Journal of Business Research xxx (xxxx) xxx–xxx

Contents lists available at ScienceDirect

Journal of Business Research

journal homepage: www.elsevier.com/locate/jbusres

Geographical co-location on Chilean SME's export performance

Jose Brache[a,b,*], Christian Felzensztein[c]

[a] Universidad Andres Bello, Chile
[b] Universidad Austral de Chile, Chile
[c] Massey University, New Zealand

ARTICLE INFO

Keywords:
Co-location
Inter-firm cooperation
Export performance
Regional clusters
Chile

ABSTRACT

Recent studies report conflicting results on the impact of geographic co-location on small firm's export performance. This paper contributes to the management literature by providing a new conceptual framework that explains the apparently disassociated findings of recent studies. It is proposed that specific positive externalities are the principal components of the co-location effect on export performance. This is examined in the context of a particular South American economy, Chile. Unexpectedly, results indicate that geographical co-location has a negative effect on export performance in this particular environment. This has implications for practitioners and further research.

1. Introduction

Exports are the most common strategy chosen by firms for internationalization and constitute a crucial element of firm's international competitiveness (Morgan, Katsikeas, & Vorhies, 2012). Hence, export performance, defined as the study of the components of firm's export success (Katsikeas, Leonidou, & Morgan, 2000), remains a relevant subject in a globalized context in general (Kaleka, 2012; Portugal-Perez & Wilson, 2012) and in particular, for Latin American firms as presented in recent issues of Journal of Business Research (Carneiro & Brenes, 2014: Brenes, Camacho, Ciravegna, & Pichardo, 2016; Ciravegna, Lopez, & Kundu, 2016).

The resource-based view (RBV) of the firm posits that gathering a set of distinguishing resources is crucial for the acquirement of competitive advantage in export performance (Sousa, Martínez-López, & Coelho, 2008). In this sense, small and medium-sized enterprises (SMEs) confront high barriers towards exports because of their limited resources and constrains (Bianchi & Wickramasekera, 2016: Ciravegna et al., 2016). As an alternative theory, the contingency criterion suggests that the firm context will influence firm characteristics, therefore rendering an effect on export performance (Cavusgil & Zou, 1994). Under this paradigm, SMEs experience a disadvantage in sustaining export strategies appropriately aligned with their environments.

Many exporting SMEs in the Latin American context operate in industry clusters or in close firm's environment which affects geographical proximity (Brenes et al., 2016). Geographical proximity or co-location refers to the physical agglomeration of firms in a location (Felzensztein, Gimmon, & Carter, 2010; Geldes, Felzensztein, Turkina, & Durand, 2015), allowing interaction among them (Porter, 2000). This article uses and follows the words co-location, agglomeration, and cluster indistinctively when referring to geographical co-location (Felzensztein et al., 2010). Expected interaction brings with it the creation of bonds, ties, relationships and interdependencies among SMEs (Audretsch & Feldman, 1996; Geldes et al., 2015).

Recent studies have pointed out fragmented results when measuring the impact of co-location in export performance. Fernhaber, Gilbert, and Mcdougal (2008) report that geographic co-location has a curvilinear effect on export intensity in highly technological new ventures located in the USA. Zhao and Zou (2002) previously detailed that firms located in China's coastal areas, where most agglomeration is present, have a higher likelihood of being exporters and a higher export intensity; in which China's new industry clusters represent a successful case study. Becchetti and Rossi (2000) report a positive relationship between co-location and export intensity in Italian firms, which represent a good example for the creation of social capital among regional districts and clusters (Felzensztein, Brodt, & Gimmon, 2014). Questions arise from the review of these past studies. For instance: Can the effect of co-location be negative in some contexts and positive in others? What are the components of the effect of co-location on SMEs' export performance in a particular Latin American context?

The article is structured as follows: First, we introduce some theoretical perspectives on industry clusters and export performance. Second, the methodology is presented, followed by results and conclusions, which includes some practical implications.

* Corresponding author at: Universidad Andres Bello, Chile.
E-mail addresses: jose.brache@unab.cl (J. Brache), c.felzensztein@massey.ac.nz (C. Felzensztein).

https://doi.org/10.1016/j.jbusres.2017.11.044
Received 30 April 2017; Received in revised form 19 November 2017; Accepted 29 November 2017

2. Theoretical perspectives

2.1. Industry clusters and externalities

Marshall (1920) made a substantial contribution with his theory of industrial agglomeration by indicating three fundamental reasons (externalities) why firms co-locate: 1) industries place themselves close to customers and suppliers to minimize transfer costs of inputs and finished products; 2) industries locate closely to develop labor market pooling; and 3) industries cluster to escalate the learning process of workers (knowledge spillovers). This triad therefore suggests two types of positive effects on firm performance: increase in productivity and increase in demand. Recently, Ellison, Glaeser, and Kerr (2010) have confirmed Marshall's three propositions using data from the US Census Bureau's Census of Manufacturing. Their results reinforce the idea that firms account for the transportation cost of three different and essential resources: people, inputs or products, and ideas. Krugman (1991) identified four agglomeration forces: technological spillovers, labor market pooling, non-traded inputs, and positive market linkages. The first three are considered as technological externalities, while the latter as a pecuniary externality (being mediated by markets).

The co-location literature argues that as firms agglomerate, some externalities, which only exist when firms are closely placed together, come to play a role affecting firms both positively and negatively. On one hand, industrial areas accommodate their industries by expanding the resources required by the firms, and this effort supports higher productivity (Niosi & Bas, 2001). Simultaneously, as the number of industries co-located rises, competition reduces the profit margins of corporations (Arthur, 1990). The final outcome will depend on the specifics of the industry, as well as regional, and country factors (Kukalis, 2010; Nicholson, Gimmon, & Felzensztein, 2017).

Recent co-location literature outlines a myriad of externalities that could logically exert a positive impact on export performance. Some examples are: *Increased marketing externalities* (Felzensztein et al., 2010; Felzensztein et al., 2014; Geldes et al., 2015) expressed in pursuing joint sales efforts towards international markets, joint trading and distribution, engaging in co-branding, sending joint missions to assess foreign market potential, conducting joint market research, as well as sharing information (either raw data or business contacts) on international markets. These actions should reduce the liability of foreignness as well as the liability of outsidership (Johanson & Vahlne, 2009) by directly decreasing the cost of acquiring the information required to penetrate a foreign market. Also, such strategies would increase the access to valid opportunities and new technological knowledge through already verified business contacts, thus resulting in an increase of export performance. Other examples include: *Higher capacity to gather external capital* (Folta, Cooper, & Baik, 2006); *Increments in the productivity of workers* (Ciccone & Hall, 1996) would create lower costs (Jaffe, Trajtenberg, & Henderson, 1993), a particular externality which could benefit export performance by allowing a more attractive product or service price; and *more efficient collaboration* (Felzensztein et al., 2014; Geldes et al., 2015; Saxenian, 1994). Boehe (2013) shows that collaborative intensity, a measure of the degree of participation of the firm with other companies, is correlated positively with export intensity in the Brazilian furniture manufacturing industry; *Knowledge spillovers* (Alcacer & Chung, 2007) are also key in the advancement of export performance, as a higher level of innovation is shown to develop within certain industries when co-location increases (Harrison, Kelley, & Gant, 1996; Shefer & Frenkel, 1998). Co-located firms have better chances of acquiring knowledge through a sophisticated set of channels conformed within social interaction (Bianchi & Bellini, 1991; Felzensztein et al., 2014; Nicholson et al., 2017). These interactions are responsible for an important part of the exploitation of collective knowledge by co-located firms (Harrison, 2007). Bell (2005), for instance, models the innovation of Canadian mutual fund companies and finds that clustering and network centrality in the managerial network increase firm innovation. Bunker, Owen-Smith, and Powell (2009) analyze the biotechnology sector and conclude that co-location and social networks have independent and contingent effects on innovation. Finally, *Foreign market knowledge*: Co-location enhances foreign market knowledge because local firms can access foreign corporations more easily. Foreign companies have a tendency to locate in denser regions (Fernhaber et al., 2008; Pino, Felzensztein, Zwerg-Villegas, & Arias-Bolzmann, 2016). As companies further develop their knowledge of foreign markets, they can tackle better opportunities and reduce the risks in the foreign market operation (Johanson & Vahlne, 1977). This factor may also be related to the mimetic pressure on internationalization (Cheng, 2010).

2.2. The co-location mechanism of cooperation

Porter (1998, p. 88) addresses the co-location mechanism expressing: "… managers tend to be wary, at least initially. They fear that a growing cluster will attract competition, drive up costs, or cause them to lose valued employees to rivals or spin-offs. As their understanding of the cluster concept grows, however, managers realize that many participants in the cluster do not compete directly and that the offsetting benefits, such as the greater supply of better trained people, for example, can outweight any increase in competition". Zhao and Zou (2002) and Becchetti and Rossi (2000) seem to subscribe to the view of Porter (1998). The idea of the mechanism behind the effect of co-location on export performance in their studies could be sumarized as co-location produces a set of externalities in a region, some with positive values (e.g. knowledge spillovers) and some with negative values (e.g. competition), the net outcome of this "co-location black box" is a net positive effect on export performance. Becchetti & Rossi (2000, p. 58) add the following on firms from traditional and specialized sectors: "costs from increased competition are lower than gains from increased cooperation when firms are located in geographically agglomerated areas". This "black-box" interpretation of the co-location mechanism resembles a *ying and yang* approach where cooperation and competition are opposite forces that complement each other (LaPlaca, 2014; LaPlaca & Lindgreen, 2016; Li, 2016; Nicholson et al., 2017). Cooperation is viewed as yielding a positive effect on export performance, while competition exerts a negative effect on export performance.

Fernhaber, Gilbert & Mcdougal (2008, p. 284) add an interesting consideration. Rather than focusing on the average effect of co-location on export performance, they argue that the effect of co-location changes at different levels. Under their perspective, the mechanism behind the effect of co-location on export performance could be described as follows: Co-location increases a set of positive externalities in a region, but after a certain point, competition counters the positive effects of co-location. In effect, this view also accounts for a set of positive externalities (e.g. knowledge spillovers, labor market pooling) and one negative externality (competition).

The previous overview pinpoints a fundamental oversight by Fernhaber et al. (2008), Zhao and Zou (2002) and Becchetti and Rossi (2000). These studies ignore the fact that cooperation may cause a negative externality (Geldes et al., 2015), therefore impacting export performance negatively.

To simplify the understanding of cooperation, the concepts of cooperative action and imperfect cooperation are presented. A cooperative action (or cooperative venue) is a cooperation opportunity that renders two possible strategies for participants, either cooperating or not cooperating (also referred as defecting). For instance, two firms may join in exploring a new potential market. They can either cooperate in this project or decide not to cooperate. Both actions are part of the cooperative venue. One of the advantages of displaying cooperation as a game with a dual action strategy is showing that some cooperative venues might render negative outcomes to players (Nowak, 2012). To understand the concept of imperfect cooperation is also important. Imperfect cooperation describes the situation where one partner decides to cooperate while the other one defects. In this

particular case the cooperating partner that decides to cooperate ends up in a position that is worse than not cooperating at all (Nowak, 2006). To sumarize cooperation mechanisms, the cost-benefit relationship is the essential defining concept in the emergence and sustainability of a cooperative environment. Only certain cost-benefit ratios produce pathways towards a cooperating venue that yields positive outcomes for all cooperating partners (Nowak, 2006). Some cost-benefit ratios will produce imperfect cooperation and a negative outcome for cooperating partners.

Knowledge spillovers are the result of diverse cooperative actions among firms or simple observations of close firms. Therefore, knowledge spillover is a "final effect" produced by specific actions of firms (Marshall, 1920; Nicholson et al., 2017). We suggest a categorization from a different perspective, a grouping of externalities based on their "causes". This new view advocates for three basic categories of externalities: Let Θ = co-location, λ = externalities that require cooperation between firms, β = externalities derived from competition among firms, and π = externalities resulting from the mere action of location. It can be later derived that the net effect of geographical co-location on export performance corresponds to $(\Theta) = \lambda + \beta + \pi$.

Fig. 1 depicts the co-location mechanism proposed in our model. We argue that as co-location increases, the externalities from cooperation, competition and location increase. Also new externalities caused by cooperation, competition and location emerge, therefore impacting export performance.

Table 1 classifies multiple externalities present in the co-location literature under the proposed categories of: externalities derived from cooperation, externalities resulting from competition and externalities resulting from mere location. Such externalities may exert a significant influence on export performance.

2.3. Effect that is context dependent and hypotheses

It is important to consider that each one of the externalities that require cooperation among firms (λ) could also render a negative effect on export performance depending on the costs and benefits involved in the cooperative action (Nowak, 2012). Cooperation could restrict innovation and technological investments, it could leave partners vulnerable when others change their levels of commitment towards the cooperative action, and it could create unintended dependencies (Akdoğan & Cingšz, 2012). Opportunistic actions can also emerge and damage the final outcomes of firms involved in cooperative actions (Estrada, Faems, & de Faria, 2015).

Under this approach, competition is not the only negative externality affecting the outcome of the agglomeration effect on export performance. Cooperation could develop negative externalities as well in some contexts (Geldes et al., 2015). Essentially, cooperation (λ) could have a positive effect, zero effect, or perhaps, a negative effect on

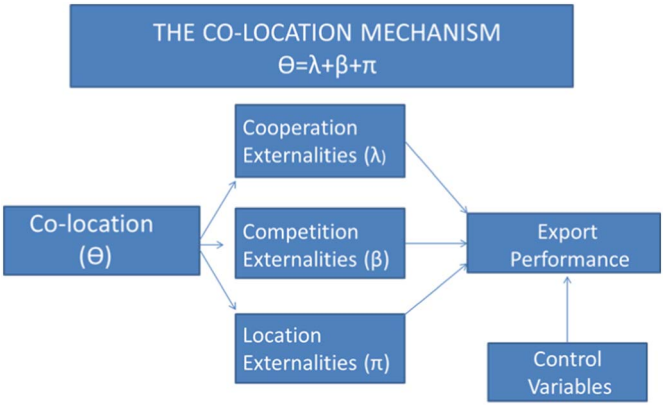

Fig. 1. The co-location mechanism.

export performance. That means that the affirmations of Porter (1998) and Becchetti and Rossi (2000) pointing out returns from cooperation that are higher than costs from competition in agglomerated areas can only be made for a particular context and not in a generalized manner to all contexts, industries, and countries.

In addition, competition (β), as shown in Table 1, is not just the negative force that restricts firm's internationalization portrayed by Fernhaber et al. (2008). It also creates positive externalities that should increase export performance. Akdoğan and Cingšz (2012) for instance, argue that competition stimulates new resource, process and skill mixtures. This means that competition should not be viewed as a negative force in all cases. Competition (β) could display an average negative effect, zero effect or a positive effect on export performance. Once again, affirmations on the sign of the competition effect within the "co-location black box" should only be based on a specific context and cannot be generalized. Finally, Location (π) may be an advantage if there are abundant natural resources (Ellison & Glaeser, 1999) or if better infrastructure is present (Porter, 1990). But location could also be a disadvantage if natural resources are scarse and infrastructure is poor. The average sign of the effect deriving from being located at a certain area, when cooperation and competition are controlled for, could be either positive, negative or neutral. That means that location effects are tied to a specific cluster context (Geldes et al., 2015; Pino et al., 2016).

In summary, the decomposition of the effects of co-location on export performance shown in Table 1 and Fig. 1 reveal that the net effect of co-location on export performance is context-dependent. Local context is a variable receiving increasing attention in the management literature (Mudambi, Mudambi, Mukherjee, & Scalera, 2017; Nicholson et al., 2017; Pino et al., 2016). Meyer and Peng (2015) state that differences in context are at the center of the explanation of today's global business field. Therefore, building hypotheses on the effects of co-location on a particular cluster region must consider the specificities of such context. For instance, in a context where cooperation is positive (strong and stable) competition is negative (but mild) and location effects are positive (and strong) we would observe $(\lambda + \pi) > \beta$ and therefore a positive net effect of co-location on export performance.

In a context where cooperation is positive, location effects are positive, and competition is negative (but increasingly negative as co-location increases) we would observe $(\lambda + \pi) > \beta$ at low levels of co-location and $(\lambda + \pi) < \beta$ at higher levels of co-location. We could then report a curvilinear relationship consistent with Fernhaber et al. (2008). Finally, in a context where imperfect cooperation prevails (when cooperating renders lower outcomes than not cooperating), if competition is negative and location effects are positive but mild we would observe: $|(-\lambda - \beta)| > \pi$ and therefore a negative net effect of co-location on export performance.

That's why in order to build hypotheses and measure the effects of co-location on export performance, we must first introduce the reality of a specific context, in this case Chile, into our theoretical framework. Past studies of such context could provide essential elements that might assist us in deducing the average signs of the components of co-location (cooperation, competition and location) and the net effect of co-location on export performance in such specific context.

In the specific context of emerging economies, like Chile, institutions that facilitate joint actions are scarce and firms lack access to superior technology and infrastructure (Gutiérrez-Martínez, Duhamel, Luna-Reyes, Picazo-Vela, & Huerta-Carvajal, 2015; Mesquita & Lazzarini, 2010). In Latin American clusters, it is difficult to acquire higher productivity because of un-operational institutions and infrastructure (Schmitz & Nadvi, 1999; Pino et al., 2016). Lack of horizontal cooperation of actors does not foster the development of capabilities needed to achieve better export performance (Rabellotti, 1999). Firms located in Chile are embedded in this challenging situation. In the subject of competition, managers interviewed in previous studies have argued that the culture and mentality in Chile does not integrate

Table 1
Decomposing co-location externalities.

Cooperation (λ)	Competition (β)	Location (π)
Better capacity to gather external capital (Folta et al., 2006)	Competition fosters environment creativity and innovation (Saxenian, 1994)	Expansion of skilled workers availability (Marshall, 1920)
Marketing externalities: pursuing joint sales efforts, joint trading and distribution, co-branding, joint missions to assess market potential, conducting joint market research, information sharing on international markets (Felzensztein, 2008; Felzensztein et al., 2014)	Competition improves product quality (Becchetti & Rossi, 2000)	Close observation of competitors & better knowledge of opportunities (Bell, 2005; Marshall, 1920; Pouder & John, 1996)
Better reputation (Pouder & John, 1996)	Competition increases competitive advantage (Bengtsson & Kock, 2000)	More access to suppliers & specialized inputs required for operations. Lower resource costs. Improved production (Krugman, 1991; Marshall, 1920)
Knowledge spillovers & tacit knowledge sharing (Alcacer & Chung, 2007; Marshall, 1920).	Competition fosters productivity (Porter, 1998)	Increasing demand (Marshall, 1920)
Higher social interaction for technological exchange (Bianchi & Bellini, 1991)	Reputation is a byproduct of competition (Porter, 1998)	Arousal of mental models among managers and patterns of competitive behavior (Pouder & John, 1996)
Increase of firm innovation (Bell, 2005)	Competition motivates firms to outdo others in several dimensions (Porter, 2000)	Increase pool of venture capitalists (Porter, 1990)
Better understanding of competitive market (Chung & Kalnis, 2001)	Competition stimulate search for new combination of resources, skills and processes (Akdoğan & Cingšz, 2012)	Better local infrastructure (Porter, 1990)
Higher exposure to foreign markets & industry standards through contact with foreign firms (Karagozoglu & Lindell, 1998)		More supportive Institutions (Boschma & Lambooy, 1999)
Tighter ties among firms (Fernhaber et al., 2008) More cooperative alliances & trust (Saxenian, 1994)		Increased firm value (Boasson, Boasson, MacPherson, & Shin, 2005)
Enhanced collective learning (Maskell & Malmberg, 1999)		Increased capital investment. (Gabe, 2005)
More shared media such as local newspapers, business journals. (Pouder & John, 1996) More information sources (Bell, 2005)		
Higher motivation through local pride (Porter, 1990)		
Facilitates industrial reestructuring (Barkley & Henry, 1997)		
Better focus of public programs (Barkley & Henry, 1997)		
Superior group response to globalized product markets (Schmitz, 1999)		
Enhanced distribution Linkages (Porter, 1998)		

cooperation as much as competition (Felzensztein, 2008; Geldes et al., 2015). A lack of trust is an overwhelming element in this business environment. Trust is an important factor in the construction of cooperation (Felzensztein et al., 2014; Huemer, Boström, & Felzensztein, 2009; Mesquita & Lazzarini, 2010). This lack of trust should increase defection and imperfect cooperation.

The latter leads to the idea of a negative competition effect and an imperfect cooperation effect that could easily engulf the positive externalities of co-location and finally yield a negative net co-location effect on export performance. Chilean companies seem to be rooted in a setting where negative cooperation outcomes prevail, competition is negative and strong and location effects depend on the abundance of natural resources (Geldes et al., 2015). Such condition ($|(-\lambda - \beta)| > \pi$) should render a negative outcome of co-location on export performance. Based on the previous arguments, we hypothesize:

H1. The higher the level of co-location, the lower the export performance of the firm.

As previously discussed, relationships and cooperation are indeed essential in internationalization and it generally comes from personal and business contacts or previous networks (Freeman, Edwards, & Schroder, 2006). An increase in co-location brings with it a higher frequency of interactions between firms. The positive effects of such interaction increase should bring more firm innovation (Bell, 2005), a better understanding of the competitive market (Chung & Kalnis, 2001), tighter ties among firms (Fernhaber et al., 2008), enhanced collective learning (Maskell & Malmberg, 1999), more information sources (Bell, 2005), and better public programs (Barkley & Henry, 1997). The sum of these externalities should cause an increment on the impact of cooperation on export performance. This means that even in cases where the net effect of cooperation on export performance is negative, we could expect the effect of cooperation on export performance to become more positive as co-location increases.

Based on the previous arguments we hypothesize:

H2. Higher levels of co-location will result to higher cooperation effects on export performance.

On the other hand, the mere action of location could provide firms with better natural resources and foster export performance (Ellison & Glaeser, 1999). A better access to suppliers and lower cost of resources (Krugman, 1991; Marshall, 1920) should impact export performance positively as well. More supportive institutions (Boschma & Lambooy, 1999), better infrastructure (Porter, 1990) and a qualified pool of workers (Marshall, 1920) should increase productivity, thus enhancing competitive advantage. But an increase of firm density would mean more competitors feasting on the same resources and therefore diminishing any location specific advantage. We proposed:

H3. Higher levels of co-location will result to lower location effects on export performance.

Finally, competition could also change at various levels of agglomeration. Table 1 shows that competition carries positive and negative externalities. On one hand, it does affect firm profits negatively through price competition (Fernhaber et al., 2008), but it also improves product quality (Becchetti & Rossi, 2000), and fosters a creative environment of innovation (Saxenian, 1994). We must once again look into the specific context of Chile to develop a hypothesis. Chilean businesses competition is fierce due to the small internal market, extreme free-market environment, and trust not being a strong element (Felzensztein et al., 2014; Geldes et al., 2015). The increase in interaction frequency brought up by co-location could easily increase the negative competition effects depicted by Fernhaber et al. (2008). We therefore propose:

H4. Higher levels of co-location will result to lower effects of competition on export performance.

3. Context and methodology

Chile is known for its openness towards international trade. It is considered to be the most international trade oriented economy in Latin America (Guimón, Chaminade, Maggi, & Salazar-Elena, 2017). It is also a reference for other countries in South America that intend to expand their international orientation (Felzensztein, Ciravegna, Robson, & Amorós, 2015). Chile hosts a wide spectrum of exporting SMEs in various industries including mining, wine, consulting, and finance (Felzensztein et al., 2015; Geldes et al., 2015). In this sense, focusing in a small emerging economy like Chile provides a different perspective from such of developed economies, where most research on co-location and cooperation has been conducted (Nicholson et al., 2017).

In order to test our hypotheses we gathered the data from the 8th and 9th Survey of Innovation from the National Institute of Statistics from Chile (2013 & 2015), where we built a pooled cross-section database. Both surveys are representative of the population of Chilean firms at two different periods: 2011–2012 and 2013–2014.

One of the major advantages in these surveys is that they control for selection bias. The 8th and 9th innovation surveys have a substantial part of participants that had to fill the surveys by law. This fact assures the correct representation of firm population. These surveys also offer survey weights. Survey weights are a technique used to adjust the sample to the population. In our analysis we expanded the databases considering survey weights (Little, 1991). Small and Medium Enterprises (SMEs), with 200 or fewer employees, compose 97% of the sample in this survey.

Coefficients for International Intensity as the dependent variable were obtained by the estimation of a General Linear Model with a logit transformation, which was calculated in Stata with family (binomial) link (logit) and robust estimates, as proposed by Papke and Wooldridge (1996). This estimation methodology is also known as fractional logit (Fryges, 2006). Coefficients shown in the results are log odds. Our models consider the following

3.1. Dependent variable

We gauged export performance by measuring international intensity. International intensity, also referred by some as export intensity (Boehe, 2013), is the percentage of total sales in the firm obtained from sales in international markets (Fernhaber et al., 2008). The use of this ratio is vastly present in the internationalization literature (e.g. Beamish, Karavis, Goerzen, & Lane, 1999; Capar & Kotabe, 2003; Knight & Kim, 2009; Lages, Jap, & Griffith, 2008; Tallman & Li, 1996). It indicates the relevance of foreign market exposure in a firm (Elango & Pattnaik, 2007).

3.2. Independent variables

a) We captured co-location in this study by measuring a regional location quotient as described by the Cluster Mapping Project from the U.S. Department of Commerce, the U.S. Economic Administration and Harvard Business School's Institute for Strategy and Competitiveness.

$$LQ = \frac{e_i/e}{E_i/E}$$

e_i = Local employment in industry i
e = Total local employment
E_i = Country area employment in industry i
E = Country total employment

We applied a logarithmic transformation to the location quotient to facilitate interpretation. This technique is frequently used in econometric estimation.

b) Cooperation: In order to measure the level of firm cooperation with multiple actors, we used principal components (eigenvalues and loadings on Appendix A). The survey has 6 questions that measure the cooperation with: Trade Associations, Suppliers, Consulting firms, Competitors, Universities, and Public Labs. All questions are phrased in the same format. The specific question in the case of universities asks: “Were universities an important source of information for innovation development in the firm?”. Firms could answer “Very Important”, “Important”, “Less Important” or “Not Relevant” to this question. We used this question as a proxy of cooperation and therefore assumed that firms that obtain more information that is important for innovation development through universities, cooperate more with such source. We assumed similarly in the case of Trade Associations, Suppliers, Consulting firms, Competitors and Public Labs. We retained 2 factors from the principal components analysis and named them “institutional cooperation” and “inter-firm cooperation”. The names were based on the loadings of the 6 variables on each selected factor.

c) Location: Chile is divided into 15 political regions. Some of them concentrate the country's richest natural resources. Mining and fishing products are the most important export products in Chile. We created a variable and coded with 0 the firms located in regions with no mining or fishing natural resource advantage. We coded with 1 the firms in areas with mining and fishing natural resources (regions I, II, X, XI & XII). The location variable captures the relevance of natural resources on performance referred by Ellison and Glaeser (1999).

3.3. Control variables

R
&D: This is a dummy variable where firms that conducted research and development take value 1, while the ones that did not conduct research and development take value 0. R&D as a proxy for innovation is included as control variable in many studies of export performance. It usually reflects a positive impact of innovation on export performance (Fernhaber et al., 2008; Zhao & Zou, 2002). *Structural Changes*: This is a dummy variable that takes value 0 if firms belong to the 8th innovation survey and value 1 if firms belong to the 9th innovation survey. This variable captures macroeconomic structural changes in time that might impact export performance. *Age*: This variable captures the age of the firm from start up. As firms gain experience export barriers should decrease. That is why this variable is present in many export performance models (Zou & Stan, 1998). *Size*: We capture the size of the company by the number of workers in the firm. Company size should reduce export barriers (Zhao & Zou, 2002). We transformed this variable to logarithmic form to facilitate interpretation. *Economic sectors*: We constructed this variable as a dummy where 1 accounts for the firm being a part of the specific economic sector. Economic sectors include: Agriculture and Livestock, Fishing, Mining, Manufacturing, Electricity, Construction, Commerce, Hotels, Transport, Finance, Consulting, Health Services and Entertainment. The consulting sector serves as base or reference. This means that the coefficients displayed for each economic sector are compared to the consulting sector.

4. Results

Table 2 shows correlations of the variables in our models. We examined the variance inflation factor and condition index, which confirm that the moderate correlation observed between covariates does not pose a high multicollinearity problem to our estimates. Also, the models exhibit good explanatory powers with a p > Chi-squared value of zero.

Table 3 displays the coefficients of the GLM regression models. The results confirm H1 (model 2) and show that the effects of co-location on international intensity are negative and statistically significant.

Table 2
Correlation matrix.

		1	2	3	4	5	6	7	8	9
1	Int. intensity	1								
2	Co-location	− 0.0563[a]	1							
3	Institutional cooperation	0,0693[a]	− 0.0259[a]	1						
4	Inter-firm cooperation	− 0.0152[a]	− 0.1249[a]	0	1					
5	Location	0,0241[a]	− 0.0722[a]	0.01	− 0.0247[a]	1				
6	Structural changes	− 0.0138[a]	0,0516[a]	0,0726[a]	0,0552[a]	− 0.0887[a]	1			
7	Firm age	0,0268[a]	− 0.0433[a]	0,0883[a]	0,0586[a]	− 0.0120[a]	0	1		
8	Firm size	0,0709[a]	0,1600[a]	− 0.0156[a]	0,0366[a]	− 0.0213[a]	0,0327[a]	0,0755[a]	1	
9	R&D	0,0903[a]	0,0039[a]	0,1468[a]	0,0796[a]	0,0486[a]	− 0.0438[a]	− 0.0143[a]	0,1482[a]	1

[a] Significant at 95% confidence level.

Table 3
Coefficients of GLM estimation with logistic transformation.

Regression models	(1)	(2)	(3)	(4)
Variables	Int. intensity	Int. intensity	Int. intensity	Int. intensity
Agglomeration/co-location		− 0.362***	− 0.701***	− 0.276***
		(0.0217)	(0.0409)	(0.0400)
Institutional cooperation			− 0.0514***	− 0.128***
			(0.0173)	(0.0190)
Inter-firm cooperation			− 0.325***	− 0.298***
			(0.0249)	(0.0266)
Location				1.662***
				(0.0476)
Structural changes	− 0.172***	− 0.167***	− 0.346***	− 0.279***
	(0.0263)	(0.0258)	(0.0529)	(0.0591)
Firm age	0.0422***	0.0296**	0.237***	0.0958***
	(0.0144)	(0.0141)	(0.0244)	(0.0235)
Firm size	0.284***	0.292***	0.364***	0.383***
	(0.00745)	(0.00754)	(0.0126)	(0.0132)
R&D	1.309***	1.275***	1.063***	0.837***
	(0.0343)	(0.0342)	(0.0434)	(0.0438)
Agricultural sector	1.768***	1.550***	2.408***	2.825***
	(0.0452)	(0.0452)	(0.0717)	(0.0696)
Fishing sector	0.604***	0.593***	1.281***	1.470***
	(0.109)	(0.109)	(0.194)	(0.198)
Mining sector	3.019***	3.105***	2.346***	2.676***
	(0.0626)	(0.0641)	(0.405)	(0.388)
Manufacturing sector	0.958***	0.791***	0.744***	1.197***
	(0.0495)	(0.0492)	(0.0898)	(0.0897)
Utilities sector	0.720***	0.694***	− 1.860***	− 1.677***
	(0.131)	(0.131)	(0.283)	(0.294)
Construction sector	− 1.123***	− 1.017***	− 0.846***	− 1.098***
	(0.0945)	(0.0951)	(0.153)	(0.156)
Commercial sector	1.064***	0.790***	0.163**	0.210***
	(0.0439)	(0.0451)	(0.0823)	(0.0778)
Hospitality sector	− 0.731***	− 0.737***	− 0.531***	− 0.571***
	(0.124)	(0.124)	(0.193)	(0.194)
Transportation sector	0.379***	0.240***	− 0.324***	− 0.439***
	(0.0548)	(0.0561)	(0.111)	(0.121)
Financial sector	0.929***	0.841***	1.605***	1.990***
	(0.0818)	(0.0822)	(0.140)	(0.151)
Health sectors	− 0.139	− 0.220**	0.227*	0.231*
	(0.0982)	(0.0981)	(0.124)	(0.122)
Entertainment sector	0.247**	0.171	0.222	0.521**
	(0.118)	(0.118)	(0.225)	(0.232)
Constant	− 5.407***	− 5.986***	− 7.285***	− 6.713***
	(0.0581)	(0.0727)	(0.131)	(0.121)
Observations	269,786	269,786	51,219	51,219

Robust standard errors in parentheses. Coefficients expressed as log odds.
*** $p < 0.01$.
** $p < 0.05$.
* $p < 0.1$.

Institutional cooperation and Inter-firm cooperation impact export performance negatively on average (models 3 & 4). Location has a positive effect on international intensity (model 5).

When addressing the issue of correctly displaying and interpreting interaction results in the management literature, Kingsley et al. (2017, p. 1) stated: "we advocate that IB scholars also evaluate the statistical significance of the marginal effect of the primary independent variable over the range of values of the moderating variable". Following their recommendation, we evaluated the marginal effects of cooperation, location and competition at a range of levels of co-location. Selected levels were based on the distribution of the co-location variable. We used the mean and standard deviation as reference. Selected values of the co-location distribution were: (1) the mean minus 3 standard deviations, (2) the mean minus 2 standard deviations, (3) the mean minus 1 standard deviation, (4) the mean, (5) the mean plus one standard deviation (6) the mean plus 2 standard deviations and (7) the mean plus 3 standard deviations.

We followed the recommendations of Williams (2012, pp. 319–320) in the plotting process of the effects of cooperation, location and competition as co-location increases. This methodology does not require the inclusion of interactions in the model. Model 4 was chosen for this calculation because it includes all the required variables for the analysis. The tables with the coefficients of marginal effects of cooperation, competition and location at increasing values of co-location are shown in the Appendix B.

Results confirm H2 for institutional cooperation and inter-firm cooperation. As co-location increases, the effects of cooperation on export performance remain negative. However, at each upper increasing level of co-location, the negative effects of cooperation on export performance approach zero. This indicates that positive externalities from cooperation become stronger with co-location, but never as strong as to turn cooperation into a positive effect.

H3 is also confirmed. At higher levels of co-location the location effect on export performance diminishes. This reaffirms the fact that more firms exploit the limited resources available in a particular geographic area, thus decreasing the firm's competitive advantage derived from mere location.

Competition is not a variable present in the survey. Nevertheless, this limitation in the data does not mean that we cannot deduce the behavior of competition as co-location increases. Regression model coefficients communicate how much the variance of the independent variable explains the variance of the dependent variable with statistical significance. Our study shows through Table 1 that the literature of co-location supports a decomposition of the co-location effect into three groups of externalities arising from cooperation, location and competition. Following this logic, in model 4, the cooperation regression coefficients capture how cooperation variance explains international intensity. Similarly, the location coefficient captures how the variance in location explains international intensity. That means that the regression coefficient of co-location is mostly capturing how the variance of competition is explaining the variance of international intensity. In other words, the co-location variable may be a valid proxy of competition.

We therefore evaluated how the marginal effects of co-location changes as agglomeration increases in model 4. As cooperation and location are controlled for in model 4, our results on this evaluation

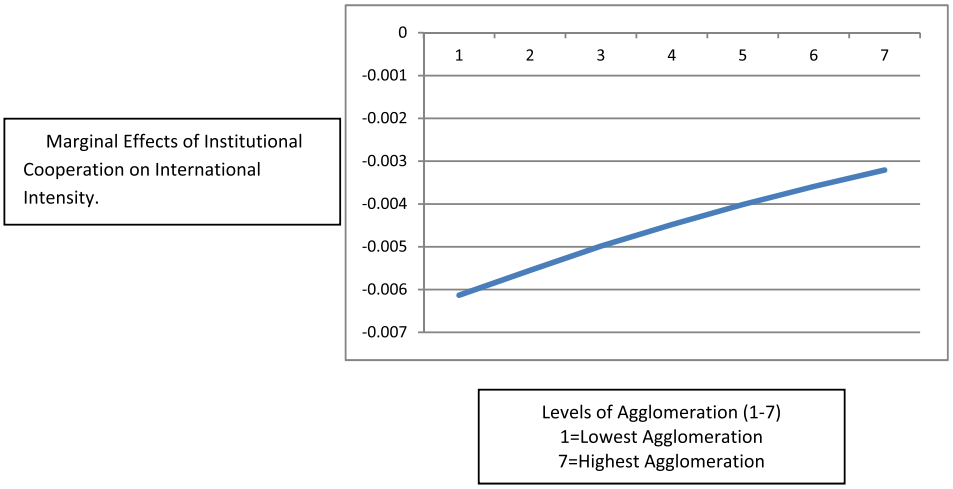

Fig. 2. Marginal effects of institutional cooperation as agglomeration increases.

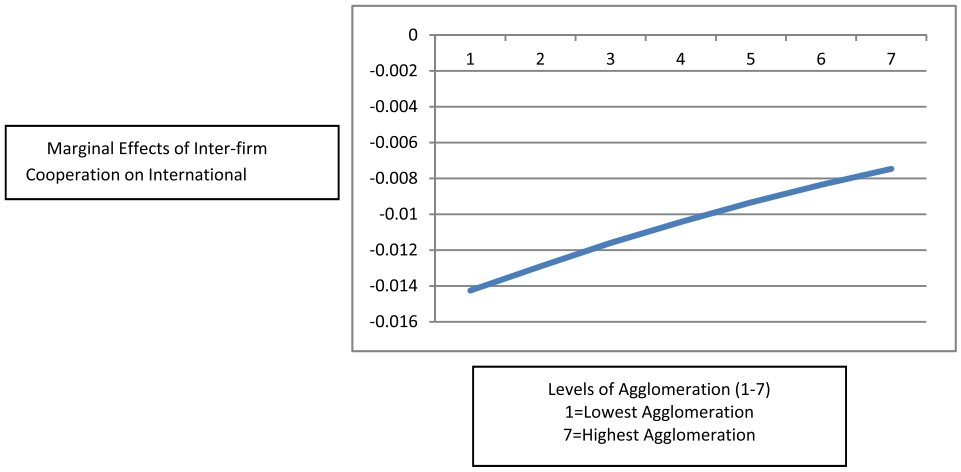

Fig. 3. Marginal effects of inter-firm cooperation as agglomeration increases.

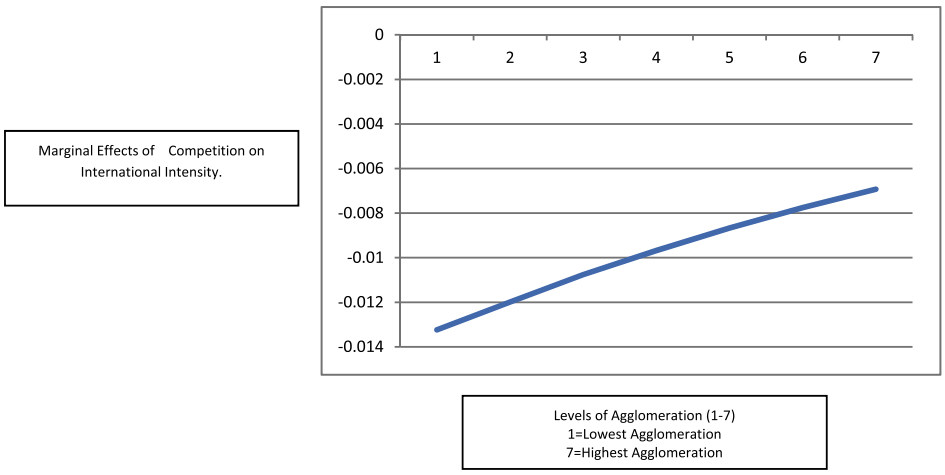

Fig. 4. Marginal effects of competition as agglomeration increases.

portray how competition is changing as co-location increases. Our findings reject H4. Unexpectedly, the positive externalities of competition are reinforced as co-location increases. But as in the case of co-operation, such externalities are never as strong as to turn competition into a positive effect. Competition exerts a negative effect on international intensity at all levels of co-location. The effects plotted in Figs. 2 through 5 are statistically significant at a 95% confidence level.

4.1. Control variables/context

Age and size correlate positively to international intensity. In this case our results are consistent with previous findings (e.g. Boehe, 2013; Zhao & Zou, 2002). R&D is positively correlated to international intensity. These results are consistent with Bell (2005) and speak of the importance of innovation on overcoming export barriers. Most industry sectors are significant in explaining international intensity as they capture the particular industrial factors that impact export

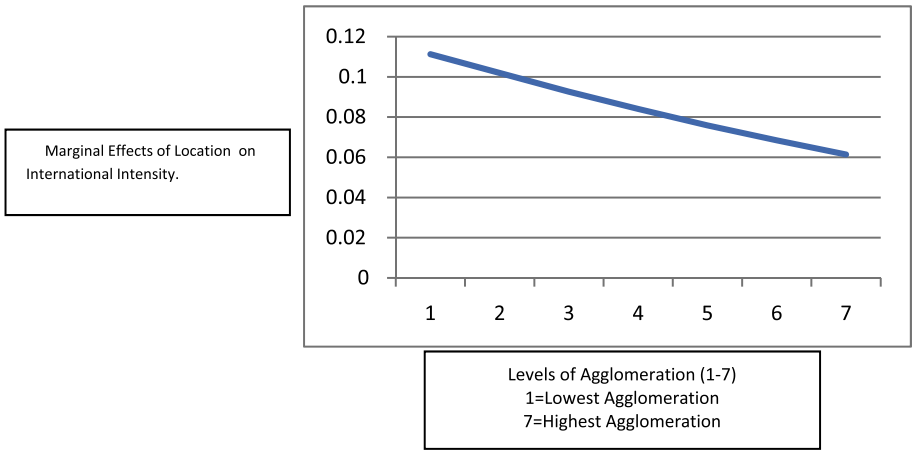

Fig. 5. Marginal effects of location as agglomeration increases.

performance.

We introduced a variable in our pool cross-section database in order to capture the macroeconomic changes that firms experience in time. This variable (named structural changes) has a negative effect on international intensity. This is consistent with a decrease in Chile's gross national product and total exports from years 2011–2012 to years 2013–2014.

5. Conclusions

This study proposes a framework that decomposes co-location externalities into the categories of: externalities caused by competition, externalities resulting from cooperation and externalities derived from mere location. Unexpectedly, our results show that the positive externalities of competition are reinforced as co-location increases. But as in the case of cooperation, such externalities are never as strong as to turn competition into a positive effect. The model introduced argues that as co-location increases, the externalities carried out by competition, location and cooperation increase in strength. Also, new externalities that derive from cooperation, competition, or location arise as agglomeration escalates. This vision unifies previous studies and shows that positive, negative, curvilinear and neutral effects of co-location on export performance are indeed possible. The nature of cooperation, competition, and location advantages at each site will be the determining factors of the net co-location effect on export performance.

Our study contributes to the current management debate on the effects of co-located firms in industry clusters by detailing the externalities that rise directly from the actions of cooperation, competition and location (Geldes et al., 2015). Previous conceptual models depicting the mechanism of co-location on export performance (e.g. Becchetti & Rossi, 2000; Fernhaber et al., 2008; Zhao & Zou, 2002) were fairly limited and did not consider cooperation to render a potential negative effect on export performance or competition to have a conceivable positive effect on export performance.

Our results highlight that we can only predict the effect of co-location on export performance by considering the specific environment of firms. In the context of Chile, the results show that cooperation and competition impact export performance negatively in average. As co-location rises, the effects of cooperation and competition on export performance increase, but not enough as to switch the negative sign of both effects into a positive sign. Location impacts export performance positively in average, but as co-location increases, this positive impact decreases. Ultimately, the net effect of co-location on export performance is negative (Table 3: Model 2).

5.1. Limitations and further studies

This study is limited by the nature of the pooled cross-sectional secondary data it used: the innovation survey. Endogeneity is always a potential issue in all cross section studies. The authors also acknowledge limitations in the use of international intensity as a measurement of export performance and the use of the location quotient as a measurement of agglomeration. Other measures, like cross industry location quotients (Morrissey, 2014) could be included in future studies to address these limitations. Similar research needs to be done in other Latin American countries for comparative purposes and generalization of results and conclusions.

Future studies should address new questions opened by this study. How is cooperation yielding a negative outcome on export performance? What elements turn cooperation from a positive force into a negative influence on export performance? What is the relationship between context and cooperation? This latter question needs further attention from Latin American scholars.

5.2. Practical implications

The fact that cooperation renders, in average, a negative effect on export performance in Chile, is a cause of concern. In a previous research, Geldes et al. (2015) reported a negative impact of cooperation on marketing innovation in Chile. Our results as well as findings supported evidence of imperfect cooperation in this context. Such evidence signals an unexplored potential towards cooperation improvement in Chile.

The dynamics of cooperation need to be reassessed in light of our results. Governments in small emerging economies, like Chile, should develop special programs with the intention of strengthening cooperation between firms in an accelerated way, especially in those sectors that government has a stronger desire to expand internationally. Efforts towards the increment of co-location should be addressed with caution. Our results show that even at the highest levels of co-location, cooperation, and competition effects on export performance remained negative. Also, the advantages provided by mere location increasingly disappeared. This suggests that co-location might not be the panacea that some emerging economies are eager to find. Co-location on its own might not be a sufficient strategy to push SMEs towards internationalization, at least in the case of Chile.

Appendix A. Principal component analysis

Factor analysis/ correlation	Number of obs = 51,378
Method: principal-component factors	Retained factors = 2
Rotation: (unrotated)	Number of params = 11

Factor	Eigenvalue	Difference	Proportion	Cumulative
Factor1	2.72973	1.67281	0.455	0.455
Factor2	1.05692	0.37394	0.1762	0.6311
Factor3	0.68298	0.08109	0.1138	0.7449
Factor4	0.60189	0.0748	0.1003	0.8453
Factor5	0.5271	0.12571	0.0878	0.9331
Factor6	0.40139	.	0.0669	1

LR test: independent vs. saturated: chi2(15) = 7,1e + 04 Prob > chi2 = 0,0000

Factor loadings (pattern matrix) and unique variances

Variable 1	Factor 1	Factor 2	Uniqueness
Trade Associati-on	0.7584	− 0.0345	0.4237
Competitors	0.5663	0.5696	0.355
Suppliers	0.5402	0.6432	0.2945
Consulting firms	0.6825	− 0.1199	0.5198
Universities	0.7152	− 0.4453	0.2902
Government Labs	0.7515	− 0.3241	0.3302

Factor analysis/ correlation	Number of obs = 51,378
Method: principal-component factors	Retained factors = 2
Rotation: orthogonal varimax (Kaiser off)	Number of params = 11

Factor	Variance	Difference	Proportion	Cumulative
Factor1	2.2212	0.65575	0.3702	0.3702
Factor2	1.56545	.	0.2609	0.6311

LR test: independent vs. saturated: chi2(15) = 7,1e + 04 Prob > chi2 = 0,0000

Rotated factor loadings (pattern matrix) and unique variances

Variable	Factor 1	Factor 2	Uniqueness
Trade Associati-on	0.6517	0.3894	0.4237
Competitors	0.1584	0.7874	0.355
Suppliers	0.096	0.8344	0.2945
Consulting firms	0.6355	0.2763	0.5198
Universities	0.8422	0.0229	0.2902
Government Labs	0.8056	0.144	0.3302

Factor rotation matrix	Factor 1	Factor 2
Factor1	0.8343	0.5514
Factor 2	− 0.5514	0.8343

Scoring coefficients (method = regression; based on varimax rotated factors)

	Factor 1	Factor 2
Trade Association	0.24975	0.12598
Competitors	− 0.12406	0.56395
Suppliers	− 0.17043	0.61679
Consulting firms	0.27113	0.04325
Universities	0.45086	− 0.207
Government Labs	0.39875	− 0.10403

Appendix B. Marginal effects

Marginal effects of Institutional_Cooperation at increasing levels of agglomeration

Agglomeration	dy/dx	St. error	z	P > z	95% confidence interval	
1	− 0.0061314	0.0008796	− 6.97	0	− 0.0078554	− 0.0044073
2	− 0.0055516	0.0008036	− 6.91	0	− 0.0071267	− 0.0039766
3	− 0.0049854	0.000736	− 6.77	0	− 0.0064279	− 0.0035429
4	− 0.0044827	0.0006815	− 6.58	0	− 0.0058184	− 0.003147
5	− 0.0040134	0.0006349	− 6.32	0	− 0.0052578	− 0.002769
6	− 0.0035922	0.0005961	− 6.03	0	− 0.0047605	− 0.002424
7	− 0.0032083	0.0005624	− 5.71	0	− 0.0043106	− 0.0021061

Marginal effects of Interfirm_Cooperation at increasing levels of agglomeration

Agglomeration	dy/dx	St. error	z	P > z	95% confidence interval	
1	− 0.0142621	0.0016002	− 8.91	0	− 0.0173984	− 0.0111259
2	− 0.0129136	0.0013353	− 9.67	0	− 0.0155308	− 0.0102964
3	− 0.0115965	0.0011006	− 10.54	0	− 0.0137536	− 0.0094394
4	− 0.0104272	0.0009188	− 11.35	0	− 0.0122281	− 0.0086263
5	− 0.0093355	0.0007788	− 11.99	0	− 0.010862	− 0.007809
6	− 0.0083559	0.0006834	− 12.23	0	− 0.0096953	− 0.0070165

7	− 0.0074629	0.0006242	− 11.96	0	− 0.0086864	− 0.0062395

Marginal effects of location at increasing levels of agglomeration

Agglomeration	dy/dx	St. error	z	P > z	95% confidence interval	
1	0.1112825	0.0045884	24.25	0	0.1022894	0.1202756
2	0.1019613	0.0037064	27.51	0	0.094697	0.1092256
3	0.0926027	0.0032431	28.55	0	0.0862464	0.098959
4	0.0840655	0.0032751	25.67	0	0.0776465	0.0904846
5	0.0758902	0.0036355	20.87	0	0.0687648	0.0830156
6	0.0683813	0.0041172	16.61	0	0.0603118	0.0764509
7	0.0613944	0.0045998	13.35	0	0.052379	0.0704099

Marginal effects of competition at increasing levels of agglomeration

Agglomeration	dy/dx	St. error	z	P > z	95% confidence interval	
1	− 0.0132381	0.0024565	− 5.39	0	− 0.0180527	− 0.0084235
2	− 0.0119864	0.002062	− 5.81	0	− 0.0160279	− 0.0079449
3	− 0.0107639	0.001689	− 6.37	0	− 0.0140744	− 0.0074535
4	− 0.0096786	0.0013705	− 7.06	0	− 0.0123648	− 0.0069923
5	− 0.0086652	0.0010861	− 7.98	0	− 0.010794	− 0.0065364
6	− 0.0077559	0.0008435	− 9.19	0	− 0.0094092	− 0.0061026
7	− 0.0069271	0.0006346	− 10.92	0	− 0.0081709	− 0.0056833

References

Akdoğan, A. A., & Cingšz, A. (2012). An empirical study on determining the attitudes of small and medium sized businesses (SMEs) related to competition. *Procedia - Social and Behavioral Sciences, 58*, 252–258.

Alcacer, J., & Chung, W. (2007). Location strategies and knowledge spillovers. *Management Science, 53*(5), 760–776.

Arthur, W. (1990). Silicon Valley locational clusters: When do increasing returns imply monopoly? *Mathematical Social Sciences, 19*(3), 235–251.

Audretsch, D., & Feldman, M. (1996). R&D spillovers and the geography of innovation and production. *The American Economic Review,* 630–640.

Barkley, D. L., & Henry, M. S. (1997). Rural industrial development: To cluster or not to cluster? *Review of Agricultural Economics, 19*(2), 308–325.

Beamish, P., Karavis, L., Goerzen, A., & Lane, C. (1999). The relationship between organizational structure and export performance. *Management International Review, 39*(1), 37–45.

Becchetti, L., & Rossi, S. P. (2000). The positive effect of industrial district on the export performance of Italian firms. *Review of Industrial Organization, 16*(1), 53–68.

Bell, G. (2005). Clusters, networks, and firm innovativeness. *Strategic Management Journal, 26*(3), 287–295.

Bengtsson, M., & Kock, S. (2000). "Coopetition" in business networks—To cooperate and compete simultaneously. *Industrial Marketing Management, 29*(5), 411–426.

Bianchi, C., & Wickramasekera, R. (2016). Antecedents of SME export intensity in a Latin American market. *Journal of Business Research, 69*(10), 4368–4376.

Bianchi, P., & Bellini, N. (1991). Public policies for local networks of innovators. *Research Policy, 20*(5), 487–497.

Boasson, V., Boasson, E., MacPherson, A., & Shin, H. H. (2005). Firm value and geographic competitive advantage: Evidence from the US pharmaceutical industry. *Journal of Business, 78*(6).

Boehe, D. (2013). Collaborate at home to win abroad: How does access to local network resources influence export behavior. *Journal of Small Business Management, 51*(2), 167–182.

Boschma, R. A., & Lambooy, J. G. (1999). Evolutionary economics and economic geography. *Journal of Evolutionary Economics, 9*(4), 411–429.

Brenes, E., Camacho, A. R., Ciravegna, L., & Pichardo, C. A. (2016). Strategy and innovation in emerging economies after the end of the commodity boom—Insights from Latin America. *Journal of Business Research, 69*(10), 4363–4367.

Bunker, W., Owen-Smith, J., & Powell, W. (2009). Networks, propinquity, and innovation in knowledge-intensive industries. *Administrative Science Quarterly, 54*(1), 90–122.

Capar, N., & Kotabe, M. (2003). The relationship between international diversification and performance in service firms. *Journal of International Business Studies, 34*(4), 345–355.

Carneiro, J., & Brenes, E. (2014). Latin American firms competing in the global economy. *Journal of Business Research, 67*(5), 831–836.

Cavusgil, S. T., & Zou, S. (1994). Marketing strategy-performance relationship: An investigation of the empirical link in export market ventures. *The Journal of Marketing,* 1–21.

Cheng, H. (2010). Seeking knowledge or gaining legitimacy? Role of social networks on new practice adoption by OEM suppliers. *Journal of Business Research, 63*(2010), 824–831.

Chung, W., & Kalnis, A. (2001). Agglomeration effects and performance: A test of the Texas lodging industry. *Strategic Management Journal, 22*(10), 969–988.

Ciccone, A., & Hall, R. (1996). *Productivity and the density of economic activity.* National Bureau of Economic Research (No.w4313).

Ciravegna, L., Lopez, L. E., & Kundu, S. K. (2016). The internationalization of Latin American enterprises—Empirical and theoretical perspectives. *Journal of Business Research, 69*(6), 1957–1962.

Elango, B., & Pattnaik, C. (2007). Building capabilities for international operations through networks: A study of Indian firms. *Journal of International Business Studies, 38*, 541–555.

Ellison, G., & Glaeser, E. (1999). The geographic concentration of industry: Does natural advantage explain agglomeration? *The American Economic Review, 89*(2), 311–316.

Ellison, G., Glaeser, E., & Kerr, W. (2010). What causes industry agglomeration? Evidence from coagglomeration patterns. *The American Economic Review, 100*(3), 1195–1213.

Estrada, I., Faems, D., & de Faria, P. (2015). Competition and product innovation performance: The role of internal knowledge sharing mechanisms and formal knowledge protection mechanisms. *Industrial Marketing Management, 53*, 56–65.

Felzensztein, C. (2008). Clusters, social networks and marketing collaboration in small firms: Exploratory evidence from Chile and Scotland. *International Journal of Entrepreneurship and Small Business, 6*(2), 230–244.

Felzensztein, C., Brodt, S., & Gimmon, E. (2014). Do strategic marketing and social capital really matter in regional clusters? Lessons from an emerging economy of Latin America. *Journal of Business Research, 67*(4), 498–507.

Felzensztein, C., Ciravegna, L., Robson, P., & Amorós, J. E. (2015). Networks, entrepreneurial orientation, and internationalization scope: Evidence from Chilean small and medium enterprises. *Journal of Small Business Management, 53*(S1), 145–160.

Felzensztein, C., Gimmon, E., & Carter, S. (2010). Geographical co-location, social networks and inter-firm marketing co-operation: The case of the salmon industry. *Long Range Planning, 43*, 675–690.

Fernhaber, S., Gilbert, B., & Mcdougal, P. (2008). International entrepreneurship and geographic location: An empirical examination of new venture internationalization. *Journal of International Business Studies, 39*(2), 267–290.

Folta, T., Cooper, A., & Baik, Y. (2006). Geographic cluster size and firm performance. *Journal of Business Venturing, 21*(2), 217–242.

Freeman, S., Edwards, R., & Schroder, B. (2006). How smaller born global firms use networks and alliances to overcome constraints to rapid internationalization. *Journal of International Marketing, 14*(3), 33–63.

Fryges, H. (2006). Hidden champions. *How young and small technology-oriented firms can attain high export sales ratios* (pp. 06–045). ZEW Centre for European Economic Research (Discussion Paper).

Gabe, T. (2005). Industry agglomeration and investment in rural business. *Review of Agricultural Economics, 27*(1), 89–103.

Geldes, C., Felzensztein, C., Turkina, E., & Durand, A. (2015). How does proximity affect interfirm marketing cooperation? A study of an agribusiness cluster. *Journal of*

Business Research, 68(2), 263–272.
Guimón, J., Chaminade, C., Maggi, C., & Salazar-Elena, J. C. (2017). Policies to attract R&D-related FDI in small emerging countries: Aligning incentives with local linkages and absorptive capacities in Chile. *Journal of International Management*. ISSN 1075-4253 https://doi.org/10.1016/j.intman.2017.09.005.
Gutiérrez-Martínez, I., Duhamel, F., Luna-Reyes, L., Picazo-Vela, S., & Huerta-Carvajal, M. (2015). The role of joint actions in the performance of IT clusters in Mexico. *Competitiveness Review, 25*(2), 156–178.
Harrison, B. (2007). Industrial districts: Old wine in new bottles? *Regional Studies, 26*(5), 469–483.
Harrison, B., Kelley, M. R., & Gant, J. (1996). Innovative firm behavior and local milieu: Exploring the intersection of agglomeration, firm effects, and technological change. *Economic Geography,* 233–258.
Huemer, G., Boström, O., & Felzensztein, C. (2009). Control–trust interplays and the influence paradox: A comparative study of MNC-subsidiary relationships. *Industrial Marketing Management, 38*(5), 520–528.
Jaffe, A., Trajtenberg, M., & Henderson, R. (1993). Geographic localization of knowledge spillovers as evidenced by patent citations. *Quarterly Journal of Economics, 108*(3), 577–598.
Johanson, J., & Vahlne, J. (1977). The internationalization process of the firm-a model of knowledge development and increasing foreign market commitments. *Journal of International Business Studies, 8*(1), 23–32.
Johanson, J., & Vahlne, J. (2009). The Uppsala internationalization process model revisited: From liability of foreignness to liability of outsidership. *Journal of International Business Studies, 40*(9), 1411–1431.
Kaleka, A. (2012). Studying resource and capability effects on export venture performance. *Journal of World Business, 47*(1), 93–105.
Karagozoglu, N., & Lindell, M. (1998). Internationalization of small and medium-sized technology-based firms: An exploratory study. *Journal of Small Business Management, 36*(1), 44.
Katsikeas, C. S., Leonidou, L. C., & Morgan, N. A. (2000). Firm-level export performance assessment: Review, evaluation, and development. *Journal of the Academy of Marketing Science, 28*(4), 493–511.
Kingsley, A. F., Noordewier, T. G., & Bergh, R. G. V. (2017). Overstating and understating interaction results in international business research. *Journal of World Business, 52*(2), 286–295.
Knight, G., & Kim, D. (2009). International business competence and the contemporary firm. *Journal of International Business Studies, 40*, 255–273.
Krugman, P. (1991). Increasing returns and economic geography. *Journal of Political Economy, 99*(3), 483–499.
Kukalis, S. (2010). Agglomeration economies and firm performance: The case of industry clusters. *Journal of Management, 36*(2), 453–481.
Lages, L., Jap, S., & Griffith, D. (2008). The role of past performance in export ventures: A short term reactive approach. *Journal of International Business Studies, 39*, 304–325.
LaPlaca, P. J. (2014). To compete or not to compete? That is the question. *Industrial Marketing Management, 43*(2), 177–179.
LaPlaca, P. J., & Lindgreen, A. (2016). Letter from the editors. *Industrial Marketing Management, 53*, 1–2.
Li, P. P. (2016). Global implications of the indigenous epistemological system from the east: How to apply Yin-Yang balancing to paradox management. *Cross Cultural & Strategic Management, 23*(1), 42–77.
Little, R. J. (1991). Inference with survey weights. *Journal of Official Statistics, 7*(4), 405–424.
Marshall, A. (1920). *Principles of economics.* London: Macmillan.
Maskell, P., & Malmberg, A. (1999). The competitiveness of firms and regions: Ubiquitification and the importance of localized learning. *European Urban and Regional Studies, 6*(1), 9–25.
Mesquita, L., & Lazzarini, S. (2010). Horizontal and vertical relationships in developing economies: Implications for SMEs' access to global markets. *New frontiers in entrepreneurship* (pp. 31–66). .
Meyer, K. E., & Peng, M. W. (2015). Theoretical foundations of emerging economy business research. *Journal of International Business Studies, 47*(1), 3–22.
Morgan, N. A., Katsikeas, C. S., & Vorhies, D. W. (2012). Export marketing strategy implementation, export marketing capabilities, and export venture performance. *Journal of the Academy of Marketing Science, 40*(2), 271–289.
Morrissey, K. (2014). Producing regional production multipliers for Irish marine sector policy: A location quotient approach. *Ocean and Coastal Management, 91*, 58–64.
Mudambi, R., Mudambi, S. M., Mukherjee, D., & Scalera, V. G. (2017). Global connectivity and the evolution of industrial clusters: From tires to polymers in Northeast Ohio. *Industrial Marketing Management, 61*, 20–29.
Nicholson, J., Gimmon, E., & Felzensztein, C. (2017). Economic geography and business networks: Creating a dialogue between disciplines. *Industrial Marketing Management, 61*, 4–9.
Niosi, J., & Bas, T. (2001). The competencies of regions: Canada's clusters in biotechnology. *Small Business Economics, 17*(1/2), 31–44.
Nowak, M. (2006). Five rules for the evolution of cooperation. *Science, 314*(5805), 1560–1563.
Nowak, M. (2012). Evolving cooperation. *Journal of Theoretical Biology, 299*, 1–8.
Papke, L., & Wooldridge, J. (1996). Econometric methods for fractional response variables with an application to 401(k) plan participation rates. *Journal of Applied Econometrics, 11*, 619–632.
Pino, C., Felzensztein, C., Zwerg-Villegas, A., & Arias-Bolzmann, L. (2016). Non-technological innovations: Market performance of exporting firms in South America. *Journal of Business Research, 69*(10), 4385–4393.
Porter, M. (1990). The competitive advantage of nations. *Harvard Business Review,* 74–91.
Porter, M. (1998). Clusters and the new economics of competition. *Harvard Business Review,* 77–90.
Porter, M. (2000). Location, competition and economic development: Local clusters in a global economy. *Economic Development Quaterly, 14*(1), 15–34.
Portugal-Perez, A., & Wilson, J. S. (2012). Export performance and trade facilitation reform: Hard and soft infrastructure. *World Development, 40*(7), 1295–1307.
Pouder, R., & John, C. H. S. (1996). Hot spots and blind spots: Geographical clusters of firms and innovation. *Academy of Management Review, 21*(4), 1192–1225.
Rabellotti, R. (1999). Recovery of a Mexican cluster: devaluation bonanza or collective efficiency? *World Development, 27*(9), 1571–1585.
Saxenian, A. (1994). *Regional advantage culture and competition in Silicon Valley and route 128.* Boston, MA: Harvard University.
Schmitz, H. (1999). Collective efficiency and increasing returns. *Cambridge Journal of Economics, 23*(4), 465–483.
Schmitz, H., & Nadvi, K. (1999). Innovative clusters: Global or local linkages? *National Institute Economic Review, 170*(1), 87–98.
Shefer, D., & Frenkel, A. (1998). Local milieu and innovations: Some empirical results. *The Annals of Regional Science, 32*(1), 185–200.
Sousa, C. M., Martínez-López, F. J., & Coelho, F. (2008). The determinants of export performance: A review of the research in the literature between 1998 and 2005. *International Journal of Management Reviews, 10*(4), 343–374.
Tallman, S., & Li, J. (1996). Effects of international diversity and product diversity on the performance of multinational firms. *The Academy of Management Journal, 39*(1), 179–196.
Williams, R. (2012). Using the margins command to estimate and interpret adjusted predictions and marginal effects. *Stata Journal, 12*(2), 308.
Zhao, H., & Zou, S. (2002). The impact of industry concentration and firm location on export propensity and intensity: An empirical analysis of Chinese manufacturing firms. *Journal of International Marketing, 10*(1), 52–71.
Zou, S., & Stan, S. (1998). The determinants of export performance: A review of the empirical literature between 1987 and 1997. *International Marketing Review, 15*(5), 333–356.