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**INDIVIDUAL ENTREPRENEURIAL ORIENTATION AND
PERFORMANCE: THE MEDIATING ROLE OF INTERNATIONAL
ENTREPRENEURSHIP**

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INDIVIDUAL ENTREPRENEURIAL ORIENTATION AND PERFORMANCE: THE MEDIATING ROLE OF INTERNATIONAL ENTREPRENEURSHIP

Abstract: This paper analyses the role that individual entrepreneurial orientation (IEO) plays in the success of international entrepreneurship moves. We focus on the mediation effect of international entrepreneurship in the relationship between IEO and firm performance. We argue that entrepreneurial experience constitutes an important source of IEO and propose an objective measure of IEO. The hypotheses are empirically analysed using a 22-year panel of family SMEs. Our results confirm the hypotheses and provide a better understanding of the role of IEO in the success of corporate strategies such as internationalisation. Specifically, IEO is found to improve firm performance indirectly by increasing the speed of internationalisation, and this effect is non-linear. Our study contributes to the literature by extending international entrepreneurship literature by offering a more complete view of the causes and consequences of IEO. Finally, our results also have the potential to contribute to the literature on family firm heterogeneity.

Key words: Individual entrepreneurial orientation, International entrepreneurship, Entrepreneurial experience, performance, SMEs, Family firm, Objective measure.

INTRODUCTION

The concept of entrepreneurial orientation (EO) (Covin and Slevin, 1989, 1991; Lumpkin and Dess, 1996; Miller, 1983), or ‘the strategy-making processes that provide organisations with a basis for entrepreneurial decisions and actions’ (Rauch et al., 2009: 762), is widely considered to be a cornerstone of the entrepreneurship literature. EO has traditionally been defined and operationalised at the firm level (Covin et al., 2020), exercising a positive effect on performance (Rauch et al., 2009). Nevertheless, only a limited set of studies consider the mediating effects between EO and performance, for example innovation (Kollmann and Stöckmann, 2014; Shan, Song and Ju, 2016), or learning (Alegre and Chiva, 2013; Real, Roldán and Leal, 2014; Rhee, Park and Lee, 2010; Wang, 2008). Thus, research on this strand of literature has neglected to address the indirect effects of EO on performance through the corporate moves (e.g. international entrepreneurship) generated by EO, despite the fact that these moves are the ‘central and essential element in the entrepreneurial process’ (Covin and Slevin, 1991: 8).

Over the last few years, some studies have extended the notion of EO to the individual level, referred to as individual entrepreneurial orientation (IEO). Covin et al. (2020: 2) define IEO as ‘a tendency held by individual employees of the organization towards innovative, proactive, and risk-taking behaviours in the workplace’. Nevertheless, research on this line of thought is restricted to the analysis of the determinants of IEO, measures of IEO (Bolton and Lane, 2012; Ferreira et al., 2017; Gotkan and Gupta, 2015; Kollman, Chistofor and Kuckert, 2007; Kraus, Breier and Hughes, 2019; Mustafa, Gavin and Hughes, 2018), the analysis of EO at the group level (Kollman et al., 2017; Monsen and Boss, 2009), the link between IEO and performance (Keil, Maula and Syrigos, 2017), and the effect of IEO on competitive strategy (Lechner and Gudmundsson, 2014). Like the EO literature, this strand of literature has neglected to link IEO to the performance of corporate moves (e.g. international entrepreneurship).

However, the concept of international entrepreneurship (the ‘combination of innovative, proactive and risk-seeking behaviour that crosses national borders and is intended to create value in organisations’ [McDougall and Oviatt, 2000: 903]) emerges as a combination of the entrepreneurship and international business literature (McDougal and Oviatt, 2000). Nevertheless, this strand of literature lacks studies analysing the individual-level antecedents of internationalisation, and as such is ‘particularly striking as the entrepreneurship and international entrepreneurship literature emphasizes the importance of entrepreneurs’ characteristics and experiences for start-up and other strategic decisions’ (Terjesen, Hessels and Li, 2016: 9). This is in line with Vahlne and Johanson (2020), who point out the necessity to

descend to the microlevel to advance in the understanding of internationalisation moves. Moreover, Coombs, Sadrieh and Annavarjula (2009), Covin and Miller (2014), and Keupp and Gassman (2009), among other authors, call to further develop theory in this field of research, especially from the entrepreneurship side (Jones and Coviello, 2005; Jones, Coviello and Tang, 2011; Wales, 2016). To our knowledge, there are no studies considering the mediating role of international entrepreneurship in the relationship between IEO and performance.

This paper aims to contribute by filling this gap and identifying the indirect effect of IEO on performance through international entrepreneurship. We argue that IEO is a heterogeneous resource that improves firm performance through international entrepreneurship. We analyse our hypothesis using a 22-year panel of family small and medium-sized enterprises (SMEs). We contribute to the literature in several ways. First, some studies have related international entrepreneurship to EO (Jones et al., 2011), but no research has analysed this at the individual level. Thus, this is the first attempt to relate IEO to international entrepreneurship at this level. Second, we consider the dynamics in the relationships between IEO, international entrepreneurship, and performance, identifying mediation effects. This can improve our understanding of the factors that explain the positive effect of IEO on performance identified in the literature (Keil et al., 2017). Third, we account for the importance of entrepreneurial experience in shaping IEO. The previous literature on IEO has not explicitly incorporated the entrepreneurial experience as a determinant of IEO. We use this idea to operationalise an objective measure of IEO (Covin and Miller, 2014) that takes the notion of entrepreneurial experience as a basis. Objective measures of IEO allow for the use of longitudinal secondary data for improving our understanding of the dynamics of entrepreneurship. Longitudinal analysis of IEO is needed to discern causal dynamics among variables across levels of analysis (Keupp and Gassmann, 2009; Rauch et al., 2009; Wales, 2016; Zahra, Wright and Abdelgawad, 2014). Some studies have used objective measures of EO (Miller and Le Breton-Miller, 2011; Williams and Lee, 2009), but no study has tried to use an objective measure to approximate IEO.

The rest of this paper is organised as follows. In the next section, we discuss the notion of IEO as a heterogeneous resource. Then, we argue that the entrepreneurial experience constitutes an important source of IEO. We then theorise how IEO influences performance and identify an indirect effect through international entrepreneurship. Finally, we present the empirical analysis, followed by the discussion and conclusions.

THEORY

IEO as a heterogeneous resource: The role of entrepreneurial

Bolton and Lane (2012: 221) define IEO as being the underlying ‘personal characteristics or attitudes’ that individuals possess that lead them to undertake entrepreneurial activities. This implies that one should consider IEO as a type of intangible resource (Wiklund and Shepherd, 2003). For the resource-based theory, differences in firm performance are a consequence of differences in heterogeneous resource endowments (Makadok, 2001; Maritan and Peteraf, 2011; Penrose, 1959). Heterogeneity is applicable at different levels, from firm level to individual level (Hoopes, Madsen and Walker, 2003). In particular, individual heterogeneity includes ‘all types of relatively stable individual characteristics that might be salient in understanding behaviour in the specific context at hand, including personality, values, beliefs, experiences and demographic features’ (Boone and Van Witteloostuijn, 2007: 259). Human resources constitute the main source of individual heterogeneity (Chadwick and Dabu, 2009; Wright, Dunford and Snell, 2001; Wright, McMahan, McWilliams, 1994). The entrepreneurship literature considers that the entrepreneur and their individual characteristics (e.g. IEO) are the main human resource possessed by firms (Casson, 2005). In the case of IEO, it is spread across all people in a company, but the literature highlights the importance of managers’ EO (Boecker, 1997; Gupta and Govindarajan, 1984; Kuratko et al., 2005). The entrepreneur generates economic wealth by exploiting entrepreneurship opportunities (Chittoor, Aulakh and Ray, 2019; Kirzner, 1997; Klapper, Amit and Guillén, 2010; Shane, 2003). Effective strategic entrepreneurship requires organisational leaders to acquire, organise, and deploy resources to explore and exploit entrepreneurial opportunities (Lumpkin, Steier and Wright, 2011).

One important question in the entrepreneurship literature refers to how individuals develop IEO (Baron, 2004; McMullen and Shepherd, 2006). Entrepreneurs are heterogeneous (Alvarez and Busenitz, 2001), with different degrees of IEO. IEO heterogeneity can be generated by contextual, and individual factors. IEO can be influenced by a range of contextual determinants (Rigtering and Weitzel, 2013; Zahra and Wright, 2011). Zahra, Newey and Li (2014) identify the following dimensions of context: temporal, industry and market, spatial, social and organisational, ownership and governance. A relevant dimension of firm-level heterogeneity is derived from the ownership regime, i.e. whether the firm is a family vs non-family firm (Barney, Ketchen and Wright, 2011). Family firms share a unique resource, the familiness of the firm¹ (Habbershon and Williams, 1999; Sirmon and Hitt, 2003; Tokarczyk et

¹ Habbershon and Williams (1999: 11) define familiness as ‘the unique bundle of resources a particular firm has because of the systems interaction between the family, its individual members, and the business’.

al., 2007; Weismeier-Sammer, Frank and von Schlippe, 2013), and socioemotional wealth² (Gómez-Mejía et al., 2007; Pukall and Calabrò, 2014). This firm-level heterogeneity impacts the family firm entrepreneur's IEO (Zahra, Hayton and Salvato, 2004; Zellweger, Eddleston and Kellermanns, 2010).

Individual factors constitute another source of IEO heterogeneity (Kuratko et al., 2005). Covin and Lumpkin (2011) differentiate between dispositional EO (that reflects the disposition towards engagement in entrepreneurial activities) and behavioural EO. This implies that the sole presence of a disposition to engage in entrepreneurial behaviours does not guarantee that such behaviours will manifest (Covin and Lumpkin, 2011). The logic of the IEO concept is based on the upper echelons theory which posits that executives' behaviours are the result of their personality, *experience*, and values (i.e. dispositions) (Hambrick, 2007; Hambrick and Mason, 1984). The extant entrepreneurship literature emphasises the impact of previous experience on ventures (Cliff, Jennings and Greenwood, 2006; Corbett, 2007; Krueger, 2007; Wiklund and Shepherd, 2003). The term 'experience' has been used by entrepreneurship scholars in five ways (Morris et al., 2012). Of these, we refer to the most common usage that focuses on experience with previous entrepreneurial activity (Gimeno et al., 1997; Toft-Kehler, Wennberg and Kim, 2014), or past entrepreneurial experiences in founding a business. Therefore, entrepreneurial experience indicates the existence of behavioural IEO and can thus serve as a suitable indicator of IEO.

Considering experience in the process of generating IEO allows one to take into account the dynamics of IEO, which implies a learning perspective through a temporal frame (Kreiser, 2011; Zahra, Ireland and Hitt, 2000). Entrepreneurship favours learning, but is also the result of previous learning (Covin and Lumpkin, 2011) through a path-dependent process (Eesley and Roberts, 2012; Morris et al., 2012; Schweizer, Vahlne and Johanson, 2010; Westhead et al., 2005). As Bird and West (1997: 5) note, 'temporal dynamics are at the heart of entrepreneurship'. Entrepreneurs with entrepreneurial experience possess certain individual resources which enable or facilitate entrepreneurial activities (Alvarez and Busenitz, 2001; Spivak, McKelvie and Haynie, 2014). Prior entrepreneurial experience enhances ability in terms of developing contracts, optimising sources of finance, recognising viable opportunities and overcoming the liability of newness, challenges in the creation of a venture such as product development and internationalisation, and improving entrepreneurial self-efficacy (Davidsson and Honig, 2003; Eesley and Roberts, 2013; Hmieleski and Baron, 2009; Morris et al., 2012;

² Gómez-Mejía et al. (2007: 106) define SEW as the 'nonfinancial aspects of the firm that meet the family's affective needs'.

Ucbasaran, Westhead and Wright, 2009). These abilities generate positive performances from new entrepreneurial actions (Aldrich and Yang, 2013; Arenius and Minitti, 2005; Baron and Ensley, 2006; Eesley and Roberts, 2013; Gimeno et al., 1997; Politis, 2005; Stuart and Abetti, 1990). For example, the prevailing view in the literature establishes a positive association between previous start-up experience and firm growth through internationalisation (Autio, Sapienza and Almeida, 2000; Love and Ganotakis, 2013; Reuber and Fischer, 1997).

In the case of the firm founder, their entrepreneurial experience determines entrepreneurial attitudes and behaviour (Cliff et al., 2006). Some studies find a positive relationship between firms run by founders and performance and firm survival (He, 2008; James, 1999; Mishra, Randøy and Jenssen, 2001), high growth (Demir, Wennberg and McKelvie, 2017), and initial internationalisation (Pellegrino and McNaughton, 2017). Some arguments for linking founder behaviour to IEO comes from stewardship theory, in which the steward seeks to achieve the objectives of the organisation (e.g. growth or profitability) beyond their individual interests (Davis, Schoorman and Donaldson, 1997; Mousa and Wales, 2011). Chief Executive Officers (CEOs) that are also founders of SMEs are stewards who are more likely to favour risky, proactive, and innovative activities (Deb and Wiklund, 2017). These authors argue that founder-CEOs have greater intrinsic motivation, passion, firm-specific expertise, a long-term approach, stronger organisational identification, and a greater commitment to the firm. Founders are more likely to invest time, effort, and risk because they identify themselves more strongly with the creation of the firm (Mousa and Wales, 2011).

In summary, entrepreneurial experience entails a series of activities inherent to the development of an entrepreneurial mindset including high risk-taking, innovativeness, and proactiveness (the dimensions of IEO) (Deb and Wiklund, 2017; Hannan and Freeman, 1989). In the case of innovativeness, founder-CEOs tend to invest more in Research and Development (R&D) compared to their non-founder peers (Fahlenbrach, 2009). Colombo and Grilly (2005) found that entrepreneurial experience positively influences new ventures, especially new technology-based ventures. Regarding the risk-taking dimension, Sarasvathy, Simon and Lave (1998) show that successful entrepreneurs see opportunities in situations where other people tend to see risks. Regarding proactiveness, Baron (2000) found that entrepreneurs may be more likely than other persons to discover opportunities because they are less likely to engage in counterfactual thinking, less likely to experience regret over missed opportunities, and are less susceptible to inaction inertia.

Figure 1 represents the dynamics of the entrepreneurial process. The model on the upper side of Figure 1 splits entrepreneurship into IEO and entrepreneurial action, following the

original framework of Lumpkin and Dess (1996). The model on the lower side of Figure 2 draws a dynamic relationship between IEO and entrepreneurial activity dimensions, suggesting a temporal interaction between both elements. Thus, the determinants of future entrepreneurial action (e.g. international entrepreneurship) come from the IEO, but this IEO is the result of the past entrepreneurial actions. This allows us to consider the entrepreneurial experience resulting from previous entrepreneurial activities that shape IEO. In this way, it is possible to approach IEO taking the entrepreneur's previous experience as a base. This is consistent with the behavioural approach to entrepreneurship (Gartner, 1988), by which entrepreneurial entities can only truly be known as such if they engage in entrepreneurial acts (Covin and Miller, 2014). As a corollary, it is possible to determine whether IEO exists by looking at past entrepreneurial actions; it is also possible to assume that IEO exists after empirically observing these actions. For example, we can argue that the founders of SMEs have demonstrated that they possess IEO through their past entrepreneurial actions. This implies that the foundation of a firm can be considered evidence that the entrepreneur possesses IEO (Covin and Miller, 2014). Because the firm's foundation has occurred, an IEO must have existed to drive this act. Thus, IEO does not need to be directly assessed; it can be inferred to exist. Our arguments support the validity of an objective measure of IEO. Some studies have used objective measures of EO (Miller and Le Breton-Miller, 2011; Williams and Lee, 2009). Objective measures provide a useful way to incorporate secondary data into the empirical analysis. Covin and Miller (2014) defend the use of objective measures of international EO similarly.

Insert Figure 1 about here

IEO, international entrepreneurship, and firm performance

In this section, we depart from the notion of IEO that we have discussed previously. We have discussed how IEO is a heterogeneous resource in which entrepreneurial experience plays a determinant role in its configuration. We argue that this resource drives entrepreneurial moves (i.e. international entrepreneurship) which have the potential to improve firm performance. Nevertheless, the literature only offers a partial view of the potential effect of IEO on performance, either analysing the effect of IEO on performance, the determinants of international entrepreneurship, or the effect of international entrepreneurship on performance. We suggest an indirect effect of IEO on performance through international entrepreneurship.

In other words, we propose a mediating effect of international entrepreneurship between IEO and firm performance.

There is consensus in entrepreneurship literature on the positive effect of EO on performance, as the Rauch et al.'s (2009) meta-analysis confirms. More recent studies introduce moderating variables in the relationship EO-performance (e.g. De Clercq, Dimov and Thongpapanl, 2010; Engelegen et al., 2015; Li et al., 2008; Lumpkin and Dess, 2001; Schepers et al, 2014; Stam and Elfring, 2008). Other studies consider mediating effects, for example, for innovation (Kollmann and Stöckmann, 2014; Shan et al., 2016), or learning (Alegre and Chiva, 2013; Real et al., 2014; Rhee et al., 2010; Wang, 2008). Nevertheless, among those studies analyzing IEO with performance (Keil et al., 2017), in spite that find a positive relationship between both variables, no one examines moderating or mediating effects on performance.

International entrepreneurship research can be divided into two streams (Covin and Miller, 2014): research focused on international new ventures or 'born globals', and research focused on the international entrepreneurship activities of established companies. We focus on this later in the paper. The literature on international entrepreneurship has been centred mainly around its effect on performance (Terjesen et al., 2016). The meta-analysis of Schwens et al. (2018) reveals a positive relationship between international entrepreneurship and performance. Jones et al. (2011) describe the different studies that analyse international entrepreneurship and their causes and consequences. Among the different causes of international entrepreneurship, these authors identify EO in line with Jones and Coviello (2005). The resource-based theory considers resources essential for entrepreneurial activities (George, Wiklund and Zahra, 2005; Servantie et al., 2016; Zahra and George, 2002). Among the different heterogeneous resources needed for international entrepreneurship, the entrepreneur's traits are essential (Jones and Coviello, 2005; Li, Qian G and Qian, 2015; Oviatt, Shrader and McDougall, 2004; Oviatt and McDougall, 2005a, 2005b; Zahra and George, 2002). Entrepreneurial characteristics, such as innovative, proactive, and risk-seeking behaviour (dimensions of IEO), may shape internationalisation and the speed at which it occurs (Acedo and Jones, 2007).

We argue that IEO, as a heterogeneous individual-level resource, shapes heterogeneity at the firm level (Rothaermel and Hess, 2007). Following this, firm-level heterogeneity (in the form of international entrepreneurship) will determine firm performance (Jones and Coviello, 2005). In other words, IEO influences international entrepreneurship performance. Figure 2 depicts these different relationships. The departure point of these relationships is the Coleman bathtub (Bendig et al., 2018; Felin, Foss and Ployhart, 2015). This scheme portrays an explanation of firm-level variables (i.e. international entrepreneurship) distinguished from

individual-level variables (i.e. IEO), but recognising the influence of firm-level variables on individual characteristics (e.g. familiness). Our framework explains firm-level heterogeneity (i.e. international entrepreneurship and performance) by looking at individual-level heterogeneity (i.e. entrepreneur IEO). This requires the incorporation of micro-foundations (Felin and Foss, 2005; Gavetti, 2005; Teece, 2007) that explain macro concepts and macro-outcomes (i.e. firm-level capabilities, performance, and strategies) using microlevel entities (i.e. entrepreneurs) (Felin et al., 2015). The model we propose is coherent with the theoretical model by Jones and Coviello (2005) that links individual-level entrepreneurial variables, international entrepreneurship, and performance. This model includes the elements we consider: the firm foundation (that generates experience that generates IEO), the entrepreneur (characterised by IEO), international entrepreneurship (influenced by IEO), and firm performance (influenced by international entrepreneurship directly, and mediating the influence of IEO).

Insert Figure 2 about here

Solid line arrows represent the relationships we consider in our hypotheses. Entrepreneur IEO (individual-level heterogeneity) influences firm-level variables (international entrepreneurship and firm performance). International entrepreneurship mediates the influence of IEO on firm performance (Hypothesis 1). We hypothesise a direct and positive influence of IEO on international entrepreneurship (Hypothesis 1a). In addition, international entrepreneurship will improve performance (Hypothesis 1b). A broken line arrow linking firm-level heterogeneity with individual heterogeneity considers the firm-level influence on individual behaviours. We also consider the influence of entrepreneur experience on IEO (Figure 1).

We propose the following hypotheses:

Hypothesis 1. International entrepreneurship mediates the influence of entrepreneur IEO on firm performance.

Hypothesis 1a. Entrepreneur IEO positively influences international entrepreneurship.

Hypothesis 1b. International entrepreneurship improves firm performance.

DATA AND METHODS

Data and sample

We use the Survey on Business Strategies for the period of 22 years (1990 to 2011), conducted by the SEPI Foundation annually for a sample of Spanish manufacturing firms. This database has been widely used in previous studies for the analysis of internationalisation strategies (Fernández and Nieto, 2006; Forcadell, Úbeda and Zúñiga, 2018; Golovko and Valentini, 2011; Salomon and Byungchae, 2010). We select a sample of family SMEs that began their international activity by exporting in the period 1990 to 2008, and then continued exporting on a permanent basis for at least three consecutive years. This condition allows us to exclude the punctual or sporadic exporter (Andersson and Löf, 2009; Love and Ganotakis, 2013). We analyse the effect of international entrepreneurship on performance during the first ten years of export activity (Mohr and Batsakis, 2017). Our final sample includes 225 family firms that each have fewer than 250 employees. This results in an unbalanced panel of 1,235 observations. The definition of a family firm is controversial because a consensus has not yet been reached in the family firm literature (Duran et al., 2016; Miller, Lavie and Delios, 2007). We consider a family firm to be those firms in which one or more family members occupy top managerial positions (Berrone et al., 2010; Chrisman et al., 2012; Chrisman and Patel, 2012; Gomez-Mejia, Makri and Larraza-Kintana, 2010; Zahra, 2003).

Measures

Independent variable

To operationalise our independent variable, we proxy the entrepreneur's IEO by looking at their past entrepreneurial activities. As previously discussed, we consider an entrepreneur with entrepreneurial experience to possess IEO. In our sample, if we compare a set of firms from different generations making an initial international entry, *ceteris paribus*, the first-generation CEO will possess more entrepreneurial experience, because they founded the company, and thus possesses more IEO, than the CEO of a firm at the second or subsequent generations. In other words, in those firms making an initial international entry, two entrepreneurial activities coincide for first-generation CEOs (firm foundation and initial international entry) compared to a single entrepreneurial activity in subsequent-generation CEOs. Thus, we define a binary variable; $LowIEO_i$ has a value of one for those second- and subsequent-generation CEOs (with low IEO), and zero for first-generation CEOs with high IEO.

To approximate the family firm generations, we follow Fiss and Zajac (2004), Fernández and Nieto (2005) and Forcadell et al. (2018): 1 to 30 years old is considered a first-

generation family firm, and more than 30 years old is considered a second- or subsequent-generation family firm. Molly, Laveren and Deloof (2010) estimate that the succession of first-generation family firms occurs, on average, 26 years after firm creation, which reinforces our proxy. The sample has 1,029 observations of family firms managed by the first generation and 206 observations of family firms managed by subsequent generations.

Dependent variable

As a measure of firm performance, we use the total factor productivity growth ($TFPG_{it}$)³. The following reasons justify using this measure instead of accounting-based measures: 1) accounting-based measures may be subject to manipulation and only provide a short-term perspective compared to production efficiency-based measures (such as productivity) (Miller et al., 2007); and 2) productivity is a measure that is more closely linked to value creation (Palia and Lichtenberg, 1999), and is an efficiency-based explanation of performance differences (Peteraf and Barney, 2003).

Mediating variable

International entrepreneurship determines the internationalisation speed (Acedo and Jones, 2007; Li et al., 2015). The internationalisation speed includes three dimensions: initial entry, the country scope, and the international commitment (Oviatt and McDougall, 2005c). The literature tends to approximate the internationalisation speed using the number of years between the firm foundation and its initial international entry, or the first year of exporting (Ramos, Acedo and González, 2011). In the case of SMEs, the most common form of internationalisation is exporting (Merino, Monreal-Pérez and Sánchez-Marín, 2015; Mittelstaedt, Harben and Ward, 2003). We take Chetty, Johanson and Martin's (2014) multidimensional measure of internationalisation speed of as a starting point. We build a construct using a factorial analysis that includes several variables: 1) the speed to achieve regular export activity ($REGEXP_{it}$) is the ratio between the number of years of regular exporting and the number of years since foundation; 2) the speed of international commitment ($COMM_{it}$) is the percentage of sales overseas divided by the number of years since foundation; 3) the speed of export diversification (SH_{it})⁴; and 4) the speed considered as the international distance to the foreign markets (SD_{it})⁵.

³ We have estimated a specific production function for each sector (Levinsohn and Petrin, 2003).

⁴ Defined as a Herfindahl index: $1 - \sum_{G=1}^3 P_G^2$ (Goerzen and Beamish, 2003), divided by the number of years since foundation. P_G is the percentage of exports to geographical area G . The database identifies three geographical areas: the European Union, the rest of the Organisation for Economic Co-operation and Development (OECD) countries, and the rest of the world.

⁵ Following Pangarkar (2008), we first arrange the different regions by increasing physical distance: the European Union, the rest of the OECD countries and the rest of the world. Second, we compute the measure of distance as follows: $D_{it} = (1 \times P_{European\ Union}) + (2 \times P_{Rest\ of\ OCDE}) + (1 \times P_{Rest\ of\ World})$. Third, we divide the distance by the number of years since foundation (SD).

Factor analysis generates a unique multidimensional construct $Speed_{it}$, which measures the internationalisation speed⁶.

 Insert Table 1 here

Control variables

To reduce the potential problems generated by omitted variable bias, we incorporate a set of control variables. Technological innovation can exert an effect on firm internationalisation (Evert et al., 2018; Fang et al., 2018; Singla and George, 2013) and on their performance (Hughes et al., 2017; Lu and Beamish, 2001). The proxy for technological effort used is the

ratio $R\&D_{it} = \frac{R\&D_{it}}{R\&D_t^j}$, where $R\&D_{it}$ is the R&D expenditure over total sales by firm i at time t ,

and $R\&D_t^j$ is the average of R&D expenditure over sales in industry j at time t . The marketing resources can improve internationalisation (Kafouros et al., 2008; Nadkarni, Herrmann, Perez, 2011) and firm performance (Lu and Beamish, 2001; Miller, Lavie and Delios, 2016). The

proxy used to measure marketing resources is the ratio $AI_{it} = \frac{AI_{it}}{AI_t^j}$, where AI_{it} is the advertising

and public relations expenses over total sales by firm i at time t , and AI_t^j denotes the average of public relations expenses over total sales in sector j at time t . We also consider the following control variables: $Size_{it}$ is the logarithm of the total number of employees (Dhanaraj and Beamish, 2003; Evert et al., 2018; Geringer, Tallman, and Olsen, 2010; Kafouros et al., 2008; Singla and George, 2013; Zahra et al., 2000); $Foreign_{it}$ is a dummy variable that takes a value of one if the percentage of a firm's total equity owned by foreign capital sources is greater than 50%, and zero otherwise; TFP_{it-1} is the total factor of productivity lagged one period; ROS_{it-1} is the return on sales (Evert et al., 2018; Sciascia et al., 2010; Zahra et al., 2000; Zahra, Matherne and Carleton, 2003; Zhou, Wu and Luo, 2007;); $Group_{it}$ is a dummy variable that takes a value of one if the firm belongs to a business group, and zero otherwise (Singla and George, 2013, Zahra et al., 2000); and $Crisis$ is a dummy variable that takes a value of one for the years 2008, 2009 and 2010, and zero otherwise. This proxy controls for the potential effect of the financial crisis.

⁶ The factors loading of four dimensions have values equal to or greater than 0.7, the Kaiser-Meyer-Olkin (KMO) index estimates are high and the Balett's sphericity test is significant, i.e. the four international dimensions are included properly in one unique factor (Table 1).

Empirical approach

To operationalise Hypothesis 1a, we compare differences in the initial internationalisation entry between second- or subsequent-generation family firms (the ‘treatment group’), and first-generation family firms (the ‘control group’). We perform a difference-in-differences (DID) estimation (Bertrand, Duflo and Mullainathan, 2004; De Loecker, 2007; Greenaway and Kneller, 2008; Yang and Mallick, 2010)⁷.

We propose the following specifications in to test Hypothesis 1a:

$$Speed_{it} = \gamma_0 + \sum_{t=1}^{10} \beta_t T_t + \gamma_1 LowIEO_i + \sum_{t=1}^{10} \alpha_t LowIEO_i \times T_t + \gamma_2 X_{it} + f_i + \varepsilon_{it}, (1)$$

where the dependent variable is $Speed_{it}$. We have included ten temporal dummies T_t , which denote the years after the firm starts exporting. The coefficient β_t measures the time effect on $Speed_{it}$. The coefficient γ_1 measures the effect of $LowIEO_i$ on $Speed_{it}$, regardless of the years that have passed since starting internationalisation. The interaction term $LowIEO_i \times T_t$ allows us to identify the effect of $LowIEO_i$ on $Speed_{it}$ for the year t after starting internationalisation. The coefficient α_t measures the effect of $LowIEO_i$ on $Speed_{it}$, and $\sum_{t=1}^{10} \alpha_t$ measures the cumulative effect of $LowIEO_i$ on $Speed_{it}$, for the year t after starting internationalisation. A negative value of $\sum_{t=0}^{10} \alpha_t$ would confirm the Hypothesis 1a. X_{it} is a vector of firm-specific control variables; f_i is the variable for firm fixed effects⁸; and ε_{it} is the error term.

A necessary condition to conduct a DID estimation is to have two homogeneous groups of firms managed by CEOs with low and high IEO, respectively, to reduce endogeneity bias. The Hotelling’s test confirms the equality of means between both groups for a set of relevant characteristics: *TFP*, *AI*, *R&D*, and *Size* (Table 2). This result is in line with Cowling (2016), Craig, Dibrell and Garrett (2014), Kashmiri and Mahajan (2010), McConaughy, Matthews and Fialko (2001), Nason, McKelvie and Lumpkin (2015), and Werner, Schröder and Chlosta (2018).

Insert Table 2 here

⁷ A difference-in-differences (DID) estimation makes such a comparison possible, reduces the problem of self-selection of exporting firms and eliminates the unobservable differences between the treatment and control firms. This allows us to control for endogeneity and reverse causality (Bertrand et al., 2004, De Loecker, 2007; Greenaway and Kneller, 2008; Yang and Mallick, 2010). Specifically, this method allows us to estimate the potential effect of a treatment on an outcome during the first ten years of export activity.

⁸ The firm-level dummy variables allow us to control for systematic unobserved heterogeneity between firms (Armstrong and Shimizu, 2007; Henderson and Cockburn, 1994). If the sectoral mobility of firms is reduced or zero, the firm-level dummy variable includes the sectoral effect.

To operationalise Hypothesis 1b, it is necessary to analyse whether the mediating variable, $Speed_{it}$, positively impacts $TFPG_{it}$. Some studies suggest a non-linear relationship between internationalisation and firm performance (Chen et al., 2014; Hilmersson and Johanson, 2016; García-García, García-Canal and Guillén, 2017; Lu and Beamish, 2004; Miller et al., 2016; Mohr and Batsakis, 2017). For this reason, we explore the possibility of a non-linear relationship between these two variables using the Hansen (2000) methodology, which allows us to identify the level of internationalisation speed (threshold) where the relationship between $Speed_{it}$ and $TFPG_{it}$ changes. Thus, to test Hypothesis 1b, we propose the following specification:

$$TFPG_{it} = \gamma_0 + \sum_{t=0}^{10} \beta_t T_t + \gamma_1 LowIEO_i + \gamma_2 I(0 < Speed_{it} \leq th_{Speed}) + \gamma_3 I(Speed_{it} > th_{Inter}) + \gamma_9 X_{it} + f_i + \varepsilon_{it}, (2)$$

where the dependent variable is $TFPG_{it}$. We include ten temporal dummies T_t , one for each year elapsed since the start of export activity. Therefore, coefficient β_t measures the temporal effect of export activity on $TFPG_{it}$ for all firms. We also include the variable $LowIEO_i$. The effect of $LowIEO_i$ on $TFPG_{it}$ is measured by the coefficient γ_1 , regardless of the value of $Speed_{it}$. Two dummy variables enable us to analyse the non-linearity of the relationship between $Speed_{it}$ and $TFPG_{it}$: $LowSpeed$ takes a value of one if $Speed_{it}$ is greater than zero and smaller than or equal to the threshold value (th_{Speed}), and takes a value of zero otherwise; $HighSpeed$ takes a value of one if $Speed_{it}$ is greater than the threshold value (th_{Speed}), and takes a value of zero otherwise. The coefficient γ_2 measures the effect of $Speed_{it}$ on $TFPG_{it}$ if $Speed_{it}$ is below the threshold. The coefficient γ_3 measures the same effect when $Speed_{it}$ surpasses the threshold. A positive value of γ_3 would mean that high levels of $Speed_{it}$ increase $TFPG_{it}$, in line with Hypothesis 1b. X_{it} is a vector of firm-specific control variables; f_i is a variable for firm fixed effects⁹; and ε_{it} is the error term.

To test the mediation effect, we use the previous models. The coefficient α_t in Model 1 measures the effect of the entrepreneur IEO ($LowIEO_i$) on the mediator variable, international entrepreneurship ($Speed_{it}$). In Model 2, the coefficient γ_3 measure the effect of the mediator variable ($Speed_{it}$) on firm performance ($TFPG_{it}$). We have used the bootstrap method

⁹ The firm-level dummy variables allow us to control for systematic unobserved heterogeneity between firms (Armstrong and Shimizu, 2007; Henderson and Cockburn, 1994). If the sectoral mobility of firms is reduced or zero, the firm-level dummy variable includes the sectoral effect.

proposed by Preacher and Hayes (2008) to calculate the significance level of coefficients $\alpha_t \times \gamma_3$ ($\forall t; t = 1, \dots, 10$), which compute the indirect effect of entrepreneur IEO ($LowIEO_i$) on firm performance ($TFPG_{it}$), mediated through international entrepreneurship ($Speed_{it}$) (Hypothesis 1).

EMPIRICAL RESULTS

Table 3 shows the descriptive statistics of the main variables of interest. We found no multicollinearity problems for the subsequent regression analyses¹⁰. Table 4 shows the estimations for Model 1¹¹. The coefficient for $LowIEO_i$ is not significant. However, the coefficients for the different interaction terms $LowIEO_i \times T_t$ are negative and significant for almost all cases. The cumulative difference effect of $LowIEO_i$ on $Speed_{it}$ is $\sum_{t=0}^{10} \alpha_t = -1.521906$. These findings indicate that the presence of IEO increases internationalisation speed, which is in line with Hypothesis 1a.

 Insert Tables 3 and 4 about here

We identify one threshold for $Speed_{it}$ (Table 5), which allows us to define two levels of internationalisation speed: 1) *LowSpeed* for values of $Speed$ less than or equal to 0.344; and 2) *HighSpeed* for values greater than 0.344. In Model 2¹² (Table 6), we estimate the nonlinear effect of internationalisation speed on firm performance. The coefficient for $LowIEO_i$ is not significant, and thus we discard a direct effect of IEO on performance. The coefficient $HighSpeed_{it}$ is positive and significant. Therefore, high levels of internationalisation speed improve firm performance. This finding supports Hypothesis 1b.

 Insert Tables 5 and 6 about here

¹⁰ All explanatory variables have variance inflation factors (VIFs) below 10 for the regression models (Kutner, Nachtsheim and Neter, 2004), and the condition number obtained is substantially below 30 (Pesaran, 2015).

¹¹ In all models, the estimation of the modified Wald test reveals a potential problem of heteroscedasticity. Therefore, in all models we initially apply the ordinary least squares (OLS) method by incorporating the Huber Sandwich Estimator for controlling for the potential problem of heteroscedasticity. Furthermore, the Wooldridge test highlighted a problem of serial correlation. To solve this potential problem, we opt for a cluster-robust variance estimator (CRVE). To this end, we initially used the industry code to create the cluster, but because the number of industries considered in our study is low (19 industries), it fails to reach asymptotic behaviour. Accordingly, we use a wild cluster bootstrap and Rademacher weights to estimate the significance levels of the coefficients linked to the different explanatory variables included in the models (Cameron and Trivedi, 2009). These estimates allow us to solve this potential problem of serial correlation.

¹² To solve the potential multicollinearity problem, we have excluded the variable $LowSpeed_{it}$.

The indirect effect of IEO on firm performance has been estimated by multiplying each α_t coefficient (Model 1) by the γ_3 coefficient (Model 2). The bootstrapping confirms a negative and significant indirect effect for almost all years, except for the fourth, fifth, and tenth years (see Table 7). Therefore, these results confirm that those firms managed by CEOs with high IEO achieve a higher international speed, which furthers the positive effect of the internationalisation on firm performance. Thus, IEO improves firm performance indirectly through internationalisation. In other words, this confirms that international entrepreneurship mediates the influence of IEO on firm performance, which supports Hypothesis 1.

Insert Table 7 about here

Regarding the control variables, the coefficients of size and knowledge-intensive assets (technological innovation and marketing) have a positive impact on internationalisation speed, in line with Chen et al. (2014), Kafouros et al. (2008), Lu and Beamish (2001) and Miller et al. (2016). The measure of firm performance lagged by one period reduces the growth of productivity (Girma, 2005; Griffith, Redding and Simpson, 2002). The technological effort lagged by one period reduces productivity (Mairesse and Sassenou, 1991; Luintel, Khan, and Theodoridis, 2010). However, the advertising investment lagged by one period improves firm performance. The rest of the control variable coefficients are not significant.

DISCUSSION AND CONCLUSIONS

We have found empirical evidence for our hypotheses linking IEO, international entrepreneurship and performance for a panel of family SMEs. Specifically, we have confirmed the mediating role of international entrepreneurship between IEO and performance. The entrepreneur's IEO has been revealed as a determinant role in the success of those SMEs making an international entrepreneurial move. Those family SMEs managed by entrepreneurs with high IEO achieve a higher internationalisation speed, which furthers the positive effect of internationalisation on firm performance. Thus, IEO improves firm performance indirectly by increasing the speed of internationalisation. Additionally, we have proved that the effects are non-linear; the mediating role appears from a certain threshold of internationalisation speed. Our study contributes to the literature by completing the picture sketched by previous studies analysing IEO, and therefore improves our understanding of the underlying mechanisms explaining the effect of IEO on performance previously identified in the literature (Keil et al. 2017). The value of IEO emerges from the effect of the strategies and moves made by the firm

(i.e. international entrepreneurship). In other words, IEO constitutes a valuable, heterogeneous, individual-level resource that generates valuable heterogeneous firm-level resources.

We have contributed to the literature by extending international entrepreneurship theory from the entrepreneurship side (Coombs, Sadrieh and Annavarjula, 2009; Covin and Miller, 2014; Keupp and Gassman, 2009), offering a more complete view of the causes and consequences of international entrepreneurship. Verbeke and Ciravegna (2018) highlight that the linkages between the individual features of the entrepreneur and their effect on firm-level decisions to internationalise, as well as their effects on firm performance, are not well understood. Specifically, our paper highlights some linkages between entrepreneur IEO, the firm-level decision to internationalise, and its consequence on firm performance. Our empirical results suggest that IEO: 1) enables better exploitation of firm resources supporting international activity; and 2) improves the identification and exploitation of international opportunities, leveraging firm performance (Wiklund and Shepherd, 2003). Thus, we contribute to the internationalisation literature that focuses on the influence of management characteristics on the success of the internationalisation of SMEs (Griffith, Cavusgi and Xu, 2008; Hutzschenreuter, Pedersen and Volberda, 2007).

Our results also have the potential to contribute to the literature focused on the analysis of family firm heterogeneity (Chua et al., 2012; Clinton, McAdam, Gamble, 2018; Cruz and Nordqvist, 2012; Kraus et al., 2018; Nordqvist, Sharma and Chirico, 2014; Pittino et al., 2018; Sciascia et al., 2012). We extend this line of research, focusing on IEO as an explanation of the heterogeneity of family firms. This is in line with the call of De Massis and Foss (2018) to build and test theory using micro-foundations to improve our knowledge of family firms. Additionally, the majority of family studies that use EO as an independent variable are focused on explaining firm performance and growth (Hernández-Linares and López-Fernández, 2018) in a similar way to that of the general EO literature (Rauch et al. 2009). Only some studies have analysed the role that EO plays in the internationalisation of family firms (Calabró et al., 2017; Kraus et al., 2018; Thomas and Graves, 2005), but to our knowledge, there are no studies analysing the role of IEO in the context of family firms. Thus, our results contribute to the literature by extending our understanding of the role of IEO in shaping international entrepreneurship in the context of family firms.

We have shown that it is feasible to use an objective measure of IEO based on the notion of entrepreneurial experience. This has allowed us to estimate our models using a 22-year panel of data. The use of an objective measure of IEO contributes by exploring the more extensive use of these kinds of measures that take advantage of secondary panel data. This has the

potential to improve the replicability of IEO studies and the generalisation of the conclusions. Additionally, our measure allows for distinguishing between entrepreneurial behaviours and dispositions (Anderson et al., 2015; Covin and Lumpkin, 2011), in line with the idea from Covin and Slevin (1991: 8) that ‘we know entrepreneurs through their actions’. In short, we have advanced the empirical analysis of IEO taking the role of experience as a basis (Morris et al., 2012).

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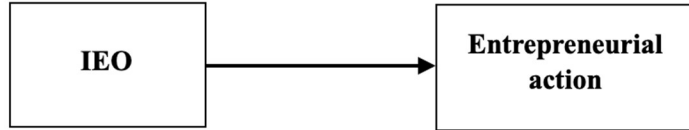
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Figure 1. IEO dynamics

Static IEO



Dynamic IEO

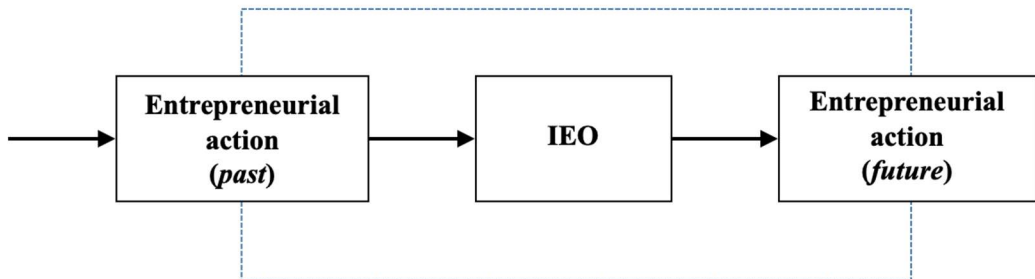


Figure 2. A multi-level framework for analysing the impact of IEO on international entrepreneurship and performance

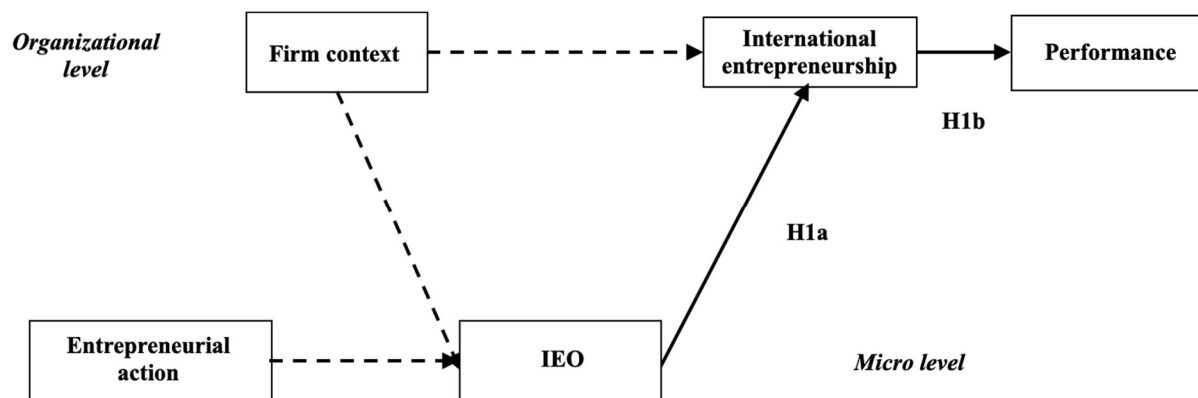


Table 1. Factorial analysis

Variable	Factor 1	Uniqueness	KMO
<i>REGEXP_{it}</i>	0.737	0.457	0.800
<i>COMM_{it}</i>	0.678	0.545	0.834
<i>SH_{it}</i>	0.731	0.466	0.802
<i>SD_{it}</i>	0.724	0.476	0.810
<i>KMO (sample)</i>	0.811		
<i>Bartlett test of sphericity</i>	1721.650****		

**** $p < 0.001$, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 2. Hotelling's test (family firms starting to export)

Variable	Obs.	First Generation				Second or Subsequent Generation				
		Mean	S.D.	Min.	Max.	Obs.	Mean	S.D.	Min.	Max.
<i>TFP_{it}</i>	170	3.125	2.175	0.099	12.134	20	2.778	2.543	0.729	10.308
<i>Size_{it}</i>	170	3.311	0.738	2.079	5.455	20	3.709	1.028	2.197	5.463
<i>AI_{it}</i>	170	0.795	1.471	0.000	11.773	20	0.530	0.761	0.000	2.725
<i>R&D_{it}</i>	170	0.696	2.597	0.000	26.352	20	1.004	2.249	0.000	8.338

2-group Hotelling's T-squared= 7.112 $F_{4,185}=1.741$; $p - value=0.141$

Table 3. Descriptive statistics

Variables	Obs.	Mean	S.D.	Median	Min.	Max.	Skewness	Kurtosis
<i>TPFG_{it}</i>	1,235	-0.034	0.469	0.030	-5.186	3.378	-0.540	20.506
<i>TFP_{it}</i>	1,235	3.896	1.721	3.604	0.025	18.186	2.116	13.294
<i>El_{it}</i>	1,235	7.426	12.057	2.600	0.000	85.000	3.005	14.101
<i>Speed_{it}</i>	1,235	0.700	0.885	0.501	0.020	18.062	8.727	141.747
<i>AI_{it}</i>	1,235	0.851	1.208	0.086	0.000	11.773	2.916	16.099
<i>R&D_{it}</i>	1,235	0.738	2.451	0.000	0.000	27.043	5.159	37.357
<i>IP_{it}</i>	1,235	0.226	0.419	0.000	0.000	1.000		
<i>IPR_{it}</i>	1,235	0.301	0.458	0.000	0.000	1.000		
<i>Size_{it}</i>	1,235	39.716	43.508	26.000	3.000	250.000	2.965	12.005
<i>EOR_{it}</i>	1,235	0.297	0.457	0.000	0.000	1.000		
<i>Foreign_{it}</i>	1,235	0.013	0.114	0.000	0.000	1.000		
<i>Group_{it}</i>	1,235	0.052	0.222	0.000	1.000	1.000		

Table 4. Estimation of DID specification

	Model 1
	<i>Speed_{it}</i>
<i>LowIEO_i</i>	0.004
<i>LowIEO_i × T₁</i>	-0.182**
<i>LowIEO_i × T₂</i>	-0.255****
<i>LowIEO_i × T₃</i>	-0.218****
<i>LowIEO_i × T₄</i>	-0.101
<i>LowIEO_i × T₅</i>	-0.117
<i>LowIEO_i × T₆</i>	-0.385*
<i>LowIEO_i × T₇</i>	-0.338**
<i>LowIEO_i × T₈</i>	-0.301****
<i>LowIEO_i × T₉</i>	-0.227*
<i>LowIEO_i × T₁₀</i>	-0.047
<i>TFP_{ijt-1}</i>	-0.003
<i>R&D_{it-1}</i>	0.014*
<i>AI_{ijt-1}</i>	-0.038**
<i>Size_{it}</i>	0.112**
<i>Group_{it}</i>	-0.151
<i>Foreign_{it}</i>	-0.074
<i>Crisis</i>	0.037
<i>Constant</i>	-0.206
Number of observations	1,235
Firms	225
<i>R²</i>	0.540
<i>Adjusted – R²</i>	0.421
Max VIF	3.740
Condition number	15.698

**** $p < 0.001$, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The coefficients are the same for CRVE (Cluster Robust Variance Estimators) and WCB (Wild Cluster Bootstrap) estimates, but the errors are different. These coefficients, robust standard errors for CRV and *p-values* for WCB estimates are not shown, and can be obtained from the authors upon request.

Table 5. Thresholds identification

International Entrepreneurship		
<i>Speed_{it}</i>		
	<i>Estimation</i>	<i>LM-test</i>
First threshold	0.344	12.69**

**** $p < .001$, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table 6. Non-linear model

	Model 2
	<i>TFPG_{it}</i>
<i>LowLEO_i</i>	-0.024
<i>Hig Speed_{it}</i>	0.101****
<i>TFP_{ijt-1}</i>	-0.165***
<i>ROS_{it-1}</i>	-1.396****
<i>R&D_{it-1}</i>	-0.038**
<i>AI_{ijt-1}</i>	0.023**
<i>Size_{it}</i>	-0.079
<i>Group_{it}</i>	0.038
<i>Foreign_{it}</i>	-0.074
<i>Crisis</i>	-0.033
<i>Constant</i>	1.308***
Number of observations	1.235
Firms	225
R^2	0.542
<i>Adjusted – R²</i>	0.429
Max VIF	2.100
Condition number	18.146

**** $p < .001$, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

The coefficients are the same for CRVE (Cluster Robust Variance Estimators) and WCB (Wild Cluster Bootstrap) estimates, but the errors are different. These coefficients, robust standards errors for CRV and *p-values* for WCB estimates are not shown, and can be obtained from the authors upon request.

Table 7. Mediation analysis

Year	Mediation Effect $\alpha_t \times \gamma_3$
1 st	-0.018**
2 th	-0.026**
3 th	-0.022**
4 th	-0.010
5 th	-0.012
6 th	-0.039*
7 th	-0.034**
8 th	-0.030**
9 th	-0.023*
10 th	-0.005
Number of observations	1,235
Firms	225
5000 bootstrapping resamples	

*** $p < .001$, ** $p < 0.01$, * $p < 0.05$, $p < 0.1$.