Innovation propensity and international development of small and medium firms: the moderating effects of corporate governance structure

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Abstract: The paper aims to explore the moderating effects of governance structure on the relationship between innovation propensity and international development of SMEs. Based on agency and organisational learning theories, we hypothesise that ownership concentration, institutional ownership, family-owned firm, and foreign group affiliation have positive moderating effects on the innovation-internationalisation relationship. Using a sample of 2,876 Italian firms, the results suggest that ownership concentration and foreign group affiliation positively moderate the relation between innovation and international development. Institutional investors seem to have no interest in being involved in innovative processes or, to some extent, in the international expansion. Family-owned firms have a positive influence on international development only when they interact with the innovation efforts of the firms.

Keywords: business development; SME; internationalisation; innovation; family ownership; institutional ownership; ownership concentration; foreign business group.


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1 Introduction

The paper aims to explore the moderating effects of governance structure (ownership concentration, institutional ownership, family-owned firm, and foreign group affiliation) on the relationship between innovation propensity and international development of SMEs. The international development of firm activities has become a strategic issue of vital relevance for those companies who want to implement a model of sustainable and lasting growth, so to enable the creation of a competitive advantage (Sanders and Carpenter, 1998; Hitt et al., 2006a). In this context, especially small and medium-sized enterprises (SMEs) have a chance to expand their business horizons (Fabian and Molina, 2009; Fletcher, 2011; Boermans and Roelfsema, 2015).

Both endogenous growth theory (Grossman and Helpman, 1994) and the resource-based view theory (Alvarez, 2004; Anand and Kogut, 1997) highlight that innovation is positively associated with the international development of firms, because it enables them to exploit the competitive advantages at global levels (Chang, 1995; Hitt et al., 1997) generating revenues on a larger scale and stimulating faster growth. Additionally, the link between internationalisation and innovation can lead to a direct and reciprocal effect, in a recursive and non-recursive way (Halilem et al., 2014). Nevertheless, not all the previous studies report a positive relation between innovation and internationalisation. Indeed, some studies reported no relationship between innovative activities and international performance of the firm (Lefebvre et al., 1998), and in some cases, the relationship results were even negative (Purkayastha et al., 2015). These findings mean this relation is not clear and not well understood and, since the previous research on the topic did not directly and extensively mainly involve SMEs (Boermans and Roelfsema, 2015; Hennart, 2007), the relationship has not been well explored in the context of SMEs. Additionally, existing literature is focused widely on the positive impact of internationalisation on innovation, rather than on the study of the opposing effect (Boermans and Roelfsema, 2015; Hsu et al., 2015).

Alongside, it should be remarked that existing literature has widely recognised the extent to which corporate governance mechanisms can affect the performance of the company, addressing the strategic choices (Hoskisson et al., 2002) and revealing to be a crucial element in the business development, including in its international expansion (Filatotchev et al., 2001). In this context, the agency theory suggests that the ownership structure may have a significant impact on business development strategies (Brickley et al., 1988; Zahra et al., 2000). A peculiarity about corporate governance is that some shareholders’ features and their different preferences about the firm’s activities that play an important role in determining the degree of innovation (Hoskisson et al., 2002; Choi et al., 2012) and the international orientation of the firm (Chen et al., 2014; Wang, 2014). Additionally, business group affiliation also plays a key role in buffering the company from the risks that are involved in creating and exploiting assets through internationalisation (Becker-Ritterspach and Bruche, 2012). Organisational learning
theory proposes that being involved in different contexts also accelerates learning processes, since the group can allocate, integrate, and generate knowledge-based resources to handle in various settings (Sambharya, 1995). Notwithstanding the recognised relevance of these themes, existing literature shows little evidence about the interconnections among governance structure, innovation and international development of SMEs (Singh and Gaur, 2013).

This study attempts to fill the research gap by incorporating the effect of the attributes of governance structure into the relationship between innovation propensity and international development in SMEs. For this purpose, we based our analysis on a sample of 2,876 Italian SMEs, as this type of company dominates the national business environment concerning the peculiarities of the corporate governance system adopted, which is characterised by a high degree of direct ownership concentration (Perrini et al., 2008) and by a reduced separation between ownership and control of firms (Bianco and Casavola, 1999). These characteristics are widespread in other countries of continental Europe (Becht and Röell, 1999), therefore, this paper could provide input for reflection and debate to further studies on the topic in the European context.

Our study aims to contribute to some extent to the international business development as well as to literature on SMEs. First, we systematically investigate the interconnections among governance structure, innovation and international development in SMEs, i.e., a research area relatively little explored by previous literature. Furthermore, our study contributes to the theory building process based on the debate about those factors that, at the firm level, influence the internationalisation efforts and development.

The remainder of this paper is structured as follows. Section 2 reviews the literature and formulates the hypotheses. Section 3 explains the sample selection process, the variables and the analytical approach. The empirical analysis is presented in Section 4. This is followed by the discussion of results and conclusions in Section 5.

2 Theoretical background

2.1 Innovation propensity and International development

Extant literature suggests that the innovation experiences support companies in developing competitive advantage for their international expansion (Anand and Kogut, 1997; Singh, 2009). Indeed, firm’s investments in innovative activities support the transformational process involving tangible and intangible assets into novel products, driving and supporting a sustainable competitive advantage (Morck and Yeung, 1991), also in foreign markets. D’Angelo et al. (2013) analysing a sample of 2,657 Italian SMEs confirm these assumptions.

To this regard, the international entrepreneurship literature has underlined the strategic and beneficial role of new knowledge and technological resources, which contribute to the international expansion of the firm, due to the development of a global offering (Brock and Yaffe, 2008; Tsang et al., 2008; Kyläheiko et al., 2011; Simba, 2015). Additionally, some scholars point out as an effective entrepreneurial internationalisation integrating an international innovation propensity (Dimitratos and Plakoyiannaki, 2003).

In accordance with the endogenous growth theory (Grossman and Helpman, 1994), the internationalisation performance depends on the technological competitiveness,
which in turn depends upon the degree of innovative activities. Similarly, the relevance of the technological experiences and resources for international activities is remarked by the resource-based view theory of the firm, which argued that technological assets and competences can be an effective foundation of long term competitive advantage of the firm, particularly in foreign marketplaces (Alvarez, 2004; Anand and Kogut, 1997), also in the SMEs context (Hessels and Parker, 2013). This assumption is supported considering that a key feature of exporting companies seems that they are more innovative than non-exporting companies (Cassiman and Golovko, 2011; Shearmur et al., 2015). Furthermore, it is not unusual that many firms carried out R&D activities with the aim of innovation for their internationalisation process (Singh, 2009).

At integration of these considerations, it is interesting to remark how the firms that intend to promote a strategic renewal (Prashantham, 2008), especially with reference to the international markets, need to accumulate new knowledge through innovation (Floyd and Lane, 2000).

Several studies have empirically investigated the relation between a firm’s innovative related activities and its internationalisation (Hansen and Lovås, 2004; Tseng et al., 2007; Kafouros et al., 2008); nevertheless, as pointed out in the introduction section, the previous studies report mixed or not significant results regarding the relation between innovation and internationalisation of the firm (Lefebvre et al., 1998; Purkayastha et al., 2015). Furthermore, the above mentioned relation was not extensively investigated in SMEs (Boermans and Roelfsema, 2015; Hennart, 2007).

This evidence calls for a more deep exploration of the mechanisms that can lead to a better and clear understanding of the dynamic interconnections between innovation activities and international development of the firm, which may in turn affect in a positive or negative way this relation. Following the work and the suggestion of Singh and Gaur (2013), firm-level governance structure can be an effective mechanism to investigate the interconnections between innovation and internationalisation strategies. Based on these assumptions and due the lack of studies that explore, in an extensive manner, the moderating mechanisms that improve the relation between innovation and internationalisation of SMEs, we argue that governance structure of this kind of firm influences their innovation propensity, which in turn moderates the international development.

2.2 The moderating role of corporate governance structure

2.2.1 Agency theory, innovation and internationalisation

The extant literature highlights that the fundamental strategic decisions of the firm, such those related to the R&D activities or to the international development, affect in a significant manner their entrepreneurial growth and organisational performance (Wu et al., 2015; Castaño et al., 2015; Zucchella and Siano, 2014; Gupta and Pandit, 2013). However, innovative activities and internationalisation-related processes need continuous and persistent investment, calling for resilient administrative and managerial maintenance from the company’s executives (Zhang et al., 2014). Nevertheless, strong support for these dynamic entrepreneurial activities is expected to be restricted without the suitable motivations for the executives in encouraging these long-term and potentially uncertain venturing activities (Zahra et al., 2000). The concepts related to the agency theory (Jensen and Meckling, 1976) propose that managerial support for innovation and
internationalisation activities are expected to improve at the time when the interests of the owners and managers are closely aligned. To this regard, corporate governance is a relevant mechanism to guarantee that executives are working in the best interests of the owners (Daily et al., 2003; Dalwai et al., 2015). However, past research showed the effects of governance mechanisms, especially those related to exploitation of the entrepreneurial opportunities, such as innovation and internationalisation, can differ among firms of diverse sizes (Kroll et al., 1997; Rediker and Seth, 1995). More precisely, in the context of SMEs the interests of owners and executives may not be always conflicting (Carney, 2005; Zahra, 2003). Indeed, the founders of SMEs are also owners which to a certain extent mitigates the principal-agent issue (George et al., 2005) improving long-term value creating activities such as innovation and internationalisation (Wright and Ferris, 1997; Zahra et al., 2000).

At integration of these assumptions, it is argued (Singh and Gaur, 2013) that when a firm has a governance structure which is favourable for international expansion, it has a positive leverage effect both on its innovation and on its internationalisation strategies and performance (Peng, 2003; Yi et al., 2013). The following paragraphs aim to illustrate and theoretically discuss some mechanisms of governance that may be crucial to enhancing the relation between innovation and internationalisation in SMEs.

2.2.2 The role of institutional and family ownership

Agency theory suggests that large investors are more inclined in monitoring CEOs’ choices and commitments to entrepreneurial activities (Bird and Wiersema, 1996). In particular, it was argued (Hoskisson et al., 2002) that different kinds of institutional investors have diverse preferences about the sources of corporate innovation. Such assumption arises from the evidence that these investors are long-term oriented, and as a result have a confident effect on firm innovation (Kochhar and David, 1996); in addition, the high institutional ownership is complemented by an unwillingness of managers to reduce R&D after a deterioration in earnings (Bushee, 1998). However, in literature not everyone agrees on the positive effects generated by institutional investors on innovation, because the focus on quarterly results may encourage a short-term emphasis (Porter, 1991; Chen et al., 2015) and the risks of being fired (Kaplan and Minton, 2012) might discourage risk-averse managers from innovating. But, a larger extent of the previous empirical findings is towards a positive effect of institutional investors on firms’ innovation, which are increasing with the holding size that in turn empower them to promote long-term value creation activities (Aghion et al., 2013; Choi et al., 2012; Brossard et al., 2013).

The ownership structure of SMEs impacts also on their inclination to assume risks and enlarge the scale and scope of their internationalisation processes (George et al., 2005). With regard to this, George et al. (2005) points out that shareholders such as venture capitalists, banks and other institutional investors usually have a positive influence on the potential of SMEs at international level. Other recent research findings reveal similar consideration, especially with regard to foreign institutional investors (Calabrò et al., 2013; Hu and Cui, 2014). Indeed, institutional owners generally prefer companies with a higher profile in the global market (Singh and Gaur, 2013). Also, the participation of institutional owners decreases agency issues, enabling managers to take internationalisation choices (Moh’d et al., 1995; Filatotchev and Wright, 2011).
Additionally, agency theorists point out that family ownership generates benefit in aligning the interest of the owner and the firm (Randøy and Goel, 2003; Schulze et al., 2001), gives definite competitive advantages, including long-term orientation (Allen and Phillips, 2000), flexibility, prompt decision-making (Zahra, 2003), and the family ‘name’ as a foundation of power and elation (Bhaumik and Gregoriou, 2010); these characteristics identify the family firm as a key source of technological innovation and entrepreneurial activities (Zahra, 2005). In addition, given that family firms can benefit from joining ownership and control, owner-managers, compared to outside managers, are expected to invest in the firm’s development and pursue promising business opportunities; owner-managers are also required to support innovations that improve the organisational growth (Zahra, 2005). In an empirical investigation of a sample of 240 Italian SMEs, Sciascia et al. (2015) found the relationship between family ownership and R&D intensity is positive, although in the case that the overlap between the family’s total wealth and single firm equity is low. The positive effects of family ownership on innovation are confirmed by other recent studies (Lodh et al., 2014; Chen et al., 2013).

Habbershon and Williams (1999) claim that the basic advantages of family-owned firms become ambiguous in the international market place. The internationalisation increases the risks resulting from emerging uncertainty, informative asymmetries and foreignness (Lu and Beamish, 2001; Hitt et al., 2006a, 2006b; Filatotchev and Wright, 2011). Conversely, some scholars (Zahra, 2003; Lin, 2012) demonstrate that family ownership has a significant and positive impact on the international efforts of the firm, though this may be nonlinear (Sciascia et al., 2012; Mitter et al. 2014). Generally, in family firms the support of owners may stretch the time horizon for payoffs (Miller and Le Breton-Miller, 2005; Zahra, 2003), allowing greater risk taken by managers in international context. Several recent research findings support these considerations, also with reference to SMEs (Lien, 2013; Piva et al., 2013; Chen et al., 2014), suggesting that family ownership may encourage internationalisation.

As noted above, both family and institutional ownership will be more motivated to stimulate managers to internationalise if they sustain the success of international processes. A high amount of R&D activities will guarantee greater confidence in the owners that internationalisation is expected to make fruitful. Conversely, if managers are not supported by owners, they may avoid and be hesitant to follow internationalisation views, although their firms have the necessary skills (Singh and Gaur, 2013). Thus, we propose:

H1 Institutional ownership positively moderates the relationship between innovation propensity and international development in SMEs.

H2 Family-owned firms positively moderate the relationship between innovation propensity and international development in SMEs.

2.2.3 The role of ownership concentration

Agency theory argued that the ownership concentration is a key determinant of the firm’s performance outcomes (Jiang and Peng, 2011). Indeed, a concentrated ownership in a single or few members helps to reduce the agency costs that rise from the separation of ownership and controlling, causing the principal-agent conflicts (Liu et al., 2012; Jensen and Meckling, 1976). This is especially true the case of family owned-firms and SMEs,
wherein the owner is usually also the CEO, leading to more efficient monitoring of management because the benefit of such control is great for block owners (Francis and Smith, 1995; Deng et al., 2013). Indeed, diffuse ownership enables managers to get involved in activities other than those characterised by inherently risky innovation, while concentrated ownership may stimulate these activities (Hill and Snell, 1988; Baysinger et al., 1991; Heugens et al., 2009). More in detail, capital becomes persistent enabling large shareholders to improve long-term relations with different stakeholders that are necessary to innovation (Driver and Guedes, 2012). Analysing a sample of 43,728 Chinese SMEs, Deng et al. (2013) empirically investigated and confirmed the positive role of ownership concentration on innovation. Also, Shapiro et al. (2014) obtained similar findings in the context of SMEs, although it was found that the relation between ownership concentration and innovation is less strong at high level of ownership.

Ownership concentration induces managers to be less exposed to a pressure from external investors (Carney, 2005), leading to a higher risk aversion and unwillingness to get involved in strategic internationalisation activities (George et al., 2005; Hill and Snell, 1988). Nevertheless, thanks to a higher level of ownership concentration, shareholders can avoid the opportunistic behaviour of managers, making them more committed to maximising the firm’s value (Dharwadkar et al., 2000). Oesterle et al. (2013) found that ownership concentration denotes a nonlinear association with the firm’s international reach, taking the form of a cubic-stretched U-shaped relation. However, entrepreneurial orientation, which is also a key element in enabling international development if the firm (Liu et al., 2011) seems to be more established in firms characterised by a high level of ownership concentration, which may stimulate the executives to pursue uncertain and long-term strategies, such as international ones (de Haaff and Urban, 2013).

The agency theory may also help to clarify how ownership concentration affects the performance and the innovation consequences of internationalisation. In fact, the incentive effect of alignment moderates the relationship between internationalisation and innovation in a positive manner (Tsao and Chen, 2012). Thus, we state the following:

H3 Ownership concentration positively moderates the relationship between innovation propensity and SMEs’ international development.

2.2.4 The role of foreign business group affiliation

In their empirical study, Yi et al. (2013) emphasise that foreign ownership and business group affiliation have a positive effect on the innovative skills of the firm. Groups’ capacity of sharing technological knowledge and financial resources among partners allows them to generate value by stimulating innovation (Chang et al., 2006). Additionally, the companies belonging to a business group and involved in innovative processes, increase their reputation and status within the business group, so incentivising this type of activities (Singh and Gaur, 2013). Jointly, foreign partners generally are more innovative than local companies as of the ownership-related benefits of multinational firms and the chances to take advantage from knowledge spillover effects and technology dissemination (Görg and Greenaway, 2004).

Cerrato and Piva (2012) remark that the presence of foreign shareholders in SMEs has a positive impact on internationalisation activities. Foreign ownership indicates a
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better knowledge of the international context and may also reveal an extensive vision of markets (Fernández and Nieto, 2006). Moreover, individual firms joining a business group can gain access to group resources in order to promote international activities, especially if accompanied by alliances with majority shareholders (Buckley and Strange, 2011). These assumptions are empirically validated by the studies of Yi et al. (2013) and Kannebley et al. (2005).

Foreign ownership and business group affiliation can also positively moderate the effects of innovative capabilities on internationalisation performance, through strengthening the innovative knowledge of the firm (Yi et al., 2013). Following the organisational learning theory arguments, the involvement of the firm in several and different environments may also increase the company’s learning processes (Sullivan, 1994; Hitt et al., 1997). In this regard, the role of business group is significant, promoting and supporting the allocation, the integration and the creation and dissemination of knowledge-based resources to handle in various contexts (Sambharya, 1995). The organisational learning theory is widely accepted in explaining the dynamics aspects of firm internationalisation activities (Eriksson et al., 2000). Indeed, the behavioural internationalisation approaches (Casillas et al., 2015) argued that learning process in international context is cumulative and path dependence. Firms extensively active in the international scenario show performances at variance with the path dependency theories of learning by entering in foreign markets at early stage of their business (Weerawardena et al., 2007), frequently with an innovative offer.

These assumptions also seems confirmed by the recent empirical work of Purkayastha et al. (2015), who found that business groups impact and strengthen the relationship between innovative activities and export activities. Additionally, Becker-Ritterspach and Bruche (2012) reveal that business group affiliation is relevant in reducing the firm’s risks linked to the creation and exploitation of assets through internationalisation processes.

In their study, Kannebley et al. (2005) point out that export-oriented foreign partners denote a greater willingness to innovate through new products than export-oriented domestic companies. We can thus propose the following:

H4  Foreign business group affiliation positively moderates the relationship between innovation propensity and SMEs’ international development.

3 Methods

3.1 Sample

To test the study’s hypotheses, the sample and data employed are drawn from EU-EFIGE/Bruegel-UniCredit Dataset (Altomonte and Aquilante, 2012), a unique firm-level database of representative samples of manufacturing firms across European countries, within the project EFIGE. Data collection, carried out in 2010 while the information primarily refers to the period from 2007 to 2009, has been performed through a survey carried out by a professional contractor (GFK, the fourth largest market research company in the world), with the aim of gathering both qualitative and quantitative information at the firm level. The dataset conjoining measures relating to the firms’
internationalisation and quantitative and qualitative data about 150 items concerning innovation, research and development, labour organisation, financing and organisational activities, as well as pricing dynamics. In detail, the dataset includes around 3,000 firms for Germany, France, Italy and Spain, more than 2,200 firms for the UK, and some 500 firms for Austria and Hungary. In total, the EFIGE survey dataset contains information about 14,759 firms. Firms with fewer than 10 employees have been excluded from the survey. For the purpose of this study, from the surveyed firms we selected only Italian ones, equal to 3,021 firms, and subsequently those identified as small firms (10–49 employees, equal to 2,447 firms) and medium firms (50–249 employees, equal to 429 firms) following the EU recommendation 2003/36, namely the number of firm’s full-time equivalents working from 10 to 249. Hence, we analysed a final sample of 2,876 firms.

3.2 Variables

3.2.1 Dependent variable

In order to evaluate the international development efforts of SMEs, we used a measure regarding the scope of internationalisation, by the total number of countries where firms export products, in line with George et al. (2005) and Zahra et al. (2007), considering that for SMEs the internationalisation processes automatically take the form of exports (Zahra et al., 1997; Lu and Beamish, 2001).

3.2.2 Independent variables

With reference to the measure of innovation propensity, we used the percentage of the total turnover invested by the firms in R&D, consistently with the extant literature (Singh and Gaur, 2013). The R&D investment is a key and important input of the innovation processes of the firm, capturing its propensity towards innovative activities (Lee and O’Neill, 2003; De Cleyn and Braet, 2012).

3.2.3 Moderators

With the aim to predict the moderating effect of the selected corporate governance mechanisms on the relationship between innovation propensity and international development of SMEs scope of internationalisation we used five independent key variables in our regression models. First, similar to Singh and Gaur (2013) and George et al. (2005), we measured the institutional ownership by two variables: the first one consists of the percentage of firm’s equity (referred to the three largest shareholders) held by banks and insurance companies, the second one concerns the percentage of firm’s equity (referred to the three largest shareholders) held by private equity and venture capital. Second, we measured the family firms by a dummy variable taking value 1 if the firm is family-owned and 0 if otherwise. Then, following Tsao and Chen (2012) and Oesterle et al. (2013), we used the stake of the largest shareholder to measure the ownership concentration. Additionally, in line with Galia and Legros (2004), Cerrato and
Piva (2012) and Singh and Gaur (2013) we used the foreign business group affiliation via a dummy variable taking value 1 if a firm belongs to a foreign business group and 0 if otherwise.

3.2.4 Control variables

We checked for firm size and sector of activity. Firm size was measured by the number of firm employees. Firm size is a relevant substitute of the several resources a firm may be endowed with (Dhanaraj and Beamish, 2003). The sector of activity was measured by a dummy variable classifying firm operating in high-tech sector with the code 1 and 0 if otherwise. In high-tech industry, fast internationalisation processes can improve firms’ development and growth (Von Glinow and Mohrman, 1990).

3.3 Analytical approach

With the purpose of predicting the internationalisation development we used a log-linear Poisson model that is very useful for count variables such as response variables (Cameron and Trivedi, 2013; McCullagh and Nelder, 1989). A goodness of fit test rejected the Poisson distribution assumption (the equality of mean and variance of the exogenous variable), which is indicative of overdispersion in the data. Hence, negative binomial regression was selected to analyse the data and overcome this problem of overdispersion [Greene, (2003), pp.740–752]. Additionally, this statistical method is designed for a maximum-likelihood estimation of the number of rates of non-negative counts.

4 Results

Table 1 shows the descriptive statistics and correlation of core variables used in the models. The results indicate that the sampled average firms expand their international activities in 10.73 countries (SD = 12.70) and show an R&D propensity in a mean value of 7.39% (SD = 8.81%). The institutional ownership is quite small, in a mean value of 0.3% (SD = 5.6%) regarding bank/insurance ownership and 0.6% (SD = 7.9%) as for private equity/venture capital ownership. An average of 24.4% (SD = 42.9%) of the firms are family-owned, while the sample shows a moderate ownership concentration, in a mean value of 57.3% (SD = 26.7%). Given the lack of sufficiently high correlation among the independent variables, issues of non-sense correlation are not detected (Aldrich, 1995; Cohen et al., 2013). We checked for multicollinearity formally using VIF statistics. We found that the VIF scores did not exceed 1.13 – which is not close to the rule of thumb ‘threshold’ value of 10 (Hair et al., 1998) – and an average of 1.05; while the ‘tolerance’ level shows an acceptable value higher than 0.10, suggesting that multicollinearity is not a serious concern, therefore multiple regression analysis can be used to test the hypotheses. It must be specified that our estimation methods, negative binomial regression, do not allow the estimation of VIF scores. Therefore, we report the VIF scores obtained from estimating the models through ordinary least squares (OLS).
<table>
<thead>
<tr>
<th>No.</th>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>No. of countries entered</td>
<td>10.726</td>
<td>12.708</td>
<td>-0.002</td>
<td>-0.004</td>
<td>0.048*</td>
<td>0.037</td>
<td>0.048*</td>
<td>0.132**</td>
<td>0.272**</td>
<td>0.058*</td>
<td></td>
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<tr>
<td>2</td>
<td>Innovation propensity</td>
<td>7.391%</td>
<td>8.09%</td>
<td>-0.002</td>
<td>1</td>
<td>-0.005</td>
<td>-0.040</td>
<td>0.008</td>
<td>0.045</td>
<td>0.022</td>
<td>-0.104**</td>
<td>0.064*</td>
</tr>
<tr>
<td>3</td>
<td>Bank/insurance ownership</td>
<td>0.003</td>
<td>0.056</td>
<td>-0.004</td>
<td>-0.005</td>
<td>1</td>
<td>0.074**</td>
<td>0.012</td>
<td>-0.020</td>
<td>-0.010</td>
<td>0.068**</td>
<td>0.026</td>
</tr>
<tr>
<td>4</td>
<td>Private equity/venture capital ownership</td>
<td>0.006</td>
<td>0.079</td>
<td>0.048*</td>
<td>-0.040</td>
<td>0.074**</td>
<td>1</td>
<td>0.037*</td>
<td>-0.007</td>
<td>0.037*</td>
<td>0.087**</td>
<td>-0.014</td>
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<td>5</td>
<td>Family-owned firms</td>
<td>0.244</td>
<td>0.429</td>
<td>0.037</td>
<td>0.008</td>
<td>0.012</td>
<td>0.037*</td>
<td>1</td>
<td>-0.022</td>
<td>0.226**</td>
<td>0.091**</td>
<td>0.045*</td>
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<td>6</td>
<td>Ownership concentration</td>
<td>0.573</td>
<td>0.267</td>
<td>0.048*</td>
<td>0.045</td>
<td>-0.020</td>
<td>-0.007</td>
<td>-0.022</td>
<td>1</td>
<td>0.215**</td>
<td>0.093**</td>
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<td>7</td>
<td>Foreign group affiliation</td>
<td>0.030</td>
<td>0.171</td>
<td>0.132**</td>
<td>0.022</td>
<td>-0.010</td>
<td>0.037*</td>
<td>0.226**</td>
<td>0.215**</td>
<td>1</td>
<td>0.210**</td>
<td>0.110**</td>
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<td>8</td>
<td>Firm size</td>
<td>34.715</td>
<td>32.561</td>
<td>0.272**</td>
<td>-0.104**</td>
<td>0.068**</td>
<td>0.087**</td>
<td>0.091**</td>
<td>0.093**</td>
<td>0.210**</td>
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<td>0.034</td>
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<td>9</td>
<td>High-technology sector</td>
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<td>0.172</td>
<td>0.058*</td>
<td>0.064*</td>
<td>0.026</td>
<td>-0.014</td>
<td>0.045*</td>
<td>0.016</td>
<td>0.110**</td>
<td>0.034</td>
<td>1</td>
</tr>
</tbody>
</table>

Notes: ** p < 0.01; * p < 0.05 (all two-tailed tests).
### Table 2

Negative binomial regression estimation with international development as dependent variable

<table>
<thead>
<tr>
<th>Variables</th>
<th>Model 1</th>
<th>Model 2</th>
<th>Model 3</th>
<th>Model 4</th>
<th>Model 5</th>
<th>Model 6</th>
<th>Model 7</th>
<th>Model 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firm size</td>
<td>0.008***</td>
<td>0.006***</td>
<td>0.006***</td>
<td>0.006***</td>
<td>0.006***</td>
<td>0.006***</td>
<td>0.006***</td>
<td>0.006***</td>
</tr>
<tr>
<td></td>
<td>(0.0007)</td>
<td>(0.0002)</td>
<td>(0.0002)</td>
<td>(0.0002)</td>
<td>(0.0002)</td>
<td>(0.0002)</td>
<td>(0.0002)</td>
<td>(0.0002)</td>
</tr>
<tr>
<td>High-technology sector</td>
<td>0.332*</td>
<td>0.138***</td>
<td>0.138***</td>
<td>0.137***</td>
<td>0.138***</td>
<td>0.121**</td>
<td>0.118**</td>
<td>0.106**</td>
</tr>
<tr>
<td></td>
<td>(0.1318)</td>
<td>(0.0355)</td>
<td>(0.0355)</td>
<td>(0.0355)</td>
<td>(0.0355)</td>
<td>(0.0357)</td>
<td>(0.0357)</td>
<td>(0.0359)</td>
</tr>
<tr>
<td>Innovation propensity</td>
<td>0.004***</td>
<td>0.004***</td>
<td>0.004***</td>
<td>0.002</td>
<td>-0.007**</td>
<td>0.002**</td>
<td>-0.008**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0009)</td>
<td>(0.0009)</td>
<td>(0.0009)</td>
<td>(0.011)</td>
<td>(0.0025)</td>
<td>(0.0010)</td>
<td>(0.0027)</td>
<td></td>
</tr>
<tr>
<td>Bank/insurance ownership</td>
<td>-0.425***</td>
<td>-0.511**</td>
<td>-0.425***</td>
<td>-0.430***</td>
<td>-0.426***</td>
<td>-0.438***</td>
<td>-0.565***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.1213)</td>
<td>(0.1912)</td>
<td>(0.1213)</td>
<td>(0.1214)</td>
<td>(0.1214)</td>
<td>(0.1214)</td>
<td>(0.1915)</td>
<td></td>
</tr>
<tr>
<td>Private equity/venture capital</td>
<td>0.527***</td>
<td>0.527***</td>
<td>0.771**</td>
<td>0.534***</td>
<td>0.527***</td>
<td>0.525***</td>
<td>0.776***</td>
<td></td>
</tr>
<tr>
<td>ownership</td>
<td>(0.0710)</td>
<td>(0.0710)</td>
<td>(0.177)</td>
<td>(0.0710)</td>
<td>(0.0710)</td>
<td>(0.0710)</td>
<td>(0.1382)</td>
<td></td>
</tr>
<tr>
<td>Family-owned firms</td>
<td>-0.021</td>
<td>-0.021</td>
<td>-0.021</td>
<td>-0.071**</td>
<td>-0.021</td>
<td>-0.024</td>
<td>-0.061**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0193)</td>
<td>(0.0193)</td>
<td>(0.0193)</td>
<td>(0.0239)</td>
<td>(0.0193)</td>
<td>(0.0193)</td>
<td>(0.0242)</td>
<td></td>
</tr>
<tr>
<td>Ownership concentration</td>
<td>-0.116***</td>
<td>-0.116***</td>
<td>-0.122***</td>
<td>-0.115**</td>
<td>-0.237***</td>
<td>-0.115**</td>
<td>-0.213***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0328)</td>
<td>(0.0328)</td>
<td>(0.0329)</td>
<td>(0.0328)</td>
<td>(0.0411)</td>
<td>(0.0328)</td>
<td>(0.0417)</td>
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</tr>
<tr>
<td>Foreign group affiliation</td>
<td>0.408***</td>
<td>0.408***</td>
<td>0.417***</td>
<td>0.407***</td>
<td>0.413***</td>
<td>0.194***</td>
<td>0.237***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0360)</td>
<td>(0.0360)</td>
<td>(0.0363)</td>
<td>(0.0360)</td>
<td>(0.0360)</td>
<td>(0.0469)</td>
<td>(0.0477)</td>
<td></td>
</tr>
<tr>
<td>Bank/insurance ownership × Innovation propensity</td>
<td>0.15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0241)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Private equity/venture capital ×</td>
<td></td>
<td>-0.062*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innovation propensity</td>
<td></td>
<td>(0.0305)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family-owned firms × Innovation</td>
<td>0.000***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>propensity</td>
<td></td>
<td>(0.0018)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ownership concentration × Innovation propensity</td>
<td>0.017***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.0036)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foreign group affiliation ×</td>
<td>0.028***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innovation propensity</td>
<td></td>
<td>(0.0035)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Likelihood-ratio chi-square</td>
<td>5,943.901***</td>
<td>1,405.116***</td>
<td>1,405.474***</td>
<td>1,409.263***</td>
<td>1,417.720***</td>
<td>1,428.690***</td>
<td>1,463.324***</td>
<td>1,482.107***</td>
</tr>
</tbody>
</table>

Notes: Values in the parentheses are standard errors. ***p < 0.001; **p < 0.01; *p < 0.05; (all two-tailed tests).
Table 2 shows the results of the negative binomial regression in the estimation of international development, while Figure 1 graphically illustrates the main results. Regression analyses are performed in a step-wise manner. Model 1 includes all the control variables; model 2 is our baseline model and includes control variables, innovation propensity and corporate governance variables; models 3, 4, 5, 6 and 7 refer to the three interaction effects, entered one by one, while model 8 represents the full model. The results of the model 2 show that innovation propensity is positive and statistically significant, even though the predicted effect is very low (coeff. = 0.004, p < 0.010). Bank and insurance ownership is statistically significant but negatively related to international development, while private equity and venture capital ownership are positively and statistically significant in relation to it (coeff. = 0.404, p < .001). These results highlight the mixed support of the institutional ownership for the international development of the SMEs. The coefficient on family-owned firms is negative and not statistically significant; similar considerations apply for the coefficient estimated on ownership concentration. The coefficient on foreign business group affiliation is positive and statistically significant (coeff. = 0.365, p < 0.001), providing evidence of the beneficial role of foreign firm involvement and group models to the international development of SMEs.

Figure 1  Results of the moderating effects models of governance structure on the relationship between innovation propensity and international development

Notes: ***p < 0.001; **p < 0.01; *p < 0.05; (all two-tailed tests).

Subsequently, we studied the combined effect of innovation propensity and governance structure on international development through a moderated multiple analysis. H1
Innovation propensity and international development of small and medium firms

remarks a positive interaction between institutional ownership (bank/insurance ownership and private equity/venture capital ownership) and innovation propensity affecting international development. In model 3, the coefficient on the interaction term involving bank/insurance ownership is insignificant; while in model 4 the coefficient on the interaction term involving private equity/venture capital ownership is statistically significant but negative. Thus, these results do not support H1. H2 states a positive interaction between family-owned firms and innovation propensity affecting international development. In model 5, the coefficient on the interaction term is statistically significant and slightly positive (coeff. = 0.007, p < 0.001), so partially confirming H2. H3 indicates a positive interaction between ownership concentration and innovation propensity affecting international development. In model 6, the coefficient on the interaction term is positive and statistically significant (coeff. = 0.017, p < 0.001), providing support to H3. H4 states a positive interaction between foreign business group and innovation propensity affecting international development. In model 7, the coefficient on the interaction term is positive and statistically significant (coeff. = 0.028, p < 0.001), so confirming H4. Table 3 summarises the results of the hypothesis tested in our models.

Table 3 Results summary of tested hypothesis

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>H1 Institutional ownership positively moderates the relationship between innovation propensity and international development in SMEs.</td>
<td>NS</td>
</tr>
<tr>
<td>H2 Family-owned firms positively moderate the relationship between innovation propensity and international development in SMEs.</td>
<td>S</td>
</tr>
<tr>
<td>H3 Ownership concentration positively moderates the relationship between innovation propensity and SMEs international development.</td>
<td>S</td>
</tr>
<tr>
<td>H4 Foreign business group affiliation positively moderates the relationship between innovation propensity and SMEs international development.</td>
<td>S</td>
</tr>
</tbody>
</table>

Note: S = supported; NS = not supported.

5 Discussion and conclusions

5.1 Discussion

This paper studies the moderating effects of governance structure (ownership concentration, institutional ownership, family-owned firm, foreign group affiliation) on the relationship between innovation propensity and international development of SMEs. On the basis of existing literature, we deduce that different ownership structures are linked to the innovation and internationalisation efforts of this type of firms, affect their development strategies. In detail, we argue that proper ownership structure amplifies the favourable impact of innovation efforts on the development of internationalisation processes. Based on the agency theory and organisational learning theory arguments, we studied a sample of 2,876 Italian firms during an observation period of two years (from 2007 to 2009). The results show that institutional ownership seems not to play a significant role as moderating effects between innovation and international development of SMEs. Only private equity and venture capital ownership denote a positive impact on the internationalisation processes of the firms, but not in their interaction with innovation.
propensity. These findings are in part consistent with those observed by Singh and Gaur (2013), pointing out that institutional investors are not inclined to be involved in the innovative processes of SMEs, and partly with the international expansion. Only the forms of institutional investment in risk capital show more interest in the international development of the firms, due to their major orientation towards international activities (Schertler and Tykvová, 2011; Smolarski and Kut, 2011). In addition, the moderating role of family ownership seems to be effective on the international development of SMEs (though to a small extent), as shown by the results of Singh and Gaur (2013). Nevertheless, the family-owned firms do not have a relevant impact on international activities of SMEs when the interaction term is not considerate, so denoting the prevailing of a risk-averse approach of less innovative firms (Claver et al., 2009; Fernández and Nieto, 2005) and the relevant sustain of innovation for high-growth strategy in family firms (Cucculelli, 2013). Furthermore, ownership concentration positively moderates the relation between innovation propensity and international development, emphasising how the innovative capabilities of the firm can straighten the incentive alignment effect, enabling a wider international expansion (Tsao and Chen, 2012). The influence of foreign business group affiliation seems to be effective: this contributes to the international development of SMEs when the interaction term with innovation propensity is not considerate and when this moderate effect is included, consistent with the findings of Yi et al. (2013) and Purkayastha et al. (2015). These findings support the beneficial role of a set of variegated formal and informal relationships of the business group and foreign shareholders, which potentially improve the optimal coordination of growth strategies, traducing them in promoting and supporting actions to the international development of the firm (Cerrato and Piva, 2012; Becker-Ritterspach and Bruche, 2012).

5.2 Managerial and practical implications

The findings in this paper have important implications for management/practice. Our study gives some evidence of the emerging tensions in the management and shareholders about the investment choices oriented towards innovation and internationalisation, so highlighting the role played by the dynamic aspects related to governance choices in accordance with the refinement and exploitation of the firms’ innovative abilities to meet their international development. In detail, the innovative efforts of the firms in order to be successful in an international context and be an effective support for the internationalisation process need a management that recognises and strengthens the capabilities and skills acquired (Loué and Baronet, 2012), with a strategic vision convincingly oriented toward change and openness to innovation and searching for new markets. To this end, the management to achieve in an effective manner such intent needs an ownership structure that stimulates and innovation and internationalisation processes. In the family-owned SMEs, the availability of innovative capabilities can overcome the aversion to entrepreneurial risk taking when they approach international market strategies. Additionally, firms with a concentrated ownership are characterised by a clearer vision and actions of the main shareholder concerning the entrepreneurial strategies, permitting a better effective willingness towards the innovation strategies and, through the same corporate entrepreneurship approach that guides the innovation policy, enhancing and strengthening the international development of the firm, as well as increasing the international exploitation of the innovative capabilities. These overall
considerations are very interesting since most SMEs are characterised by a concentrated ownership structure and high family involvement (Hamelin, 2013; Deng et al., 2013). Finally, internationally orientated managers and shareholders need to consider the role of alliance and group affiliation strategies in order to improve their competitive advantages in international markets; especially if the alliance and group affiliation involve foreign companies. The positive grouping effect can improve and support the entrepreneurial strategies of SMEs, enabling the effective exploitation of innovative capabilities and by means of the latter, the international development of the firm.

5.3 Limitations and directions for future research

However, this study presents some limitations. First, even though it is based on extant literature and overall theory, the findings should be prudently interpreted given that they are drawn from a sample of Italian SMEs, which may restrict the generalisation to SMEs in other countries, especially those outside the European context. Secondly, our study is focused on the innovation propensity of the firms, but as suggested by Singh and Gaur (2013), it could be interesting to explore the innovation outcomes too, in order to pave the way to additional theoretical developments about these aspects. Also, the international development measure presents some limits: we used the international scope that captures only part of the firm’s international development (Arregle et al., 2012). For these reasons, future research could employ multiple measures of internationalisation (both quantitative and qualitative) in order to have a fuller picture of the phenomenon. Additionally, the limited observation period of two years restricts the study of firms’ international development. Thus, future research could benefit from exploring rich longitudinal data in a longer observation period.

References


Innovation propensity and international development of small and medium firms


**Notes**

1 Although the research has been carried out jointly, paragraphs 2.2 and 4 have been prepared by Antonio Prencipe; paragraphs 2.1 and 3 by Christian Corsi; paragraphs 1 and 5 by Christian Corsi and Antonio Prencipe.