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# Inward–outward connections and their impact on firm growth

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### ABSTRACT

Firms can internationalize via two types of operations: inward (related to international supply operations) and outward (related to serving or selling in foreign markets). This paper analyzes variations in growth for firms that adopt different international strategies: those that perform only one type of international operation, and those that undertake both types simultaneously. The study starts from the premise that connections exist between inward and outward operations, connections that give access to related and diverse knowledge. Based on a sample of European SMEs from different sectors, the empirical findings indicate that undertaking inward and outward operations simultaneously exerts a greater positive effect on turnover growth than performing just one type of international operation. This simultaneous effect is significantly higher when these operations take place in the same foreign country. The findings provide support for the idea that the acquisition of country-specific knowledge allows firms to boost sales growth.

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## 1. Introduction

Many firms decide to internationalize when in search of a way to improve performance (Lu & Beamish, 2001, 2006; Pangakar, 2008; Zahra, Ireland, & Hitt, 2000; among others). Exposure to international markets allows them to develop capabilities that can feed further growth (Lu & Beamish, 2006; Sapienza, Autio, George, & Zahra, 2006). Specifically, internationalization exposes firms to fresh and diverse ideas; it provides them with a broader learning opportunity and the ability to develop new skills and augment existing capabilities that are not available to purely domestic firms (Hitt, Hoskisson, & Kim, 1997; Kim, Hwang, & Burgers, 1993). A look at the literature, however, reveals that findings on the relation between internationalization and performance are contradictory (Contractor, Kundu, & Hsu, 2003; Hitt, Bierman, Uhlenbruck, & Shimizu, 2006; Qian, Li, Li, & Qian, 2008), and also specifically when it comes to the relation between internationalization and growth (Lu & Beamish, 2006; Reuber & Fischer, 2002; Westhead, Wright, & Ucbasaran, 2001). These inconclusive findings may be because internationalization also brings cost disadvantages that outweigh its potential benefits (Ruigrok & Wagner, 2003). Many of

the difficulties associated with international markets are due to a lack of knowledge (Eriksson, Johanson, Majkgard, & Sharma, 1997, 2000). Firms, though, can mitigate the problems of operating abroad by accumulating this missing knowledge (Liesch & Knight, 1999).

Firms implement their internationalization strategies via two types of operations: outward and inward (Fletcher, 2001; Hätonen, 2009; Welch & Luostarinen, 1993; Welch, Benito, & Petersen, 2007; among others). Previous research has typically concentrated on outward or inward operations individually to examine how firms accumulate knowledge (Blomstermo, Eriksson, Lindstrand, & Sharma, 2004; Bozarth, Handfield, & Das, 1998; Grosse & Fonseca, 2012). Most studies have focused on international strategies based on developing outward operations, which are related to selling products or services in foreign markets through exporting, contractual agreements or foreign direct investment (FDI) in overseas subsidiaries to serve foreign markets. Among the benefits generated by outward operations, entry into foreign markets allows firms to gain knowledge that offers opportunities for growth and improved firm performance (Pangakar, 2008). Firms may also internationalize via inward operations, however. These operations are related to obtaining inputs in foreign markets via importing, contractual collaborations or FDI (Fletcher, 2001; Welch et al., 2007). Although they can open the door to enhanced resources (such as valuable knowledge) that provide a competitive advantage and greater growth (Hessels & Parker, 2013), they were typically seen as being routine and lacking in strategic implications. This led to the

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belief that their advantages were limited to questions of cost (Karlson, Silseth, Benito, & Welch, 2003) and meant that they were usually given less attention in the internationalization literature. Recently, however, researchers have identified strategic reasons for inward operations, such as their potential role in boosting innovation results (Nieto & Rodríguez, 2011) and ultimately firm performance (Chiao, Yu, Li, & Chen, 2008; Hessels & Parker, 2013).

Some research has also analyzed the existence of inward–outward connections and how inward and outward operations are linked, influence each other and promote the sharing of knowledge (Karlson et al., 2003; Korhonen, Luostarinen, & Welch, 1996; Welch & Luostarinen, 1993). A gap in the literature exists, however, as research considering how internationalization strategies featuring simultaneous inward and outward operations affect the internationalization–performance relation is missing. Given this situation, the following research question emerges: Are there different effects on growth when firms undertake both inward and outward activities and when they just undertake one type of operation? Specifically, this study explores whether the combination of inward and outward operations in internationalization strategies may help firms to achieve greater growth than when they perform just one type of international operation. An examination of the organizational learning literature helps us to answer this question. This literature posits that it is crucial for firms to acquire and share knowledge (Levitt & March, 1988), with international firms needing to transfer knowledge due to the demands of globalization (Argote & Miron-Spektor, 2011). Inward and outward operations give access to different types of experiential knowledge from different sources. Undertaking both operations simultaneously, then, may allow firms to increase the diversity, relatedness and complementarity of their experiential knowledge. And access to this knowledge has been related to an increase of the absorptive capacity of the firm (Eriksson & Chetty, 2003; Kostopoulos, Papalexandris, Papachroni, & Ioannou, 2011; Yao, Yang, Fisher, Ma, & Fang, 2013), which ultimately affects firm performance (George, Zahra, Wheatley, & Khan, 2001; Tsai, 2001).

This work sets out to contribute to the literature in different ways. First, the paper adds to the inward–outward connections literature by analyzing the impact of performing simultaneous operations on firm growth (previous research focuses on internationalization patterns or the effect of one type of operation on the intensity of the other). The work extends studies that highlight the importance of considering complementarities that may arise between different international activities and goes beyond the individual advantages of accumulating knowledge that one or other operation can offer individually. In this way, the paper extends the typical analysis of the impact of outward operations on performance (Brouthers, Nakos, Hadjimarcou, & Brouthers, 2009; Hitt et al., 1997; Pangakar, 2008; Qian et al., 2008; Zahra et al., 2000; among others). In particular, it advances our understanding of the synergies and complementarities that could derive from undertaking inward and outward operations simultaneously (Bertrand, 2011), insofar as they could positively affect firm performance (Cassiman & Golovko, 2011). Moreover, it feeds into the organizational learning literature by considering the benefits derived from accumulating knowledge from different domains, which increases the potential paths for seeking and combining knowledge (Taylor & Greeve, 2006). In fact, we draw on the notions of absorptive capacity (Cohen & Levinthal, 1990) to build a theoretical argument on why undertaking inward and outward operations simultaneously is important for increased growth. Organizational learning scholars in the international arena have explained the effect of accumulating and transferring knowledge on performance by considering aspects such as the geographic scope and the pace or rhythm of the firm's international activity (Barkema & Drogendijk, 2007; Vermeulen & Barkema, 2002). Less

research, however, has explored this relation by analyzing the acquisition of knowledge from international markets through operations on the supply and/or demand side. By tapping into the concepts of relatedness, diversity and complementarity of the knowledge acquired, this paper covers this gap to extend our understanding of how the growth rate of firms may differ depending on the types of operations undertaken in their international strategies. The analysis is conducted on a large sample of European SMEs. This sample is especially suitable for examining this relation as knowledge is fundamental for the growth of these firms (Mejri & Umemoto, 2010) and growth is in itself a fundamental objective (Golovko & Valentini, 2011; Lu & Beamish, 2006). Furthermore, the richness of the available data may make it possible to generalize the results to different national and sectoral contexts. This is particularly important given that many of the studies examining inward–outward connections are conceptual or based on case studies (Holmlund, Kock, & Vanyushyn, 2007). A clear need, then, exists to widen the literature via studies based on large samples that permit generalizable results (Fletcher, 2001). Likewise, the examination of a variety of inward operations (i.e., imports, contractual collaborations, and FDI to acquire inputs) and outward operations (i.e., exports, contractual collaborations and FDI to serve foreign markets) allows this paper to go beyond other studies that focus solely on importing and exporting (Holmlund et al., 2007; Korhonen et al., 1996).

The paper is structured in the following way. The next section considers the theoretical aspects of knowledge in the internationalization process, along with the relation between internationalization and firm performance. The following sections then go on to formulate the research hypotheses and describe the methodology used. The final sections of the work analyze and discuss the results and their implications, closing with some limitations and lines for future research.

## 2. Literature review and hypotheses

### 2.1. Knowledge accumulation through international operations

Most of the literature indicates that the ability to create and replicate new knowledge via expanding markets has an impact on firm growth (Kogut & Zander, 1993). Not all types of knowledge, however, share the same potential for generating a competitive advantage. Researchers distinguish between objective and experiential knowledge (Penrose, 1959), with the latter being more complex to transfer both within firms and between them because it is tacit and acquired by experience (Grant, 1996). As Johanson and Vahlne (2006) posit, experiential knowledge is what provides the framework for perceiving and formulating opportunities.

Firms can tap into different types of experiential knowledge. Firms accumulate experiential knowledge of internationalization by being active in foreign markets. This experiential knowledge is considered to be more important than objective knowledge for international strategies (Blomstermo et al., 2004; Eriksson et al., 1997; Johanson & Vahlne, 1977). Some research divides this international experiential knowledge between: (i) *internationalization knowledge* – referring to general knowledge of how firms develop and execute their internationalization strategies; identify and evaluate opportunities; screen country markets, etc.; and (ii) *market knowledge* – including both specific knowledge of clients and competitors in the foreign market (*business knowledge*), as well as how institutions operate in the foreign market (*institutional knowledge*) (Eriksson et al., 1997). Another type of experiential knowledge that is relevant for international activities is *technological knowledge* – referring to the knowledge required to produce goods and services (Bohn, 1994; Nordman & Melén, 2008). Firms

can accumulate this knowledge internationally thanks to contact with new technology trends and innovation systems in foreign markets (Zahra et al., 2000).

The traditional approach has been to analyze how the two operations provide access to different types of knowledge. In line with this, works examining outward operations tend to focus on how firms exploit them to obtain internationalization and market knowledge (Brouthers et al., 2009; Erramilli & Rao, 1993; Pan & Tse, 2000). Similarly, works examining inward operations typically focus on how these operations supply potential improvements in quality, flexibility, or technology (Di Gregorio, Musteen, & Thomas, 2009; Kotabe & Murray, 2004; Quintens, Pauwels, & Matthysens, 2006). Outward operations, however, also give access to indirect experience on the supply-side, as in this case knowledge is acquired by observing the experience of others (Fletcher & Harris, 2012; Huber, 1991). Something similar – but in the opposite direction – occurs with inward operations, which are more related with access to technological knowledge (Naldi & Zahra, 2007) and which accumulate indirect experience on the demand-side. Each type of operation, then, provides access to internationalization, market and technological knowledge that is relevant for both, though they are not acquired equally by one or other operation. Outward operations have a higher impact on the acquisition of internationalization and market knowledge than on the acquisition of technological knowledge. Thus, the international strategy followed by the firm (i.e., outward or inward operations) may determine the knowledge acquired and its impact on firm performance.

This process of knowledge acquisition and its impact on firm performance may be described from an organizational learning perspective. The literature in this field has established that firms need to adapt their systems, processes and organizational structures during the internationalization process. But the absorptive capacity of firms may limit their capacity to adapt (Vermeulen & Barkema, 2002). Several studies analyze how firms may develop their absorptive capacity to create and sustain a competitive advantage (Zahra & George, 2002). A number of studies argue that boosting knowledge stocks via knowledge inflows contributes to the development of absorptive capacity (Al-Laham, Tzabbar, & Amburgey, 2011; Erden, Klang, Sydler, & von Krogh, 2014). On the one hand, knowledge stocks should be varied, as knowledge diversity (defined as the width or variety of knowledge accumulated) has also been linked with increased absorptive capacity (Eriksson & Chetty, 2003). And on the other, firms seeking to recognize and assimilate the value of fresh information need it to be related with prior knowledge (Cohen & Levinthal, 1990). Therefore, firms also need to accumulate related knowledge to develop absorptive capacity (Casillas, Moreno, Acedo, Gallego, & Ramos, 2009). The combination of related and non-overlapping diverse knowledge generates knowledge complementarity, which in turn increases the opportunities for learning (Lofstrom, 2000) and enhances the development of effective knowledge absorption (Yao et al., 2013). And increased absorptive capacity is what makes firms better able to recognize opportunities, detect trends and find solutions to potential problems – and ultimately achieve improved results (George et al., 2001; Kostopoulos et al., 2011; Yao et al., 2013; Zahra & George, 2002).

Then, we take into account this framework to explain that depending on the kind of international operation/s undertaken, firms may vary their access to knowledge, what would affect performance. Specifically, we consider differences in growth between firms that undertake one type of operation or both simultaneously. Firms opting for the latter option may benefit not only from the individual benefits that each operation brings individually, but also from the inter-connections between inward

and outward operations in terms of accessing and sharing diverse, related and complementary knowledge (Bertrand, 2011; Di Gregorio et al., 2009; Grosse & Fonseca, 2012; Hätonen, 2009; Karlsen et al., 2003). In the following sections we analyze the impact of undertaking inward and outward operations simultaneously on firm growth.

## 2.2. Inward–outward connections and firm growth

Generating a competitive advantage depends on the ability of firms to create and transfer knowledge (Kogut & Zander, 1992). Moreover, firms must consider the impact of demand-side factors (i.e., how far its productive activities answer a market need) and supply-side factors (i.e., how it serves the market needs and if it does so more effectively and efficiently than other firms) in the creation and maintenance of an advantage (Grant, 1996). Studies of inward and outward connections posit that inward operations not only open the door to technological knowledge derived from working with foreign suppliers and their networks abroad on the supply-side (thereby generating cost reductions, higher flexibility or location-specific benefits) (Bertrand, 2011; Di Gregorio et al., 2009), but that they may also give access to internationalization knowledge in an indirect way. These operations involve making contacts, learning new commercial and negotiating techniques in foreign market conditions, and drawing up procedures for foreign operation modes that can be integrated into outward operations (Hätönen, 2009; Karlsen et al., 2003; Korhonen et al., 1996; Welch & Luostarinen, 1993). Specifically, inward operations permit firms to know what knowledge is required to operate in different environments. Firms, therefore, can take advantage of the technological and internationalization knowledge obtained via inward operations when they undertake outward operations.

Most studies of inward–outward connections focus on how the knowledge obtained from inward operations can be used to perform outward operations. It is important to note, however, that the connections can operate in the opposite direction (Karlsen et al., 2003). In fact, the connections take place during the whole internationalization process – and as this process advances, the direction of the influence becomes more difficult to identify (Welch & Luostarinen, 1993). It is, then, reasonable to think that outward operations exert a positive effect on inward operations, as the former also supply internationalization and technological knowledge that is useful to perform the latter. Specifically, outward operations give access to technological knowledge in an indirect way. For example, they can provide information on the technologies of other firms (Bengtsson, 2004), as well as help find solutions to customer problems and needs (Shane, 2000). With these outward operations, firms may become involved with established networks of manufacturers and other technology providers abroad (Zahra et al., 2000). This allows firms to gain knowledge about inputs that are not available (or at least not at the same price or quality) in their local markets.

When firms undertake the two international operations simultaneously, then, they may develop connections and complementarities that generate different benefits. Firms, for instance, may improve their absorptive capacity thanks to the greater level of diversity, relatedness and complementarity in the knowledge accumulated. And these are all aspects that allow firms to recognize opportunities, detect trends, and find solutions to potential problems and ultimately achieve improved results (George et al., 2001; Kostopoulos et al., 2011; Yao et al., 2013; Zahra & George, 2002). Specifically, the connections generated allow firms to perform inward operations more efficiently and obtain cheaper and/or higher quality inputs, along with new product and process technologies. Similarly, firms will be in a better position to recognize opportunities when they consider technological knowledge in



conjunction with knowledge of how best to serve international markets. This will also allow them to undertake outward operations by selling higher quality products and services in the different markets in which they operate. In other words, complementarities and doubled-up benefits may exist that allow these firms to gain a greater boost to performance than those that engage in only one operation (inward or outward). The following hypothesis captures this idea:

**Hypothesis 1.** Undertaking inward and outward operations simultaneously allows firms to achieve greater growth than undertaking only one type of international operation.

### 2.3. Inward and outward operations in the same foreign country

As mentioned above, inward–outward connections may boost access to general (i.e., not country specific) internationalization and technological knowledge. In addition to the connections derived from the transfer of knowledge in general terms, however, some studies include the transfer of specific knowledge. In fact, performing inward and outward operations in the same market makes it possible for firms to gain access to: (i) knowledge of market institutions, which may lead them to select specific outward operations (Grosse & Fonseca, 2012); or (ii) local technical advantages of suppliers and reduced costs for tailored inputs or customization (Bertrand, 2011). In a similar way, outward operations in a particular market may also exert a positive effect on the performance of inward operations in the same market, as market knowledge makes it easier to determine the market value of technological breakthroughs and changes (Wiklund & Shepherd, 2003).

The benefits derived from these connections, though, may go beyond the boundaries of the local market in which firms undertake inward and outward operations simultaneously. As previously explained, firms need to generate complementary knowledge that helps develop their absorptive capacity – and combining relatedness and diversity in the knowledge is crucial to achieve this goal. When firms undertake inward and outward operations in the same country, they maintain the levels of diversity in the knowledge acquired, but increase its relatedness as it is specific to the market and the technology in it. Consequently, the complementarity of the knowledge may increase. Specifically, when firms complement market with technological knowledge, they generate combinations of knowledge that make it possible to apply and commercialize technical solutions (Lichtenthaler, 2009). Moreover, combining technological with market knowledge may bring better performance than when the two types of knowledge are separated (Song, Droge, Hanvanich, & Calantone, 2005). Therefore, firms that obtain technological and market knowledge from a specific market will enjoy more gains in complementary knowledge, as this is a scenario in which firms can create more value and improve overall performance. The inter-connections and complementarities that arise provide an extra boost to the absorptive capacity of firms compared to cases that are limited to general knowledge (Eriksson et al., 1997, 2000). More exactly, when firms undertake the two operations in the same country, the accumulated knowledge they generate is more comprehensive than when the two types of operations are undertaken in different countries. This may help them to increase sales in that particular market, but also to transfer the learning within the organization to other markets, enhancing the overall growth of sales for the whole firm (Pangakar, 2008).

In summary, firms that undertake both operations simultaneously in the same foreign country will accumulate general knowledge of the internationalization process and technologies. Furthermore, these firms may also obtain specific knowledge

about a particular market and the technology present in it. Thus, undertaking inward and outward operations in the same foreign country allows firms to gain access to diverse and related specific knowledge that also encourages knowledge complementarity. The connections that emerge allow firms to reinforce the virtuous circle created via knowledge transfers between inward and outward operations, compared with cases in which there is no coincidence of country. Overall, firms gain access to diverse knowledge – technological, internationalization and market – that is both general and specific. These factors, then, will increase the likelihood of developing absorptive capacity and thereby improve levels of competitiveness and growth. These arguments lead to the following hypothesis:

**Hypothesis 2.** Undertaking inward and outward operations simultaneously in the same foreign country allows firms to achieve greater growth than undertaking both types of international operation simultaneously but not in the same foreign country.

## 3. Empirical analysis

### 3.1. Sample

The empirical analysis uses the “*Internationalisation of European SMEs, European Commission, DG Enterprise and Industry, 2010*” database. The database is based on a survey of the internationalization of European SMEs from 33 countries with between one and 249 employees. The goal of this survey is to contribute to a better understanding of the level and structure of internationalization of these firms. The survey was designed by EIM Business & Policy Research. The fieldwork was undertaken between January and April 2009 by the Global Data Collection Company in Rotterdam (Holland) via telephone interviews with staff in management positions. The questionnaire was designed in English and then translated into 26 other languages to allow the interviews in the different countries to be conducted in the participants’ native languages. A stratified random sample based on the whole group of European SMEs was performed. The stratification plan was developed along three dimensions: size (in three size categories); industry sector (26 sectors); and country (33 countries). The interview was completed by 19% of the firms contacted, producing a final sample of 9480 respondents. To achieve the objective of this paper, the final sample was limited to those firms that were operating since at least 2006, leaving a total of 8226 observations available to the study.

Information is available for the characteristics of the firms in the sample (size, activity, country of origin, ownership structure, etc.) and their strategic behavior, particularly regarding specific issues of international strategy (modes of internationalization, timing and sequence of modes, internationalization barriers, etc.). As is shown in Table 1, almost 60% of the firms perform internationalization operations, although only 36% perform both inward and outward operations simultaneously. In this study, different inward and outward operations are identified. The study was performed in spring 2009, capturing cross-sectional data from 2008.

### 3.2. Variables

#### 3.2.1. Dependent variable

Growth is the dependent variable and is measured via the sales turnover growth of the firm between 2007 and 2008. Sales growth is a common measure of performance in the literature (Chandler & Lyon, 2009; Singh & Mitchell, 2005; Zahavi & Lavie, 2013; among many others). Chandler and Hanks (1993) posit that it is one of the

**Table 1**  
Descriptive analysis.

Variable	Obs	Mean	Std. dev.	Min	Max
Turnover gr	7275	3.21	1.10	1	5
Onlyinw	7275	0.13	0.34	0	1
Onlyoutw	7275	0.11	0.31	0	1
Inwoutw	7275	0.36	0.48	0	1
Coinc	7275	0.22	0.41	0	1
Size	7275	2.87	1.42	0	6.48
Inter experience	7275	1.56	1.43	0	5.35
Innov	7275	0.46	0.50	0	1
Public	7275	0.13	0.33	0	1
Private	7275	0.60	0.49	0	1
Other	7275	0.28	0.45	0	1
Manufact	7275	0.25	0.43	0	1
Constr	7275	0.09	0.28	0	1
Trade	7275	0.23	0.42	0	1
Transport	7275	0.05	0.21	0	1
Bus. serv.	7275	0.24	0.43	0	1
Pers. serv.	7275	0.14	0.34	0	1

most relevant performance dimensions. Sales growth, for example, provides opportunities for achieving economies of scale and learning curve effects; additional market power; and spreading fixed costs over more revenue – all factors that can contribute to improved firm performance (Brush, Bromiley, & Hendrickx, 2000). In fact, some studies contend that if only one indicator is to be selected as a measure of firm growth, the preferred choice is sales (Delmar, Davidsson, & Gartner, 2003). Moreover, sales growth is a suitable proxy for performance in the context of SMEs. Growth is a fundamental objective for these firms (Golovko & Valentini, 2011; Lu & Beamish, 2006) and is closely linked to their success and survival (Phillips & Kirchoff, 1989), as well as being considered a critical precondition for their longevity (Storey, 1994). In this way, the study attempts to reflect the strategic component of firms' results (Murray, Kotabe, & Wildt, 1995; Reuber & Fischer, 2002; Zahra et al., 2000; Zhou, Wu, & Luo, 2007). The variable is defined in categories, depending on percentage increases or decreases. The use of categorical variables to measure firm growth is common in the literature (Hessels & Parker, 2013; Nguyen Van, Laisney, & Kaiser, 2004; among others). This study identifies five categories. The first category takes value 1 and includes firms whose sales turnover decreased by more than 20% in 2008 (year-on-year comparison with 2007); the second takes value 2 and includes firms whose turnover fell between 20% and 5%; the third takes value 3 and includes firms whose turnover remained more or less stable (i.e., fluctuations of up to a maximum of 5% in either direction); the fourth takes value 4 and includes firms whose turnover increased between 5% and 20%; and lastly, the fifth takes value 5 and includes firms whose turnover increased by more than 20%.

### 3.2.2. Independent variables

To test hypothesis 1, independent variables are included to identify the different options available to the firm when implementing its international strategy. Among inward activities, the study identifies if the firm has undertaken operations such as imports, contractual collaborations via outsourcing, or FDI to acquire inputs. Among outward activities, the study identifies if the firm has undertaken operations such as exports, contractual collaborations via licenses and subcontracting agreements, or FDI related to selling via sales offices or local production. All these operations are defined for the interval 2006–2008. In order to eliminate contemporaneous effects, observations in which the firm begins to internationalize in 2008 or goes from performing just one type of operation to both types simultaneously in 2008 have been excluded. Based on whether firms undertake one, two, or no types

of operation, the paper examines the following variables: *Only outward operations (Onlyoutw)* is a dichotomous variable that takes value 1 if the firm was only engaged in outward international operations (it takes value 1 when this is the case; otherwise it takes value 0). *Only inward operations (Onlyinw)* is a dichotomous variable that takes value 1 if the firm was only engaged in inward international operations (it takes value 1 when this is the case; otherwise it takes value 0). *Inward and outward operations (Inwoutw)* is a dichotomous variable that indicates if the firm undertook inward and outward operations simultaneously (it takes value 1 when this is the case; otherwise it takes value 0). *No international operations (Nointer)* is a dichotomous variable that indicates if the firm undertook no outward or inward operations. It takes value 1 when the firm is domestic; otherwise it takes value 0. To avoid problems of multicollinearity, this variable is designated as the baseline category.

To test hypothesis 2, an additional variable is required: *Coincidence of inward and outward operations in the same country (Coinc)*. This variable captures if the firm performed inward and outward operations simultaneously in the same foreign country in at least one country where it undertook international operations. It takes value 1 when this is the case; otherwise it takes value 0.

### 3.2.3. Control variables

To account for different factors that may have an impact on firm growth, the study includes control variables to capture the firm's specific characteristics, its sector and country of origin, as identified by previous studies (He & Wong, 2004; Hessels & Parker, 2013; Kyläheiko, Jantunen, Puumalainen, Saarenketo, & Tuppurä, 2011; Lu & Beamish, 2006; Naldi & Davidsson, 2013; Zahra & Hayton, 2008).

First, variables related to firm characteristics are considered. Specifically, *Size* (measured by the logarithm of the total number of employees in 2007) is included. *Size* is a commonly used control variable in research – to analyze both firm performance and the results of internationalization strategies – because it is viewed as a proxy for the firm's resource endowment (Di Gregorio et al., 2009; Fernández & Nieto, 2006; Hessels & Parker, 2013; Jonsson & Lindbergh, 2010). Similarly, the impact of the firm's experience in international markets is captured via the logarithm of the number of years the firm declares it has performed international operations of any type (*Inter experience*). This variable measures the effect of the resource endowments and skills obtained in international contexts (Kundu & Katz, 2003). In order to control for the firm's level of technological assets, the study incorporates an innovation related proxy, in accordance with previous studies of firm growth (Hitt et al., 1997; Qian, 2002; Robson & Benett, 2000). This variable (*Innov*) takes value 1 if the firm achieved product or process innovations; otherwise it takes value 0. The study also controls for the legal form and ownership structure of the firm. The analysis explicitly determines whether the firm is a public limited enterprise (*Public*); a private limited enterprise (*Private*); or a partnership or sole proprietorship (*Other*, which is the base category). Studies analyzing firm growth commonly include variables related to firm liquidity (Zahra & Hayton, 2008) or the financial and organizational capital of the firm (Stam & Wennberg, 2009). Different ownership structures have specific characteristics such as those related to the possibility of obtaining managerial, intangible and financial resources (Fama & Jensen, 1985). These differences may ultimately affect firm performance (Thomsen & Pedersen, 2000).

Firm growth may also be influenced by sectoral-specific factors (He & Wong, 2004; Hessels & Parker, 2013; Kyläheiko et al., 2011; among others). Although manufacturing and service industries present differences on how they use and accumulate knowledge, especially technological knowledge, both kinds of industries are

included. Technological knowledge is often related to manufacturing industries. This knowledge, however, is also related to design or other technical procedures for the deployment of products and processes in service sectors. This is the case, for example, for the technological knowledge derived from information technologies. To capture the effect of the variation among industrial sectors, binary variables are included. Six sectors are identified in this paper: *Manufacture*; *Construction*; *Trade*; *Transport and communications*; *Business services*; and *Personal services*. To avoid problems of multicollinearity, *Manufacture* is designated as the reference category in the econometric analyses. The inclusion of sectoral dummies is common in the literature on firm performance (Chiao et al., 2008; Hessels & Parker, 2013; Hitt et al., 1997; Qian, 2002).

Lastly, at country level categorical variables are used to indicate the country of origin of the firm. This control variable is common in studies with firms from different countries in the sample (He & Wong, 2004; Hessels & Parker, 2013). These country dummies control for potential country-related biases. As was the case at the sectoral level, to avoid problems of multicollinearity, this study includes 32 dichotomous variables corresponding to 32 of the 33 countries represented in the sample.

### 3.3. Analytical approach

Tables 1 and 2 respectively display the descriptive statistics and correlation matrix (with the exception of the dummy variables for country). To identify potential problems of multicollinearity, a variance inflation factor (VIF) analysis of the variable was performed in the different models. As the individual VIF values are lower than ten and the mean value is lower than six, problems of multicollinearity do not exist (Neter, Wasserman, & Kutner, 1989).

The study uses an ordinal probit model for the estimation of both hypotheses. This model is appropriate when the dependent variable is sorted in categories, as shown by other studies (Steffens, Davidsson, & Fitzsimmons, 2009). The general specification of models (a) and (b) to test hypotheses 1 and 2, respectively are:

$$(a) \text{ Growth}_i = \beta_0 + \beta_1 \text{Onlyinw} + \beta_2 \text{Onlyoutw} + \beta_3 \text{Inwoutw} + \beta_i X_i + \epsilon_i$$

$$(b) \text{ Growth}_i = \beta_0 + \beta_1 \text{Onlyinw} + \beta_2 \text{Onlyoutw} + \beta_3 \text{Inwoutw} + \beta_4 \text{Coinc} + \beta_i X_i + \epsilon_i$$

where  $\beta_i$  represents the coefficients of the independent and control variables,  $X_i$  is the vector of control variables, and  $\epsilon_i$  is the terminal error in each equation.

## 4. Results

Table 3 displays the results of the different models used to test the research hypotheses. Model 1 includes the control variables only, while models 2 and 3 include the different explanatory variables required to test the hypotheses. Model 2 includes the control variables together with the variables *Onlyinw*, *Onlyoutw* and *Inwoutw*; in this model the category reference is the variable identifying domestic firms. Model 3 includes the variables *Inwoutw* and *Coinc*. In this way, the study compares the impact of performing both inward and outward operations simultaneously in the same foreign country with the rest of the possible options.

The results of model 2 show that engaging in international operations – regardless of whether only one type of operation is performed or both types are performed simultaneously – is positively related to turnover growth. The coefficient for *Inwoutw* is greater than those for *Onlyinw* and *Onlyoutw*. Wald tests were conducted, however, to test the significance of the difference between *Inwoutw* and the other two coefficient estimates and to check for the increased impact. The results of these tests on model 2 indicate that it is possible to rule out the null hypothesis of equality. Therefore, undertaking inward and outward operations simultaneously provides a significant boost to turnover growth beyond that produced by performing just one type of international operation, inward or outward. This result provides support for hypothesis 1. To confirm this result, however, it is necessary to observe the comparison tests on model 3. These tests also show the differences for firms performing inward and outward operations simultaneously in different countries or in the same foreign country. In model 3, then, the comparison tests are only significant for the latter case. This means that in the Wald tests for model 2 the differential effect of performing both operations in the same country takes precedence over cases in which no coincidence of country exists. Thus, inward–outward operations performed in different countries do not provide a significant boost to turnover beyond that produced by undertaking just one type. Additionally, the coefficient for the variable *Coinc* in model 3 shows a positive and significant effect ( $p < 0.01$ ). In other words, performing inward

**Table 2**  
Correlation matrix.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1 Turnover gr	1																
2 Onlyinw	0.001	1															
3 Onlyoutw	0.021	-0.136**	1														
4 Inwoutw	0.06**	-0.291**	-0.26**	1													
5 Coinc	0.06**	-0.205**	-0.18**	0.704**	1												
6 Size	0.05**	-0.04**	0.016	0.212**	0.157**	1											
7 Inter experience	0.031**	0.26**	0.121**	0.651**	0.453**	0.228**	1										
8 Innov	0.085**	-0.008	0.04**	0.222**	0.167**	0.169**	0.216**	1									
9 Public	-0.005	-0.031**	-0.001	0.038**	0.042**	0.148**	0.052**	0.032**	1								
10 Private	0.013	0.016	0.003	0.039**	0.036**	0.034**	0.05**	0.011	-0.47**	1							
11 Other	-0.011	0.005	-0.003	-0.07**	-0.07**	-0.15**	-0.1**	-0.036**	-0.236**	-0.75**	1						
12 Manufact	-0.012	-0.054**	0.048**	0.229**	0.16**	0.147**	0.22**	0.107**	0.0158	0.032**	-0.05**	1					
13 Constr	0.00	-0.014	-0.02**	-0.101**	-0.057**	-0.04**	-0.13**	-0.09**	-0.031**	-0.014	0.038**	-0.180**	1				
14 Trade	-0.03**	0.191**	-0.08**	0.02	-0.036**	-0.03**	0.12**	-0.031**	-0.026**	-0.023**	0.045**	-0.322**	-0.172**	1			
15 Transport	0.001	-0.017	0.015	0.024**	0.07**	0.01	0.023	-0.052**	0.011	0.016	-0.025**	-0.130**	-0.069**	-0.124**	1		
16 Bus. serv.	0.019	-0.09**	0.06**	-0.092**	-0.04**	-0.13**	-0.14**	0.03**	0.022	0.02	-0.039**	-0.326**	-0.174**	-0.311**	-0.126**	1	
17 Pers. serv.	0.02	-0.033**	-0.022	-0.13**	-0.098**	0.037**	-0.16**	-0.03**	0.003	-0.035**	0.036**	-0.232**	-0.124**	-0.222**	-0.09**	-0.225**	1

\*  $p < 0.05$ .

\*\*  $p < 0.01$ .



**Table 3**  
Inward and outward operations and turnover growth.

	(1)	(2)	(3)
<i>Onlyinw</i>		0.441 <sup>***</sup> (6.55)	0.438 <sup>***</sup> (6.50)
<i>Onlyoutw</i>		0.418 <sup>***</sup> (6.77)	0.416 <sup>***</sup> (6.74)
<i>Inwoutw</i>		0.516 <sup>***</sup> (7.68)	0.455 <sup>***</sup> (6.29)
<i>Coinc</i>			0.0987 <sup>**</sup> (2.30)
<i>Size</i>	0.0293 <sup>***</sup> (3.12)	0.0314 <sup>***</sup> (3.32)	0.0310 <sup>***</sup> (3.28)
<i>Inter experience</i>	0.00548 (0.56)	-0.142 <sup>***</sup> (-6.66)	-0.141 <sup>***</sup> (-6.60)
<i>Innov</i>	0.196 <sup>***</sup> (7.43)	0.171 <sup>***</sup> (6.43)	0.170 <sup>***</sup> (6.39)
<i>Public</i>	0.0823 <sup>*</sup> (1.68)	0.0920 <sup>*</sup> (1.87)	0.0917 <sup>*</sup> (1.86)
<i>Private</i>	0.0725 <sup>**</sup> (2.21)	0.0649 <sup>**</sup> (1.98)	0.0646 <sup>**</sup> (1.97)
<i>Constr</i>	0.0972 <sup>*</sup> (1.95)	0.113 <sup>**</sup> (2.26)	0.112 <sup>**</sup> (2.23)
<i>Trade</i>	-0.00262 (-0.07)	0.0138 (0.38)	0.0178 (0.49)
<i>Transport</i>	0.0750 (1.21)	0.0811 (1.31)	0.0719 (1.16)
<i>Bus. serv</i>	0.0976 <sup>***</sup> (2.66)	0.107 <sup>***</sup> (2.91)	0.106 <sup>***</sup> (2.89)
<i>Pers. serv</i>	0.127 <sup>***</sup> (2.98)	0.151 <sup>***</sup> (3.52)	0.152 <sup>***</sup> (3.55)
Country dummies	Included	Included	Included
Cut1 cons	-1.487 <sup>***</sup> (-15.76)	-1.461 <sup>***</sup> (-15.47)	-1.455 <sup>***</sup> (-15.39)
Cut2 cons	-0.624 <sup>***</sup> (-6.72)	-0.597 <sup>***</sup> (-6.42)	-0.591 <sup>***</sup> (-6.35)
Cut3 cons	0.124 (1.34)	0.154 (1.66)	0.161 (1.73)
Cut4 cons	1.344 <sup>***</sup> (14.32)	1.382 <sup>***</sup> (14.69)	1.389 <sup>***</sup> (14.76)
<i>N</i>	7275	7275	7275
$\chi^2$	521.1	582.7	588.0
Degrees of freedom	42	45	46
Log likelihood	-10402.8	-10372.0	-10369.4
Comparison tests	$\beta^{inwoutw} > \beta^{onlyinw}$ $\beta^{inwoutw} > \beta^{onlyoutw}$ $\beta^{inwoutw} + \beta^{coinc} > \beta^{onlyinw}$ $\beta^{inwoutw} + \beta^{coinc} > \beta^{onlyoutw}$	$\chi^2(1) = 3.2^*$ $\chi^2(1) = 4.51^{**}$	$\chi^2(1) = 0.11$ $\chi^2(1) = 0.52$ $\chi^2(1) = 6.43^{**}$ $\chi^2(1) = 7.76^{***}$

t statistics in parentheses.

\*  $p < 0.10$ .  
\*\*  $p < 0.05$ .  
\*\*\*  $p < 0.01$ .

and outward operations in the same foreign country has a positive and incremental effect, thus providing support for hypothesis 2. Therefore, firms that undertake both operations in the same foreign country perform significantly better than those that perform the two operations but not in the same foreign country.

To complement the analyses performed with the dummy variables, robustness checks with continuous measures were performed. As our database only provides continuous measures for imports and exports, the model was tested with this information via a selection of variables: (i) a variable that measures imports as a percentage of total costs of purchasing, or exports as a percentage of total turnover; (ii) a variable that captures a weighted average of the previous percentages (when the firm undertakes both operations simultaneously); and (iii) two variables that differentiate between when the firm undertakes both operations simultaneously in the same foreign country or when no coincidence of country exists. The findings confirm the empirical evidence

presented in the models. In these robustness checks, however, the comparison tests show that undertaking imports and exports simultaneously is not significantly better than undertaking only one type of operation. This finding may be because import and export operations imply lower levels of general and specific knowledge than other international operations. Indeed, when the distinction between undertaking both operations in the same country or in different countries is included, only the first coefficient is significant.

Of the coefficients for the control variables, *Size* exerts a positive and significant effect on turnover growth. Debate, however, persists over the pros and cons of smallness (Steffens et al., 2009). On this issue, these results are consistent with studies indicating that despite SMEs' advantages in terms of flexibility, they may suffer from limited resource endowments that reduce their prospects for growth. Other studies such as Hessels and Parker (2013) also find that size has a positive effect on turnover growth. For its part, the coefficient for *Inter experience* is negative and significant. This result contradicts those of other studies which find that this variable has a positive effect on performance (Zahra et al., 2000). It is not possible, however, to interpret this finding as evidence that firms with greater international experience suffer from inertia that limits their growth potential. Studies that obtain similar results to this one posit that some firms with many years of international experience may only be operating on a small scale, while others with less experience may be operating on a larger scale (Brouthers & Nakos, 2005). *Innov* also merits attention as it is positive and significant. This is in line with research that points to innovation as a means of developing better products/services or reducing costs and thereby increasing sales (Freel, 2000). Lastly, of the two variables related to ownership structure, *Public* and *Private* are positive and significant. The reasons for this result may lie in the fact that private limited enterprises are halfway along the road to public limited enterprises, partnerships and sole proprietors. Thus, private limited enterprises may enjoy better growth prospects, because they have easier access to capital compared to partnerships or enterprises with sole proprietors (Majumdar, Vora, & Nag, 2012).

Regarding sectoral variables, the study finds a positive and significant relation with turnover growth for the following categories (compared to the baseline category of *Manufacture*): *Construction*; *Business services*; and *Personal services*. Additionally, although the coefficients for the origin country dummies are not shown, it is possible to identify those countries in which significant differences exist with *Austria* (the baseline category). *Romania* is the only country that presents a positive and significant coefficient, possibly because it entered the EU in 2007 – just within the period under analysis. On the opposite side of the coin are seven eastern European countries (*Czech Republic*, *Estonia*, *Hungary*, *Latvia*, *Lithuania*, *Malta* and *Slovakia*) that joined the EU in 2004 and may have experienced greater turnover growth during these years before leveling off in the succeeding periods. Negative and significant coefficients are also found for the following countries: *Belgium*, *Croatia*, *France*, *Germany*, *Ireland*, *Italy*, *Luxembourg*, *Portugal*, *Spain*, *Turkey* and the *United Kingdom*. No significant effect for the rest of the countries is found. These results are consistent with the economic situation of *Austria*, which is regarded as having an export-oriented economy.

## 5. Discussion and conclusions

### 5.1. Discussion

The study of international operations has traditionally centered on the analysis of outward operations, with most scholars until recently largely neglecting the strategic importance of inward

operations (Quintens et al., 2006). Similarly, although research on inward–outward connections has been gathering speed, it remains an area of study where many questions await answers (Bertrand, 2011). This work adds to the literature on how complementary activities can reinforce each other to increase firm performance (Golovko & Valentini, 2011).

The paper considers the organizational learning literature, with its emphasis on the role of knowledge in developing absorptive capacity (Cohen & Levinthal, 1990; Eriksson & Chetty, 2003). Firms that look beyond their national borders acquire both internationalization and market knowledge (Eriksson et al., 1997), along with technological knowledge (Fletcher & Harris, 2012). This study, then, shows how undertaking inward and outward operations simultaneously helps firms combine diverse and related knowledge in a more comprehensive way – and helps generate complementary knowledge that increases the opportunities for learning and results in improved performance. The paper contributes to advancing our understanding by analyzing the impact of undertaking inward and outward operations simultaneously on the turnover growth of firms, bearing in mind that both operations can play a role in obtaining and transferring knowledge and developing absorptive capacity.

The first hypothesis postulates that internationalization via undertaking inward and outward operations simultaneously will have a greater positive impact on turnover growth than when just a single type of operation is employed. The findings show that engaging in individual operations (either inward or outward) and engaging in both operations simultaneously are positively related to turnover growth – but that this effect is significantly greater for firms that perform both operations simultaneously. This result, however, captures the aggregate of the cases in which both types of operation are performed in the same country along with the cases in which the operations take place in different countries. When each of these cases is considered separately, the study finds that the impact is greater only in those firms that perform both types of operations in the same foreign country. These results confirm the second hypothesis, which posits that performing both operations simultaneously in the same country has a greater impact on growth than undertaking the two in different countries. These results reveal that the greater general internationalization and technological knowledge provided by undertaking inward and outward operations simultaneously is insufficient to exert an additional effect on turnover growth beyond that provided by one single type of operation. This could be because inward–outward connections provide general knowledge that does not give additional value compared to that generated individually by each kind of operation. Thus, despite increasing the interactions and knowledge exchanges derived from undertaking both operations simultaneously, firms do not increase their learning opportunities enough to lead to significantly higher levels of performance.

Undertaking both types of operations in the same country allows firms to exploit in an inward operation the specific experiential knowledge they have acquired via an outward operation – and vice versa. This specific knowledge is related to the business conditions and institutional issues of operating in a particular country (Eriksson et al., 1997), as well as advantages provided by technologies present in this specific market. Firms that operate in a particular country with inward and outward operations obtain diverse knowledge relative to the two types of operations. Sharing this specific knowledge from the supply and demand sides increases the levels of relatedness of the knowledge acquired. When this occurs, then, it leads to increases in the levels of complementarity between market and technological knowledge and in the absorptive capacity of firms. And this in turn allows them to create, apply and commercialize better technical solutions,

not only for that specific country but for the overall firm. This finding implies that performing inward and outward operations simultaneously in the same foreign country results in the acquisition of knowledge that is specifically useful for firms – and that this specific knowledge has a positive impact on turnover growth.

## 5.2. Implications, limitations and future research

From an academic point of view, the paper contributes to the continuing debate over inter-connected international strategies and their impact on firm performance. The research advances understanding of the consequences of internationalization strategies according to the type of operations developed and the markets selected. Moreover, the study argues that sharing related and diverse knowledge is crucial for increasing the absorptive capacity of firms. Specifically, the paper explains why different international strategies may generate different knowledge flows and absorptive capacity, factors that may result in a competitive advantage. From an empirical point of view, the study also makes headway on some limitations noted in the literature on inward–outward connections. First, the paper considers different types of inward and outward operations. Other papers on these connections typically undertake a more limited analysis. Bertrand (2011), for instance, focuses on offshoring activities within inward operations and export sales within outward operations. Similarly, Holmlund et al. (2007), Korhonen et al. (1996) and Knudsen and Servais (2007), among others, analyze only imports within inward operations and exports within outward operations. And second, whereas many papers examine inward–outward connections via case studies (e.g., Karlsen et al., 2003; Roolah & Varblane, 2009), the use of a sample of firms from a large number of countries and sectors makes it possible to obtain results that are generalizable to different national and sectoral contexts.

This study also has implications for management and public policy. One lesson for managers is that they should consider not only the potential benefits of undertaking different international operations separately, but also the benefits that may flow from the connections arising among them. Undertaking one type of operation or another has an impact on the acquisition of internationalization knowledge and the development of absorptive capacity, which is important for evaluating international initiatives accurately (Eriksson et al., 1997) and developing more successful operations. In particular, firm performance is better when inward and outward operations are undertaken together in the same foreign country, as opposed to performing just one operation or performing the two operations in different countries. The specific experiential knowledge acquired leads to higher quality information on market opportunities, business practices and institutional issues in one country, information that the firm can benefit from in its operations in other locations. Moreover, the implications could be especially important for the managers of SMEs. Despite their limited resource endowments, these firms also find that entry into international markets offers opportunities for growth and improvements in performance (Pangakar, 2008). Furthermore, intangible resources such as knowledge are fundamental for them, given the risk and uncertainty that international operations generate and the great impact these actions can have on the evolution and survival of these firms if internationalization is unsuccessful. The resulting accumulation and transfer of knowledge via inward and outward operations, then, may be especially attractive for these firms. Due to the size and flat organizational structure of SMEs, their managers can use the complementary knowledge acquired to convert the information derived from both operations more rapidly into knowledge for the organization (Di Gregorio et al., 2009; Korhonen et al., 1996). As far as public policy



is concerned, this study agrees with Korhonen et al. (1996) that governments should sponsor programs that not only promote entry into international markets, but that also pave the way for international sourcing.

This work has some limitations that may offer promising lines for future research. First, the study provides theoretical but not empirical justification for the claim that firms increase their levels of absorptive capacity when they undertake both kinds of operations simultaneously, as this situation increases knowledge stocks and flows. Future research could include a measure of the absorptive capacity generated and test whether this exerts an effect on the relation via moderation and/or mediation. Moreover, future research could also take into account the previous level of absorptive capacity and observe if this may explain the potential differences among firms that undertake both kinds of operations simultaneously. Second, it should be noted that this study only considers the propensity to engage in both types of operations. Future work could examine the intensity with which firms undertake these operations using instruments that go beyond dichotomous measures of inward and outward operations and beyond the intensity of import and export operations. Likewise, it would be advisable to include measures of the duration and number of these operations. Third, the analysis could be enriched with information on markets (e.g., the institutional distance between the origin and destination countries), on firm characteristics (e.g., the length of time operating in a specific market, small versus large size), or on managers' characteristics (e.g., entrepreneurial attitudes or founder ambitions). The inclusion of these external or internal dimensions may moderate some of the relations considered in this study and lead to further findings for academia or management. Attempting a more fine-grained analysis of the mechanisms that firms use to share general or specific experiential knowledge would also be interesting. Additionally, future research could include other measures of performance. For example, measures based on profitability or financial performance, productivity, innovation results or continuous measures of turnover growth. This research could also analyze the learning effect over time by examining measures of sales growth or more long-term results. Lastly, even though this study has data on a large number of countries, it would be useful to replicate the analysis with data from non-European countries. In summary, inward–outward connections merit further attention to understand how combining international operations improves firm performance.

### 5.3. Concluding remarks

This paper highlights how undertaking inward and outward operations simultaneously can improve firm growth. Through international operations and their inter-connections, firms can gain access to related and diverse experiential knowledge and thereby improve their absorptive capacity. Specifically, the empirical evidence indicates that firms that perform inward and outward operations simultaneously in the same foreign country are able to take greater advantage of the specific knowledge acquired – which makes it possible to generate more complementarities – and achieve better results in terms of turnover growth. Moreover, the evidence indicates that when this coincidence of operations in the same foreign country is absent, firms do not perform better than those that only undertake one kind of operation. Although this study has some limitations, it makes an important contribution to this line of research by considering the existence of the complementarities and synergies that may arise when firms undertake both operations, as well as the possible different effects derived from the type of knowledge acquired and shared within organizations.

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