMEs affiliated with domestic business groups.

Impact of firm size on business group affiliation-exporting relationship

Firm size is amongst the most researched antecedents of firm internationalization (Martineau & Pastoriza, 2016). In the context of internationalization, firms size is a critical piece to the puzzle of explaining SMEs' internationalization patterns (Dasí, Iborra, & Safón, 2015). Firm size is typically a proxy for the availability of resources available to the firm, where smaller firms are typically confronted with higher resource barriers due to liabilities of smallness and newness (Kahiya, Dean, & Heyl, 2014). This liability of smallness constrain the international growth of smaller firms, due to scarce availability of resources. Thus, SMEs have to cope with severe resource constraints when seeking to increase their involvement in foreign markets (Dimitratos, Johnson, Slow, & Young, 2003). One way smaller firms can cope with the liabilities of smallness and newness is by generating relational resources through social ties and/or business relationships (Schweizer, 2013). Thus, network ties is likely to be more valuable to smaller firms, due to the higher resource barriers faced by smaller firms (Paul et al., 2017). Hence, drawing on the liability of smallness, we also suggest that the impact of BG affiliation is greater for smaller firms, as it

provides these firms with a way to cope with their scarce availability of resources. Thus, we propose the following hypotheses:

Hypothesis 3a: The impact of business group affiliation on export propensity is negatively moderated by firm size.

Hypothesis 3b: The impact of business group affiliation on export propensity is negatively moderated by firm size.

Methodology

Sample and Data

To examine the impact of business group affiliation on the level of internationalization in SMEs, we used the Flash Eurobarometer survey on "Internationalisation of Small and Medium-sized Enterprises". This dataset contains information about SMEs' involvement in international business activities, including the level of internationalization as well as business group affiliation.

The data contain information about 14,513 SMEs from 34 countries participating in the European Union (EU) program for the Competitiveness of Enterprises and Small and Medium-Sized Enterprises (COSME). Data were collected using structured telephone interviewing in June 2015. Following previous studies, SMEs were defined as firms employing less than 250 employees. Stratified random sampling was used by applying country specific quotas on both company size (using four different rages: 1-9 employees, 10-49 employees, and 50-249 employees) and sectors (manufacturing, services, retail, and industry). To ensure the trustworthiness of the collected data, the selected respondents had to be a general manager, a financial director, or a significant owner.

The data set contains some missing data, which we examined prior to further analysis. Closer examinations of the missing data revealed that less than 10 percent of the respondent sample was made up of partial respondents (i.e. 1,262 out of 14,531). Due to the limited amount of missing data, we restrained from using maximum likelihood or multiple imputation approaches and instead used pairwise deletion to handle missing data (Newman, 2014).

Measures and variables

Dependent variable

The main dependent variable in this study is internationalization in its initial mode of exporting. Following previous studies, we measured exporting using two distinct indicators: export propensity and export intensity (Fernández & Nieto, 2006; Hagsten & Kotnik, 2017; Sullivan, 1994). Export propensity captures whether or not a firm derives part of its sales from foreign markets (Martineau & Pastoriza, 2016). Thus, *export propensity* was measured as a dummy variable that takes a value of '1' if the firm is selling their products or services outside their home country and '0' if otherwise. *Export intensity* captures "the firm's commitment to serving customers in foreign markets" (Miller, Lavie, & Delios, 2016, p. 908) and is captured by the proportion of firms' revenue in foreign markets to their total revenue (Elango & Pattnaik, 2007; Hsu et al., 2013; Reuber & Fischer, 1997). Thus, internationalization intensity reflects the importance of international sales relative to domestic sales and can range from 0 to 1, with higher values indicating a greater reliance on foreign sales (Martineau & Pastoriza, 2016).

Independent and moderating variables

Our main independent variable is *business group affiliation*. Following Iona, Leonida and Navarra (2013) we measure business group affiliation by means of a dummy variable that takes a value of '1' if the firm is part of a business group and '0' if otherwise. Thus, we distinguish between firms affiliated with a business group and those that are not.

Our main moderating variable is *international business group affiliation*. This measure captures the geographical diversity of the network ties. We created a dummy variable that takes a value of '1' if the firm is part of an international business group and '0' if otherwise.

Control variables

To rule out alternative explanations, we also included a number of control variables that have previously been found to influence both export intensity and export propensity. These include firm characteristics, such as firm size, firm age, and industry affiliation. Firm size is one of the most researched antecedents of SME internationalization (Martineau & Pastoriza, 2016): Firm size is a proxy of a firm's managerial and financial resources, where a certain size is expected to be necessary for an SME to become involved in internationalization (Dhanaraj & Beamish, 2003). Firm size has also previously been found to be an important antecedent for both export propensity (Serra, Pointon, & Abdou, 2012) and export intensity (Majocchi, Bacchiocchi, & Mayrhofer, 2005). Smaller firms are typically subject to higher export barriers than larger ones (Paul et al., 2017). Thus, as firm size increases, both the propensity to engage in exporting and the export intensity can be expected to increase.

Firm age is also likely to influence the international involvement of SMEs, as export activity often develops as a consequence of an SME's success in its domestic market (Johanson &

Vahlne, 1977). In addition, older firms are more likely to possess more resources and have a greater number of network ties which can be exploited for internationalization (Fernhaber, McDougall-Covin, & Shepherd, 2009; Zahra et al., 2000) Consequently, to control for firm size and age, firm age was measured as the number of years since inception, while firm size was measured as the logarithm of the total number of employees.

To control for industry affiliation, we included four industry dummies. Industry affiliation is likely to influence internationalization strategies, as the industry affiliation partly determines the context in which firms operate affecting the process of internationalization and strategic choices of SMEs (Dasí, Iborra, & Safón, 2015; Lattemann et al, 2017; Majocchi & Strange, 2012). Thus, industry affiliation is an important context variable in understanding firm internationalization, including the decision to internationalize and the level of involvement in foreign markets (Andersson, 2004; Andersson, Evers, & Kuivalainen, 2014).

Finally, importing, which refers to the internationalization of purchasing operations, was included as a control variable. Importing was measured using a dummy variable that takes a value of 1 if the firm has importing experience and 0 otherwise. A number of studies have explored the role of importing and its connection to the exporting side of internationalization. According to these studies, importing is typically the first step in the internationalization process in SMEs (Jones, 1999; Korhonen, 1999; Samiee et al. 1993; Welch & Luostarinen, 1988, 1993). In addition, importing has been found to act as a springboard to exporting (Karlsen et al., 2003; Korhonen, 1999; Welch & Luostarinen, 1993). Importing provides firms with opportunities for establishing network ties in foreign markets and for learning about foreign trade (Karlsen, Silseth, Benito, & Welch, 2003). These network ties and the knowledge about foreign trade can then subsequently be exploited for exporting (Holmlund, Kock, & Vanyushyn, 2007).

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Estimation methods

We measure export intensity as the proportion of foreign sales to total sales. Thus, the range of values which the dependent variable may assume has a lower and upper bound, as observations can never be below zero (meaning no exports) or above one (meaning all sales originate from foreign markets). In addition, the lowest value occurs in a significant number of observations, as a large number of SMEs in our sample do not engage in any export activity. Thus, in order to analyze the impact of BG affiliation on export intensity, we use a two-part model, which is appropriate when the dependent variable has the mass point at zero, as in our case (Cragg, 1971). In two-part models, a binary choice model is fit for the probability of observing a positive-versus-zero outcome. Then, conditional on a positive outcome, an appropriate regression model is fit for the positive outcome (Belotti, Deb, Manning, Norton, & Arbor, 2015). Thus, the two-step approach models the decision to export or not, and the decision how much to export separately (Wagner, 2001). This estimation approach, which has been used in previous studies on export intensity, allows to estimate the impact of the variables of interest on export propensity and intensity separately (Ganotakis & Love, 2012; Love & Mansury, 2009; Nam et al., 2017; Roper & Love, 2002).

In line with previous studies, we use logistic regression analysis to model export propensity, while we use fractional logit regression to model export intensity (Arregle, Naldi, Nordqvist, & Hitt, 2012; Manolopoulos, Chatzopoulou, & Kottaridi, 2018; Nguyen & Almodóvar, 2018). Since

export intensity is a fractional dependent variable, which can range from zero to one, ordinary linear regression is not appropriate to apply without imposing limits on the variation in the variable (Manolopoulos et al., 2018). A standard approach to deal with fractional dependent variables that range from zero to one, such as export intensity, is to use fractional logit regression. Fractional logit regression fits models on continuous zero to one data and models the conditional expected value of the dependent variable, *y*, as a logistic function:

$$E(y|x) = \frac{\exp(x\beta)}{[1 + \exp(x\beta)]}$$

The main advantage of fractional logit model is that it allows not only for the boundary values of zero and one, but also all values in between (Adetunji Adegbesan & Higgins, 2010). In addition, the fractional logit model also ensures that the predicted values of *y* are in the interval [0, 1] (Arregle et al., 2012). Thus, fractional logit models are designed to take the bounded nature of fractional dependent variables into account as well as the possibility of observing values at the boundaries (Wagner, 2001). Some researchers have used censored normal regression techniques (e.g. Tobit) to model export intensity (Fernández & Nieto, 2006; Fernhaber & Li, 2013). However, this is inappropriate, as the observed data in this case are not censored, rather values outside the [0, 1] interval are not feasible.

Findings

In the following section, we present the results of the data analysis. Table 2 presents a summary of the descriptive statistics, including the minimum, maximum, and standard deviation of all variables included in the different regressions models and their bivariate correlations.

To examine whether collinearity was an issue, we examined the correlations between the covariates. As illustrated in Table 2, the correlation did not show any collinearity, as all correlations were below .43, which is far below the .8 cut-off point (Mason & Perreault, 1991).

To examine the different research hypotheses, we conducted logistic regression and fractional logit regression. In Table 3, the results from the logistic regression are presented. We first estimated a baseline model (Model 1) that omits BG affiliation and only reports the results of the controls on export propensity. Results show that firm size, industry affiliation, importing, and domestic market size are all significantly associated with SMEs' export propensity. As expected, both firm size (OR=1.25, p<.001, 95% CI = 1.21, 1.30) and importing experience (OR=7.45, p < .001, 95% CI = 6.83, 8.14) increase the likelihood of SMEs engaging in exporting. However, contrary to expectations, firm age is found not to have a significant impact on SMEs' export propensity, while domestic market size was found to have a positive impact (OR = 1.08, p < .05, 95% CI=1.01, 1.14).

Next, we included business group affiliation in the logistic regression model (Model 2 and Model 3) to estimate the direct effect of business group affiliation on SMEs' export propensity. The results from Model 2 show a significant association between business group affiliation and export propensity. More specifically, the results show that SMEs affiliated with business groups are 1.17 times more likely to be engaged in exporting, compared to independent SMEs. Thus, Hypothesis 1 is confirmed. However, when we take the geographical diversity of business group into consideration (Model 3), we only find a positive impact of business group affiliation on SMEs' export propensity for SMEs affiliated with international business groups (OR=1.68, p <.001, 95%

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CI=1.47, 1.92), while no statistically significant impact was identified for SMEs affiliated with domestic business groups. Thus, the potential of business groups to facilitate exporting appears to be contingent upon the nature of the business group in terms of the geographical diversity of the inter-firm network ties. Hence, hypothesis 2a is confirmed. The results of Model 4 suggest that the impact of business group affiliation on SMEs' export propensity is negative and statistically significant. However, as illustrated in Model 5, when we distinguish between domestic and international business groups, we find that the interaction term is only statistically significant for the interaction term of international business group and firm size. To facilitate the interpretation of how firm size moderates the relationship between business group affiliation and export propensity, we calculated the average marginal effect (AME) of business group affiliation at various firm sizes (Hoetker, 2007) (see Figure 1). As illustrated in Figure 1, the AME of business group affiliation declines as firm size increases. Thus, we can (partially) confirm Hypothesis 3a stating that the impact of business group affiliation on export propensity is negatively moderated by firm size.

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Next, we estimated the impact of business group affiliation on export intensity. As mentioned previously, this was only estimated for the SMEs that are engaged in exporting. Again, we first estimated a baseline model (Model 1) that only estimates the impact of the controls on SMEs' export intensity. Results show that firm size, firm age, industry affiliation, and domestic market size are all significantly associated with SMEs' export propensity. In line with our expectations, firm size has a positive impact on SMEs' export intensity, while domestic market size had a negative impact on SMEs' export intensity. Thus, SMEs' export intensity increases as firm size increases, while export intensity decreases as the size of the domestic market increases.

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However, surprisingly, we found firm age to have a negative impact on SMEs' export intensity, suggesting that younger SMEs display a higher level of export intensity compared to older SMEs.

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Next, we included the independent variables in a stepwise manner. First, we included business group affiliation (Model 6a and Model 6b) to estimate its direct effects on SME export intensity. As illustrated in Table 4, the results show that business group affiliation is positively and statistically significantly related to SME export intensity (β = .34, p < .001). Thus, Hypothesis 1b is confirmed. When distinguishing between whether SMEs are affiliated with domestic or international BG, our results show that BG affiliation is positively and statistically significantly related to the export intensity of SMEs when affiliated with international business groups, while it was negatively related to export intensity (β = .54, p < .001), yet not statistically significant, for SMEs affiliated with domestic business groups (β = -.11, ns). To interpret the results and assess the relative magnitude of the effects of the independent variable on export intensity, we calculated the marginal effects of the independent variables, based on the regression results in Table 4. The marginal effects show that being affiliated with an international business group had one of the highest marginal effects on export intensity, with an average marginal effect of 12 percentage points. These results support our hypothesis that being affiliated with international business groups can increase export intensity by providing affiliated firms with access to information about international opportunities, which are not available in geographically concentrated networks, such as domestic business groups. Thus, Hypothesis 2b is confirmed.

Finally, we estimated the impact of firm size on the business group affiliation – export intensity relationship. Our results did not reveal any moderation effect of firm size in either Model 7a or Model 7b. Thus, the results did not show any evidence that the benefits associated with business group affiliation for SMEs seeking to increase their export intensity is smaller for larger firms or vice versa. Thus, we did not find any support for Hypothesis 3b.

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Discussion and Conclusion

The purpose of this research was to examine the impact of business group affiliation on firm internationalization in European SMEs. This was achieved by modelling the determinants of internationalization both in terms of internationalization propensity and international intensity, with a particular focus on the importance of business group affiliation and how the geographical diversity of the business group network moderates the impact of business group affiliation on firm internationalization. As such, our research contributes to the ongoing research examining the impact of business group affiliation on member firms' strategic decisions, such as internationalization (Elango & Pattnaik, 2007; Gaur & Delios, 2015). In addition, our paper contributes to existing literature by considering how business group network characteristics may enable or inhibit internationalization of entire business groups (Chen & Jaw, 2014; Shukla & Akbar, 2018). The key findings and their implications are considered below.

Discussion of findings

The literature on business groups and firm internationalization has been growing recently (Holmes et al., 2018). Our review of the literature on the impact of business group affiliation on firm internationalization demonstrated how existing studies have provided mixed results, with some studies showing that affiliates are more likely to internationalize compared to non-affiliated firms (Singh, 2009; Singh & Gaur, 2013), while others studies find the opposite to be true (Chittoor, Sarkar, Ray, & Aulakh, 2009; Gaur & Delios, 2015; Tan & Meyer, 2010). Thus, further research was needed to understand better under what circumstances business group affiliation is more likely to contribute to higher levels of internationalization.

Our research demonstrates how business group networks can be a facilitator for SMEs seeking to expand their business abroad, by providing firms access to information and resources pertaining to internationalization. Our findings both confirm that's that firms belonging to a business group have higher internationalization propensity, while at the same time increasing the international intensity of firms engaged in business activities in foreign markets. Thus, our findings confirm previous studies suggesting that firms can utilize their affiliation to other firms in the business group to exploit new market opportunities and/or to supply needed resources for internationalization (Singh, 2009; Singh & Gaur, 2013). Thus, our findings are consistent with earlier studies that found that firms belonging to a business group is more likely to be engaged in business activities in foreign markets, since business group affiliation allows the firm to overcome the size-related constraints and acquire the resources necessary to internationalize. Thus, firms that are affiliated with business groups appears to be in a better position to identify foreign market opportunities and acquire the resources necessary to exploit these vis-à-vis unaffiliated firms (Lamin, 2013).

The most interesting findings in this study is that the impact of business group affiliation on firm internationalization is determined by the characteristics of the business group network. This highlights that business group affiliation only acts as a facilitator for internationalization under certain circumstances. More specifically, we find that network diversity, in terms of geographical diversity of firms affiliated with a business group, has a significant impact on the effect of business group affiliation on firm internationalization. Thus, we provide empirical support for previous claims that the more international a business group is, the more information is accessible about foreign markets, thereby increasing the internationalization of affiliated firms (Lamin, 2013). In contrast, we find that affiliation to domestic business groups has a negative impact on the level of internationalization. This suggests that the benefits of business groups for internationalization disappears or even turns into a disadvantage when the business group is purely domestic. Thus, our findings agree with previous studies suggesting that the heterogeneity of network partners in terms of geographical location are important in explaining the usefulness of potential network resources (Ellis, 2011; Musteen et al., 2010). There are different reasons for why geographical diversity of firms affiliated with a business group has an impact on the consequences of being affiliated with a business group for firms seeking to expand their business abroad. First, an international business group is likely to provide more relevant foreign market knowledge and help firms identify international opportunities (Ellis, 2011; Musteen et al., 2010). This, in turn, enables affiliated firms to more easily surpass important internationalization barriers (Añón Higón & Driffield, 2011). In addition, prior studies have suggested that home-country ties may take away attention and effort from international opportunities and thereby suppress international growth (Prashantham & Birkinshaw, 2015). Thus, in a business group context, this suggests that being

affiliated with a domestic business group may have a significant impact on managerial attention and make them less attentive to identifying and exploiting international.

Practical implications

Our findings have important implications for practitioners as well. First, our findings propose that SMEs can use business group affiliation as a strategy to mitigate the liabilities related to lack of resources and experiential knowledge. Thus, SMEs seeking to expand their business abroad may consider joining forces with other firms and establish or join an already established business group as a means to handle their own lack of resources. However, the ability of business group affiliation to facilitate firm internationalization depends on the ability of the inter-firm network to provide SMEs with the necessary resources.

Limitations and further research

While the empirical analysis presented in this paper is conducted on a relatively large sample of 15,231 European SMEs, it is limited by the nature of the used dataset. In particular, we were only able to distinguish between domestic and international business groups and empirically analyze how affiliation to these two types of business group influences firm internationalization. Thus, we have concluded that business group affiliation is more likely to contribute to higher levels of internationalization when firms are affiliated with international business groups vis-à-vis domestic business groups. However, while domestic business groups were found to negatively influence firm internationalization and suppress international growth, domestic ties may also have a positive impact on international growth and competitiveness of SMEs in certain circumstances (Prashantham & Birkinshaw, 2015). For example, domestic ties may be able to enable firm

internationalization when firms in the domestic network have accumulated considerable international experience. In such cases, domestic ties can act as substitutes for the lack of international experience and become a source of learning for firms seeking to expand their business abroad (Milanov & Fernhaber, 2014). However, due to the nature of the available data, we were not able to explore this in a greater detail. Thus, our study only provides partial answers to the question of why some business groups are more likely to facilitate internationalization of member firms. We therefore encourage future research to continue exploring how business group network characteristics, including the international experience of the firms affiliated with the business group, influence affiliated firms' ability to identify and exploit opportunities in foreign markets. Such studies can increase our understanding of whether domestic business groups are more likely to contribute to higher levels of internationalization under certain circumstances.

In addition, our study only explores the direct effect of business group affiliation – whether being affiliated with a domestic or international business group – on the propensity to internationalize and the degree of internationalization without paying attention to the ability of firms to identify and exploit potential network resources. Not all firms may be equally good at identifying and exploiting the network resources created in business groups. The ability of firms to exploit the opportunities afforded by network ties to internationalize is likely to depend on the competencies of firms (Torkkeli, Puumalainen, Saarenketo, & Kuivalainen, 2012). For example, network learning may be critical for affiliated firms' ability to realize the potential benefits of business group affiliation in facilitating international expansion (Prashantham & Dhanaraj, 2010). Thus, while business group affiliation can play a crucial role in the formation of network resources, which can facilitate internationalization of affiliated firms, this will materialize only when firms possess the necessary resources to identify and exploit network resources. Thus, future research

may explore the role of network competencies in identifying and exploiting network resources for internationalization. We believe that the ability of business group affiliation to facilitate internationalization largely depends on the individual firm's network competence. For example, any networking activity should be complemented by entrepreneurial opportunity-seeking and opportunity-development behavior to facilitate SME internationalization (Mort & Weerawardena, 2006).

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Tables and Figures
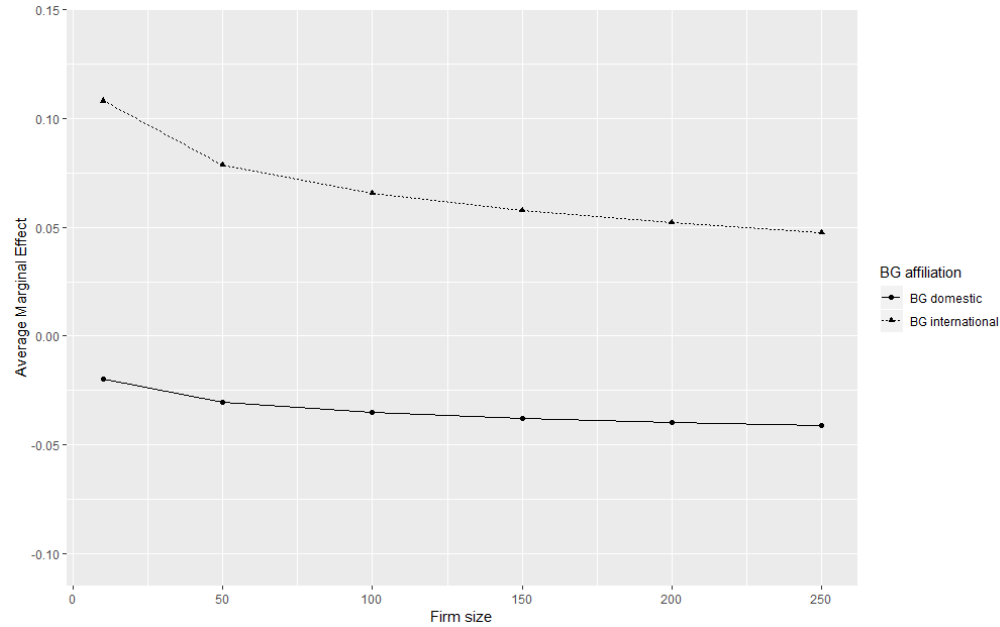
Figure 1 Average Marginal Effect of business group affiliation at various firm sizes.

Table 1 Variables included in the analysis.

Variable	Description
Internationalization propensity	Dummy variable=1 if foreign sales are greater than zero
International intensity	Proportion of a firm's revenue in foreign countries to its total revenue in a given year (FTST)
Business group affiliation	Dummy variable=1 if firm is affiliated with business group
Type of business group	Dummy variable=1 if business group is international
Firm size	Number of employees
Firm age	Number of years since firm was established
Manufacturing	Dummy variable=1 if firm is in the manufacturing industry
Retail	Dummy variable=1 if firm is in the retail industry
Service	Dummy variable=1 if firm is in the service industry
Industry	Dummy variable=1 if firm is in the industrial industry

Table 2 Correlations and descriptive statistics.

	1	2	3	4	5	6	7	8	9
Firm size	1								
Firm age	0.27***	1							
Importing	0.17***	0.09***	1						
Domestic market size	-0.02*	0.13***	-0.09***	1					
Retail	-0.17***	0.00	0.19***	-0.04***	1				
Services	0.03***	-0.06***	-0.23***	0.06***	-0.43***	1			
Industry	-0.02*	-0.05***	-0.14***	-0.04***	-0.31***	-0.31***	1		
BG affiliation	0.23***	0.03**	0.12***	0.02**	0.00	0.04***	-0.09***	1	
Int. BG affiliation	0.17***	0.01	0.16***	0.00	0.02**	0.01	-0.10***	0.72***	1

Table 3 Results from logistic regression (Baseline = independent SMEs).

	Model 1	Model 2	Model 3	Model 4	Model 5
Firm size	1.25 ***	1.23 ***	1.23 ***	1.25 ***	1.25 ***
	(1.21, 1.30)	(1.19, 1.28)	(1.19, 1.28)	(1.20, 1.30)	(1.20, 1.30)
Firm age	1.00	1.01	1.01	1.01	1.01
	(0.95, 1.06)	(0.95, 1.07)	(0.96, 1.07)	(0.95, 1.07)	(0.96, 1.07)
Retail	0.45 ***	0.45 ***	0.45 ***	0.45 ***	0.45 ***
	(0.40, 0.51)	(0.40, 0.50)	(0.40, 0.50)	(0.40, 0.50)	(0.40, 0.50)
Services	0.33 ***	0.33 ***	0.33 ***	0.33 ***	0.33 ***
	(0.29, 0.37)	(0.29, 0.37)	(0.29, 0.37)	(0.29, 0.37)	(0.29, 0.37)
Industry	0.17 ***	0.17 ***	0.18 ***	0.17 ***	0.18 ***
	(0.15, 0.20)	(0.15, 0.20)	(0.15, 0.20)	(0.15, 0.20)	(0.15, 0.20)
Domestic market size	1.08 *	1.07 *	1.08 *	1.07 *	1.08 *
	(1.01, 1.14)	(1.01, 1.14)	(1.01, 1.14)	(1.01, 1.14)	(1.01, 1.14)
BG affiliation		1.27 ***		1.70 ***	
		(1.14, 1.42)		(1.26, 2.29)	
BG domestic			0.87		0.97
			(0.74, 1.01)		(0.59, 1.57)
BG international			1.68 ***		2.36 ***
			(1.47, 1.92)		(1.62, 3.44)
Firm size * BG affiliation				0.91 *	
				(0.84, 1.00)	
Firm size * BG domestic					0.97
					(0.84, 1.11)
Firm size * BG international					0.90
					(0.80, 1.00)
N	13251	13193	13193	13193	13193
AIC	13598.24	13527.28	13483.84	13525.28	13484.10
BIC	13658.18	13594.67	13558.72	13600.16	13573.95
Pseudo R2	0.37	0.37	0.37	0.37	0.37

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

Table 4 Fractional Logit Regression estimating export intensity.

	Model 5	Model 6a	Model 6b	Model 7a	Model 7b
Firm size	.11 ***	.08 ***	.08 ***	.08 ***	.08 ***
	(.07, .14)	(.04, .11)	(.04, .12)	(.04, .12)	(.03, .12)
Firm age	-.22 ***	-.21 ***	-.20 ***	-.21 ***	-.20 ***
	(-.27, -.17)	(-.26, -.15)	(-.26, -.15)	(-.26, -.15)	(-.26, -.15)
Retail	-.50 ***	-.52 ***	-.52 ***	-.52 ***	-.52 ***
	(-.60, -.40)	(-.62, -.42)	(-.62, -.42)	(-.62, -.42)	(-.62, -.42)
Services	-.23 ***	-.24 ***	-.24 ***	-.24 ***	-.24 ***
	(-.34, -.12)	(-.35, -.13)	(-.35, -.13)	(-.35, -.13)	(-.35, -.13)
Industry	-.58 ***	-.57 ***	-.56 ***	-.57 ***	-.56 ***
	(-.73, -.43)	(-.72, -.42)	(-.71, -.41)	(-.72, -.42)	(-.71, -.41)
Import	-.12 *	-.15 **	-.17 ***	-.15 **	-.17 ***
	(-.22, -.03)	(-.25, -.05)	(-.27, -.08)	(-.25, -.05)	(-.27, -.08)
Domestic market size	-.25 ***	-.26 ***	-.26 ***	-.26 ***	-.26 ***
	(-.31, -.19)	(-.32, -.20)	(-.32, -.20)	(-.32, -.20)	(-.32, -.20)
BG affiliation		.34 ***		.33 *	
		(.25, .44)		(.06, .60)	
BG domestic			-.11		-.21
			(-.27, .04)		(-.72, .30)
BG international			.54 ***		.51 **
			(.44, .65)		(.20, .82)
Firm size * BG affiliation				.00	
				(-.07, .08)	
Firm size * BG domestic					.03
					(-.11, .17)
Firm size * BG international					.01
					(-.08, .10)
N	5249	5229	5229	5229	5229
Log pseudolikelihood	-3425.13	-3,398.01	-3,384.83	-3,398.01	-3,384.49
AIC	6,866.25	6,814.03	6,789.05	6,816.02	6,792.97
BIC	6,918.78	6,873.08	6,854.67	6,881.64	6,871.71
Wald chi2	296.77***	351.41***	398.09***	351.83***	399.15***
McFadden's R2	.022	.026	.030	.026	.029

*** p < .001; ** p < .01; * p < .05.

Table 5 Average marginal effects of independent variables on export intensity.

	AME	SE	Lower	Upper
Firm size	0,018***	0,004	0,010	0,026
Firm age	-0,046***	0,006	-0,059	-0,034
Retail	-0,120***	0,011	-0,143	-0,098
Services	-0,057***	0,013	-0,083	-0,032
Industry	-0,129***	0,017	-0,161	-0,096
Importing	-0,039***	0,011	-0,061	-0,017
Domestic market size	-0,059***	0,007	-0,072	-0,045
BG domestic	-0,025	0,017	-0,059	0,009
BG international	0,128***	0,013	0,103	0,153

*** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$.

Note: Marginal effects were calculated as the change in export intensity associated with a change in explanatory variables for the results reported in Table 5 (Model 6b).