GROWTH-ORIENTED NEW AGRICULTURAL VENTURES: THE ROLE OF ENTREPRENEURIAL RESOURCES AND CAPABILITIES UNDER CONVERGENCE FORCES

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Abstract: Using a multilevel approach, this study examines how new entrants' resources and capabilities and context influence growth-oriented new agricultural ventures. Results indicate that growth orientation is largely self-determined. The knowledge base of the new entrants, their social ties with entrepreneurs, together with the capabilities to identify and exploit opportunities, as well as those to effectively offer new products, trigger these growth-oriented ventures. Industry contexts also influence them, as those operating in less agriculturally competitive countries have a greater probability of becoming growth-oriented, suggesting convergence forces. Lastly, results reveal that competitiveness positively moderates the relationship between product innovation capabilities and growth orientation.

Keywords: Agricultural entrepreneurship, growth-oriented entrepreneurship, firm growth, convergence, innovation.

JELCodes: M13 – Q18 – L26 – D84 – O13

1. INTRODUCTION

Growth-oriented entrepreneurs (also called 'high-growth', 'ambitious' or 'high-potential' entrepreneurs) contribute to economic development more than entrepreneurial activity in general and have been identified as drivers of employment generation, promotion of innovations and economic transformation (Coad et al., 2014; Hölzl, 2014; Mason and Brown, 2013, Autio and Rannikko, 2016). From an entrepreneurial perspective, growth-oriented new ventures can be defined as those entrepreneurs who have substantially increased their sales or number of employees over a period of time at their initial stages of entrepreneurial activity (Terjesen et al., 2015). The literature suggests that the growth of these ventures results from the interaction between entrepreneurs' internal resources and capabilities, the constraints of institutions, and the industrial context where they carry out their activities (Autio and Acs, 2010; Bamiatzi et al., 2016; Estrin et al., 2013).

A growing body of literature based on cross-country analysis has contributed to the understanding of a country's institutional and socio-economic influences on growth-oriented entrepreneurs, but relatively little attention has been paid to industry specific conditions within these studies (Du and Temouri, 2015; Krasniqi and Desai, 2016). Research has noted that this kind of entrepreneur is not exclusive to high R&D intensity industries, and that the industry's technological regime and structure, as well as individual characteristics such as specific human capital, play a crucial role in these ventures (Daunfeldt et al., 2015; Henrekson and Johansson, 2010). However, existing research has not fully addressed the interactions between entrepreneurs' strategic assets and capabilities, industry, institutions and growth orientation (Bamiatzi et al., 2016). In this regard, the existing literature suggests that, within specific industries, the inherent characteristics of the business (e.g. rural embeddedness, small-sized firms, family

ownership and management) and industry dynamics (e.g. heavily regulated environments and mature markets) may shape the rewards of entrepreneurial behaviours (Alsos et al. 2014; Grande et al., 2011; Lumpkin and Dess, 1996; Zilberman et al., 2017). The agricultural sector, therefore, provides a suitable setting for researching these internal and external determinants of entrepreneurial strategic choices because of its characteristics and the presence of growth-oriented entrepreneurs (Brown, 2011; Henrekson and Johansson, 2010). Additionally, there is still little knowledge about the drivers or the external influences of those individuals who can significantly contribute to the economic progress of the rural communities (Grande, 2011; Lans et al., 2014; Pindado and Sánchez, 2017; Zagata and Sutherland, 2015).

Therefore, the objective of this paper is to examine the resources and capabilities that affect the probability of an individual becoming a growth-oriented agro-entrepreneur, as well as the influence of institutional and industry conditions on this kind of entrepreneur. For this purpose, the study builds upon insights from the resource-based view and institutional theory, as well as the industry-based view. We examine the applicability of the above theories to a specific agricultural setting. The data for the empirical analysis has been drawn from the Global Entrepreneurship Monitor (GEM) and World Bank data. In the current study, we use an unbalanced sample of 90 countries and 5,770 individuals for the years 2004-2014. To test our hypotheses, we used multilevel modelling which takes into account the hierarchical structure of the dataset in which individuals represent level one and the country-year level two.

The contributions of this research are both conceptual and practical. First, this study is, to our knowledge, the first empirical analysis of growth-oriented agricultural entrepreneurship which uses cross-country data. Second, we adopt an approach developed in the strategic management literature – combining the resource based view, institutional

theory and the industry-based view– to analyse the multidimensional nature of new ventures' growth orientation within the agricultural sector. In doing so, we extend these theories to new ventures operating in mature and regulated markets. Thus, we address recent calls to increase knowledge about how specific industry conditions determine the growth of new ventures (Krasniqi and Desai, 2016; Stam and Bosma, 2015). Specifically, we explore whether the growth orientation of new ventures may be shaped by convergence effects in the level of international competitiveness of an industry (Delgado et al., 2014). Hence, we contribute to the discussion concerning the role that entrepreneurs play in their entrepreneurial outcomes versus exogenous influences (Wright et al., 2014). Our findings confirm the assumption that new ventures' growth is, to a great extent, determined by the entrepreneur and his innovative behaviour. Therefore, we provide insights into the critical role that entrepreneurs' competencies play in industries where specific features, such as resource constraints and engagement with the rural-natural environment, may hinder entrepreneurial efforts. Finally, the paper proposes some recommendations that may increase the effectiveness of agricultural entrepreneurial policies.

2. THEORETICAL BACKGROUND

2.1. Growth-oriented new ventures and agriculture

A review of the emerging literature on growth-oriented entrepreneurs reveals that we do not yet understand enough about the determinants of these entrepreneurs within specific industries, and, hence, more research is still needed (Autio and Rannikko, 2016; Coad et al., 2014). Nonetheless, from a general point of view, the prior literature indicates that this typology of entrepreneurship is determined by entrepreneurs' individual characteristics and external environment.

On this count, several researchers have examined entrepreneurs' internal factors associated with growth-oriented new ventures. For example, these new ventures are frequently team based with a higher level of market orientation, and are often knowledge-based and innovative (Mason and Brown, 2010). Moreover, growth-oriented entrepreneurs tend to be more highly educated than the average entrepreneur and have greater entrepreneurial experience (Autio, 2007; Mason and Brown, 2010). Furthermore, it is important to note that these entrepreneurs not only support their growth on the basis of their human capital, but also on their social capital; they use their social networks to acquire strategic resources reducing growth constraints (Littunen and Niittykangas, 2010).

An increasing number of studies have addressed the influence of entrepreneurs' external environment on the growth of the new ventures (Autio and Rannikko, 2016; Bravo-Biosca, 2010; Estrin et al., 2013; Littunen and Niittykangas, 2010; Mason and Brown, 2013). Research shows that the greater availability of human and financial resources to entrepreneurship and the flows of knowledge across actors positively affect the growth of the new ventures (Bowen and DeClercq, 2008). Likewise, studies have emphasized the influence of institutions (e.g. market regulations and cultural conditions) on growth-oriented entrepreneurs (Autio and Acs, 2010; Estrin et al., 2013; Stenholm et al., 2013). Finally, evidence suggests that industry specific characteristics such as competitive environment and technological innovation shape new firm growth (Eckhardt and Shane, 2011).

The agricultural sector has been traditionally associated with low-growth entrepreneurship as a consequence of its marginal productivity of labour, low R&D expenditures and specific market structure (Roucan-Kane et al., 2011). Market imperfections are responsible for growth opportunities, so markets like agriculture, which

have been strongly supported, have not experienced these imperfections that enhance entrepreneurial behaviour (Alsos et al., 2011; De Lauwere, 2005). Nevertheless, this situation has changed as a result of "more open policies" and of changes in demand and structural change which have opened up possibilities to develop agriculture through entrepreneurs offering value added products with high-growth perspectives (Grande, 2011; Vesala and Vesala, 2010).

In terms of these growth-oriented entrepreneurs, few studies have analysed new agricultural ventures' growth. Research has generally focused on established farms and country specific cases. Some of these studies have been focused on farm characteristics such as size and mechanisation and have arrived at different conclusions (Gardebroek et al., 2010). It is thus evident that the economic results of these agricultural ventures are influenced by other factors such as farmer characteristics as well as external constraints such as weather and location (Barbieri and Mshenga, 2008). Indeed, the role of the owner/manager is essential; their decision-making process and behaviour affect factors required to stay in the market and to obtain competitive advantage (Grande, 2011; De Lauwere, 2005).

In particular, to compete within the agricultural setting, new entrants may adopt a craftsman behaviour (i.e. compete on cost based on their technical skills), being effective managers of their new ventures, or by contrast, they may adopt a proactive approach towards the scanning of new market opportunities and taking risks to offer new products, which implies being a 'real' entrepreneur (Lans et al., 2017). The development of this entrepreneurial behaviour to take advantage of a positive market is a complex process that depends on the individual's resources and competencies (Shane, 2003). Hence, agro-entrepreneurs' characteristics such as demographic attributes, human capital (e.g. agriculture specific education, management experience and opportunity recognition

capabilities), as well as their social capital, influence farm growth (Barbieri and Mshenga, 2008; Gray et al., 2004; Lans et al., 2016).

However, business owners' characteristics are not the only factors that affect the new agricultural enterprises' venture revenue and income. There are numerous factors in the national economy that affect the farm economy. Furthermore, as pointed out above, the growth of these ventures is determined by the institutional context. Studies have shown how the changes in agricultural policy and agricultural chain norms (e.g. contracts among operators) affect the intentions of farmers regarding growth (Lobley and Butler, 2010; Van Herck et al., 2012). Moreover, the literature reflects how specific industry characteristics (e.g. number of competitors, access to land and agricultural commodity prices) influence the growth of farm enterprises (Van Herck and Swinnen, 2015). Therefore, institutional changes may create entrepreneurial opportunities and establish the rules to exploit it, but the specific industry context provides the frame that determines and drives the achievement of these opportunities within the agricultural sector (Zahra et al., 2014).

Thus, summarizing the above literature, the determinants of growth-oriented entrepreneurship within agriculture still remain scattered and underdeveloped. Agricultural scholars have focused on established firms more than on the initial stage of the new venture creation process. Moreover, much of the literature analysing external influences on agricultural entrepreneurship has overlooked the internal micro-processes of entrepreneurial action, and vice versa, literature focusing on individuals has overlooked their context. Consequently, there is a need for further knowledge recognizing the multidimensional nature of new ventures' growth within agriculture, where growth-oriented entrepreneurs may be critical actors in developing rural areas (Krasniqi and Desai, 2016; Pindado and Sánchez, 2017; Seuneke et al., 2013).

2.2. Theoretical framework

As the strategic management literature suggests, firm growth can be attributed to the three way interaction between a firm's resources and capabilities, the constraints of the institutional context, and the industry conditions in which it operates (Bamiatzi et al., 2016). Our theoretical framework, therefore, draws on the resource-based view and institutional theory, and also on the industry-based view, thus recognising the multilevel nature of new ventures' growth (Delmar et al., 2003; Lounsbury and Glynn, 2001; Lumpkin and Dess, 1996).

The resource-based view (RBV) allows us to analyse the internal factors that affect a new agricultural venture's growth. RBV defines a business as a unique collection of resources and capabilities, and those that are valuable, rare and inimitable, together with the suitability of the firm's organization to exploit these tangible and intangible assets (VRIO framework) give the firm competitive advantage and consequently greater financial rewards (Barney et al., 2001). Entrepreneurship literature has used RBV to understand the processes behind new firm creation and it has been extensively adopted in explaining the growth of these new ventures (Cassia and Minola, 2012; Wiklund and Sheperd, 2003).

However, despite the fact that RBV has been a core and fruitful perspective to explain firms' competitive advantages, it has overlooked or underestimated the influence of the external context on firms' strategic behaviour and results (Peng et al., 2008). In this regard, aggregate conditions such as institutional, cultural, demographic, technological and economic factors determine not only the decision to start a new venture, but also the strategy and behaviour of the new firm (Baumol, 1996; Wennekers et al., 2002). Institutions, together with the constraints of economy, therefore define the opportunities

in the economic system as well as the profitability and feasibility of new ventures exploiting them (Veciana and Urbano, 2008).

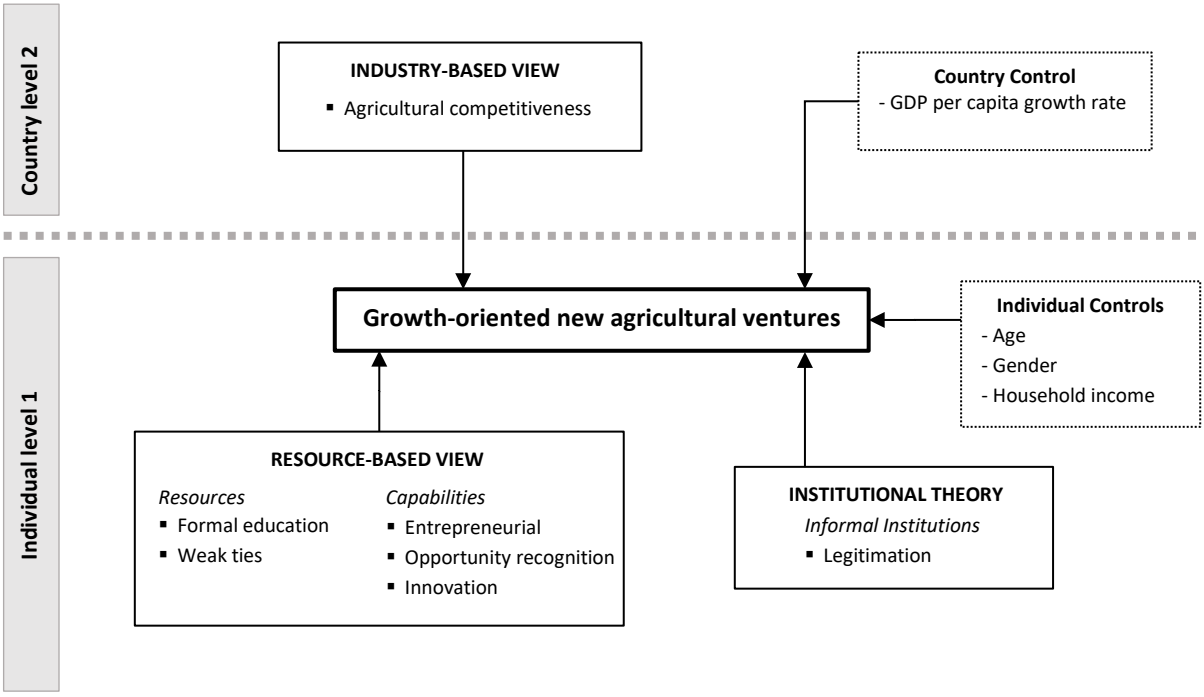
Accordingly, the institutional theory provides a well-established framework for assessing the effects of the social system on entrepreneurial outcomes (Stenholm et al., 2013; Veciana and Urbano, 2008). This theory holds that institutions shape the entrepreneurial processes by providing the rules and norms, thus determining the appropriability of actions for entrepreneurial organizations (Bruton et al., 2010). Following North's institutional perspective (1990), institutions can be classified into formal and informal. Informal institutions refer to values, beliefs and norms that determine socially acceptable behaviour, and formal institutions refer to regulations and law. Hence, informal institutions provide the guidelines about what is appropriate in social and commercial interactions (Bruton et al., 2010). Entrepreneurship literature has shown that new ventures that act under the framework of these institutions and, therefore have greater legitimacy from their peers, usually tend to achieve better results (Lounsbury and Glynn, 2001; Zimmerman and Zeitz, 2002).

Additionally, the industry-based view of the firm may be adopted to complement the understanding of new ventures' strategic choices to pursue and achieve growth (Yamakawa et al., 2008). This view of the firm suggests that market structure (e.g. industry maturity, barriers to entry, set-up costs, and degree of product differentiation and market concentration) within an industry shapes firms' behaviour and growth (Bamiatzi et al., 2016; Porter, 1980). The influence of these industry conditions on new ventures' performance and survival have been shown by several studies within the entrepreneurship field (Eckhardt and Shane, 2011; Larrañeta et al., 2014).

Thus, based on these theoretical approaches, a series of hypotheses will now be proposed that analyse the resources and capabilities, as well as the contextual variables

affecting growth oriented agricultural new ventures. These factors will be classified as follows: (1) resources and capabilities, (2) institutional factors, (3) industry context and (4) control variables (see Figure 1). The rationale for the inclusion of each of these factors and the proposed hypotheses will now be given.

Figure 1. Research model.



Source: Authors

2.2.1. Resource-based view

Formal Education as a resource. As widely acknowledged in the literature, high quality human capital enhances the ability to perceive and successfully exploit profitable entrepreneurial opportunities (Unger et al., 2011). Formal education is a core component of human capital and provides the knowledge and cognitive skills required to understand new information arising in the environment and elaborate adequate strategies to achieve higher returns from these identified opportunities (Ucbasaran et al., 2008). This positive relationship between formal education and growth oriented new ventures has been

highlighted in the literature (Estrin et al., 2013; Terjesen and Szerb, 2008). Regarding the agricultural sector, higher levels of education have been associated with higher performance of new ventures in prior research (Barbieri and Mshenga, 2008; Gray et al., 2004). Thus we propose the following hypothesis:

H1: It is more likely that new agricultural ventures will be growth-oriented when new entrants have higher formal education.

Weak ties as a resource. External relationships allow entrepreneurs to better access valuable resources such as market information and knowledge, and also provide better access to technology, financial capital and customers (Liao and Welsch, 2005). Hence, this social capital supports the growth of the new venture (Bosma et al., 2004; Estrin et al., 2013). Regarding the nature of this social capital, scholars have distinguished between weak ties (i.e. acquaintances, strangers and colleagues) and strong ties (i.e. family and close friends) based on Granovetter's classification (1973). Research reflects how weak ties increase the alertness of new entrants to industry changes which directly influences the growth of the new venture (Stam et al., 2014). Here, the agricultural literature has identified the importance of personal networks on new farm growth. However, the role that weak ties play remains unclear (Gray et al., 2004; Lans et al., 2016). Hence, we test the following hypothesis:

H2: It is more likely that new agricultural ventures will be growth-oriented when new entrants know other entrepreneurs.

Entrepreneurial capabilities. Prior literature has argued that new business owners who possess the necessary capabilities for the management and setting up of a firm have a greater chance of success (Lockett et al., 2011; Terjesen and Szerb, 2008; Unger et al., 2011). As Baum et al. (2001) note, entrepreneurial skills facilitate the implementation of the entrepreneur's strategy, as does their entrepreneurial mind-set, which ultimately

provides competitive advantage to new ventures. Despite the scarcity of these entrepreneurial skills among farmers –outlined in the literature – a series of studies have noted that farmer's entrepreneurial capabilities directly affect the farm's performance (De Lauwere, 2005; Ondersteijn et al., 2003). Consequently, we posit that:

H3: It is more likely that new agricultural ventures will be growth-oriented when new entrants have entrepreneurial capabilities.

Opportunity recognition capabilities. Opportunity recognition is the ability to recognize a profitable idea and exploit it for business development (Lumpkin and Lichtenstein, 2005). Properly recognizing what products, processes or business models can generate commercial value can enable entrepreneurs to evaluate and generate suitable commercial strategies and successfully deal with the barriers that they find during the initial stages, thus producing better results (Baron, 2004). The literature has verified the positive effects of entrepreneurs' capacity to identify opportunities for their firm's growth and performance (Mayer-Haug et al., 2013; Sambasivan et al., 2009). For agricultural ventures, opportunity identification has also been distinguished as a core capability for entrepreneurial performance and growth (Lans et al., 2014). Therefore, we hypothesized the following:

H4: It is more likely that new agricultural ventures will be growth-oriented when new entrants have the capability to recognize business opportunities.

Innovation Capabilities. Innovative assets such as accumulated scientific knowledge and capabilities required for product development, among others, enhance firms' innovation (Christensen, 1995). Entrepreneurs introduce new products, processes or services in order to take competitive advantage from identified market opportunities (Stenholm, 2011). Thus, this innovative behaviour is positively related to firm growth (Terjesen and Szerb, 2008; Stenholm, 2011). Consequently, growth-oriented

entrepreneurship has been traditionally related to innovations (Bamiatzi and Kirchmaier, 2014; Coad, 2009). The literature has emphasized growth through technical effectiveness and scale efficiency in the case of agricultural producers. Nevertheless, modern supply chains require innovative products offering valuable opportunities for new entrants growth (Pindado and Sánchez, 2017; Gray et al., 2004; Rao et al., 2012). Based on this, we propose the following hypothesis:

H5: It is more likely that new agricultural ventures will be growth-oriented when new entrants have product innovation capabilities.

2.2.2. Institutional theory

Legitimation. Scholars have used legitimacy "to describe the prescriptions of both formal and informal institutions" (Webb et al., 2009). As such, institutional legitimacy has been classified into regulatory, normative and cognitive legitimacy in the literature (Pollack et al., 2012). The first corresponds to the regulations, standards and expectations created by governments and organizations, an acknowledgment that the new venture is a good corporate citizen. Normative legitimacy corresponds to the norms and values of a society and cognitive legitimacy describes how stakeholders passively make "legitimacy judgments" about an organization (Pollack et al., 2012; Zimmerman and Zeitz, 2002). Entrepreneurship scholars have emphasized the importance of normative and cognitive legitimacy for access to and the acquisition of valuable resources which enhance the growth of new ventures (Khaire, 2010; Zimmerman and Zeitz, 2002). Hence, we propose the following hypothesis:

H6: It is more likely that new agricultural ventures will be growth-oriented when new entrants perceive legitimation of their entrepreneurial activity.

2.2.3. Industry-based view

Industry competitiveness. Empirical research has shown faster growth of firms in emerging markets and industries than in developed ones (Mitra et al., 2014). This fact relates to the concept of global convergence, which argues that developing economies grow faster due to their greater marginal gains in productivity (Mankiw et al., 1992). This convergence can be found at the aggregate level as well as in industries (Ball et al., 2004; Dumais et al., 2002). At the industry level, cost based competition, limitations on resources and congestion costs in highly competitive industries may diminish the returns of new ventures (Delgado et al., 2014). However, the literature also states that the presence of specialized firms and institutions in highly competitive regions may generate knowledge spillovers that foster the creation of new ventures with high growth potential (Acs et al., 2009; Delgado et al., 2014). In this regard, Martin and Mitra (2001) noted how agriculture is influenced by rapid convergence dynamics in less competitive countries. Consequently, we propose the following hypothesis:

H7: It is more likely that new agricultural ventures will be growth-oriented in less agriculturally competitive countries as a consequence of convergence forces.

2.2.4. The moderating effect of industry competitiveness on the innovativeness-growth relationship

Several studies in the literature have provided evidence to the fact that the relationship between innovation and firm growth is moderated by the firm's external context (De Clercq et al, 2010; Rosenbusch et al., 2011). However, understanding of the external market conditions under which product innovation is more or less beneficial is still limited (Prajogo, 2016). The literature has reflected how within competitive markets, where resources are constrained and price competition is intense, product innovation is a significantly effective strategy in achieving competitive advantage for new entrants

(Covin and Slevin, 1989; Lumpkin and Dess, 2001). Nevertheless, within these highly competitive environments, the number of competitors, innovative products and substitutes is higher, which may limit the potential to generate profits from innovative products and entrepreneurs may find cost competition through process innovations more efficient (Prajogo, 2016). Hence, we test the following:

H8: A country's agricultural competitiveness moderates the positive relationship between a new agricultural entrant's product innovation capabilities and the growth orientation of the new venture such that as competitiveness increases, product innovation capabilities have a stronger influence.

3. DATA AND METHODOLOGY

Our theoretical framework attempts to explain what constitutes a growth-oriented agro-entrepreneur based on internal (level 1) and external factors (level 2). Consequently, a multi-level analysis is required to test the proposed hypotheses. Hence, the study uses a dataset created by the authors by merging data from the Global Entrepreneurship Monitor (GEM) with environmental economic data from the World Bank. In this study we analyse early stage agricultural entrepreneurs defined as owner-managers of new businesses less than 42 months old belonging to the agriculture, forestry or fisheries sectors, in accordance with the International Standard Industrial Classification (ISIC). The initial dataset included a total of 5,770 new agricultural ventures from the GEM adult population surveys (APS) from 2004 to 2014 in 90 countries (Table A1 in the Appendix lists the countries included). The APS collects the entrepreneurial activity, attitudes and aspirations of individuals from representative samples of at least 2,000 adults (18–64 years old) per country (see Reynolds et al., 2005).

3.1. Description of variables

Dependent variable. The literature has identified growth-oriented new ventures as the subset of entrepreneurs that have achieved a substantial increase in employees (firm size) or sales (firm outputs) over a period of time (Terjesen et al., 2015). Related to this, several studies have demonstrated with strong empirical validity the role played by entrepreneurs' employment growth aspirations in predicting their current and future growth (Covin and Wales, 2012; Delmar and Wiklund, 2008, Stam, 2010). Thus, our dependent variable is the agro-entrepreneurs' employment growth aspirations, calculated following Estrin et al., (2013), as the difference between the natural logarithms of the agro-entrepreneur's expected level of employment in five years and the current number of jobs. We eliminated the extreme outliers from the dataset defined as those observations greater than three times the inter-quartile range.

Independent variables. Three groups of independent variables are considered in this study: new agricultural entrants' resources and capabilities, institutional legitimation and the country's agricultural competitiveness. At the individual level, to test our hypotheses related to entrepreneurs' resources (H1 and H2) we use new entrants' formal education level to assess their general human capital and weak social ties to capture their social capital. In order to test the influence of new entrants' entrepreneurial capabilities on new ventures' growth orientation (H3) we use the individual's self-assessed entrepreneurial capabilities as proposed by Gist (1987). For the entrepreneurial capabilities reflecting the new farmer's proactiveness (H4), we use the new entrants' opportunity recognition (Pindado and Sánchez, 2017). To test the effect of product innovation strategy on growth orientation (H5), we use entrepreneurs' product innovation capabilities. All these variables have been used in empirical analyses based on GEM data analysing new ventures' growth (Autio and Acs, 2010; Estrin et al., 2013; Stenholm et al., 2013). We

also use –for H6 – the perceived legitimation of the entrepreneurial activity by the new entrant to analyse the effect of informal institutions on new agricultural ventures' growth orientation (Liñán et al., 2011). Finally, at country level, we use the agricultural value added per worker from the World Bank data as a proxy for the national level of agricultural competitiveness to test the effect of industry conditions on new agricultural ventures' orientation (H7) (Audretsch et al., 2012; Buckley et al., 1988; Lio and Liu, 2008).

This measure of competitiveness, available for the countries selected in this research, has also been used to compare different geographic scenarios by Ball et al., (2010), Coca et al., (2017), García-Álvarez-Coque et al., (2018), Matyja, (2016) and Nowak and Kaminska (2016).

Control variables. Prior research suggests that entrepreneurs' socio-demographic profile and country socioeconomic conditions influence the growth of new ventures (Bravo-Biosca, 2010; Estrin et al., 2013). Thus, at the individual level, we control for the entrepreneurs' age, gender and household income, which have been considered as factors that affect new venture growth (Autio and Acs, 2010). At country level, we control for the influence of the national business cycle measured through the GDP per capita growth rate (Aidis et al., 2012; Wennekers et al., 2005). This country control was taken from World Bank data. Table 1 shows the definition of the variables and the descriptive statistics for observations used in estimations. The correlation matrix can be found in the Appendix (Table A2).

Table 1. Definitions and descriptive statics of variables used.

Variable	Description	Possible Values	Mean	S.D.
Individual level variables				
Resource-based view				
Formal education	Variable indicating whether new agricultural entrant has graduate experience	1. Yes 0. No	0.064	0.246
Weak ties	Variable indicating whether the new agricultural entrant knows someone who has started a business in the last two years.	1. Yes 0. No	0.586	0.493
Entrepreneurial capabilities	Variable indicating whether the new agricultural entrant believes that he or she has the knowledge, skills and experience required to start a business.	1. Yes 0. No	0.797	0.402
Opportunity recognition capabilities	Variable indicating whether the new agricultural entrant believes that there will be good opportunities for starting a business in the area in which he lives in the next six months.	1. Yes 0. No	0.551	0.497
Product innovation capabilities	Variable indicating whether the new agricultural entrant considers that his clients (some or all) believe his product to be new.	1. Yes 0. No	0.342	0.474
Institutional theory				
Legitimation	Variable indicating whether the new agricultural entrant believes that in his/her country most people believe that entrepreneurship is a good career option.	1. Yes 0. No	0.703	0.457
Individual level controls				
Age	Age of new agricultural entrant measured in years.		39.699	12.222
Gender	Gender of new agricultural entrant.	0. Female 1. Male	0.672	0.470
Household income	Household income scale	1. Lowest 33% 2. Middle 33% 3. Upper 33%	2.014	0.816
Country level variable				
Agricultural competitiveness (t−1)	Agriculture value added per worker, constant at 2005 US$ (WBI).		14,492.782	19,838.698
Country level controls				
GDP per capita growth rate (t−1)	Annual percentage growth rate of GDP per capita based on constant local currency (WBI).		2.820	3.664
Dependent Variable				
Agro-entrepreneurs' employment growth aspirations	Expected rate of employment growth calculated as the difference between the natural logarithms of expected level of employment in five years and the current level of employment considering the number owner-managers of the new agricultural venture.		0.754	0.899

Source: GEM 2004-2014 or specified (World Bank Indicators, WBI). Statistics reported are based on observations used in multilevel estimations (5,770 observations).

3.2. Estimation Methods

This study used a cross-time, cross-country, cross-individual dataset obtained from the GEM Adult Population Surveys, grouped by country and year. This hierarchical and clustered structure of the data violates the OLS assumption of the independence of all observations due to the fact that observations within each group are often more similar

(correlated) than observations between groups (Hofmann et al., 2000). Thus, analyses that assume independence of observations may produce biased results due to an underestimation of standard errors given their non-normal distribution (Hox, 2002). Hence, to avoid biased results and to capture the unobserved heterogeneity, we used multilevel (random-effects) linear models which include random intercept terms for country and year (Rabe-Hesketh et al., 2005). For an agro-entrepreneur i of country j in year k, the regression model without interactions takes the following form (Gelman and Hill, 2006):

$$\begin{aligned}\mathrm{GrowthAspirationsAgroEntrepreneur_{ijk}} &= \beta_0 + \beta_1\,\mathrm{Age_{ijk}} + \beta_2\,\mathrm{Age.Squared_{ijk}} + \beta_3\,\mathrm{Gender_{ijk}} + \beta_4\,\mathrm{HHincome_{ijk}} \\ &+ \beta_5\,\mathrm{FormalEducation_{ijk}} + \beta_6\,\mathrm{WeakTies_{ijk}} + \beta_7\,\mathrm{EntrpCap_{ijk}} \\ &+ \beta_8\,\mathrm{OpportRecognitionCap_{ijk}} + \beta_9\,\mathrm{ProductInnCap_{ijk}} \\ &+ \beta_{10}\mathrm{Legitimation_{ijk}} + \beta_{11}\mathrm{l.GDPpc.growth_{jk}} \\ &+ \beta_{12}\mathrm{l.AgriCompetitiveness_{jk}} + u_{\mathrm{j}} + v_{\mathrm{k}} + \varepsilon_{\mathrm{ijk}}\end{aligned} \quad (1)$$

Where β_0 is the overall intercept term and the combination $(u_{\mathrm{j}} + v_{\mathrm{k}} + \varepsilon_{\mathrm{ijk}})$ represents the random part of the equation, in which u_{j} are the country residuals, v_{k} are the year residuals, and $\varepsilon_{\mathrm{ijk}}$ those of the individual. This econometric approach allows us to capture the heterogeneity of individual-level entrepreneurial behaviours as well as their dependence on the higher-level contexts in which those behaviours are developed, obtaining more accurate tests of cross-level interaction effects (Autio and Acs, 2010; Martin et al., 2007). Moreover, this approach is preferred to 'complete pooling' regressions which assume no differences between higher-level units and Fixed Effects specifications, which does "*not allow for the estimation of higher-level, time-invariant*

parameters or residuals" (Bell and Jones, 2015). In the context of the present research (i.e. GEM data is highly unbalanced with countries appearing once or twice over time), it would be possible to expect a small variation of country-level variables over time and, therefore, these methods could be not adequate (Estrin and Mickiewicz, 2011).

A five-step testing strategy was used to estimate the influence of the entrepreneur's resources and capabilities, and country-year factors on the agro-entrepreneurs' employment growth aspirations. First, we performed an LR test (likelihood ratio approach), comparing the null multilevel model with a null single-level model to test the significant variance across country and years groups for the dependent variable, justifying the use of multilevel analysis (Bliese, 2000). Next, we performed a multilevel regression model including individual and country-year levels controls to estimate the percentage of variance explained by these controls. Third, we included the individual-level variables to estimate their effects on growth-oriented agro-entrepreneurship and evaluate the remaining variance explained by these factors. Fourth, we included country-year variable to test their effect. Finally, we tested the interaction hypothesis.

In order to control for the robustness of our results, a Hausman specification test was performed for eq. (1) to support the use of random effects models against fixed effects models. The test showed an insignificant result ($p = 0.678$) which means that the fixed effects models do not provide a more efficient estimate. Furthermore, the correlations between the explanatory variables, shown in the Appendix (Table A2), do not initially show severe multicollinearity problems (Hair et al., 1995). A multicollinearity test was carried out for each regression and the results (Variance Inflation Factors) rule out any problems in this regard in the database. We lagged the country-year variables by 1 year to potentially reduce problems of reverse causality (Fritsch and Falck, 2007).

The Hausman test performed does not indicate the presence of level 2 endogeneity (Hanchane and Mostafa, 2012). On the other hand, at level 1, to control for the potential endogeneity caused by the possibility that growth-oriented new entrants self-select to become innovators, we performed a two-step Heckman test (Mansury and Love, 2008). This approach involves using a selection probit equation to predict the likelihood that a new entrant will engage in innovation behaviours. For this first stage, we employed a variable that is correlated with the new entrants' innovation behaviours and uncorrelated with the growth aspirations. In particular, we utilized the national level of unemployment[1] which fosters necessity entrepreneurship — identified as non-innovative new entrants— and should not be relevant for their growth aspirations as it increases local turbulence and, therefore, may create opportunities or constraints for firms' growth (Santarelli and Vivarelli, 2007). The residuals from this equation were used to calculate the inverse Mills' Ratio (IMR), which was inserted as a control in the new entrant's growth aspiration equation. The results (available on request from the authors) indicate that the IMR is not significant, which suggest that sample selection did not result in substantial bias in our analysis.

4. RESULTS

A pre-condition for multilevel modelling is that statistical significance between-group variance exists for the dependent variable (Bliese, 2000). The intra-class correlation coefficient (ICC) reveals that 11.4% of the total variance in the dependent variable is attributable to specific country circumstances and 1.6% to temporal factors. Hence, the effect of country and year groups has been analysed through an LR test with a statistically

[1] From World Bank database.

significant effect being found for growth-oriented agro-entrepreneurs with an LRT of 734.739 ($p<0.001$), which supports the use of multilevel models.

The estimated parameters obtained for the multilevel regressions and model fit statics are shown in Table 2. Model 1 in Table 2 includes only individual and country-year controls. It allows us to analyse the proportion of variance in growth-oriented agro-entrepreneurship accounted for by the controls. The variance of random intercept decreases from 0.09 in the null model (not shown in Table 2) to 0.086 in Model 1 in Table 2, suggesting that our controls explain 4.4% (((0.09-0.086)/0.09)*100) of the country level variance.

Model 2 in Table 2 shows the statistically significant and positive influence of new agricultural entrants' resources and capabilities, particularly their level of formal education ($p<0.01$), weak social ties with other entrepreneurs ($p<0.10$), entrepreneurial capabilities ($p<0.01$), opportunity recognition ($p<0.01$) and product innovation capabilities ($p<0.01$) on growth-oriented agro-entrepreneurship, supporting hypotheses 1, 2, 3, 4 and 5 respectively. On the other hand, the positive effect of perceiving entrepreneurial activity as legitimate on the growth orientation of the new venture (Hypothesis 6), has not been found to be statistically significant. Regarding the effect of national agricultural competitiveness, Model 3 in Table 2 shows that agricultural productivity is statistically significant ($p<0.05$) and negatively related to the probability of becoming a growth-oriented agro-entrepreneur. This suggests that the growth orientation of new agricultural ventures is driven by convergence forces thus supporting Hypothesis 7.

Table 2. Estimation results for growth-oriented agro-entrepreneurship. Multilevel random intercept model.

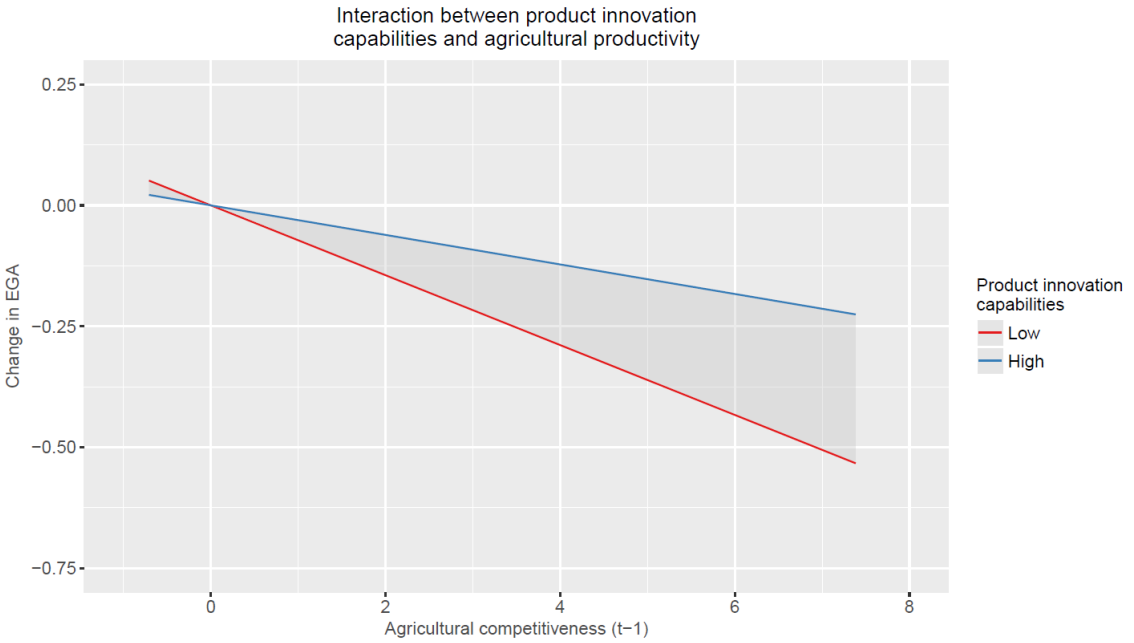
	Model 1	Model 2	Model 3	Model 4
Individual level controls				
Age	0.187 *** (0.063)	0.196 *** (0.062)	0.197 *** (0.062)	0.197 *** (0.062)
Age (squared)	-0.217 *** (0.063)	-0.221 *** (0.062)	-0.221 *** (0.062)	-0.220 *** (0.062)
Gender (Male)	0.147 *** (0.024)	0.125 *** (0.023)	0.124 *** (0.023)	0.124 *** (0.023)
Household income	0.091 *** (0.014)	0.072 *** (0.014)	0.072 *** (0.014)	0.072 *** (0.014)
Individual level variables				
Formal education		-0.040 (0.046)	-0.038 (0.046)	-0.039 (0.046)
Weak ties		0.051 ** (0.023)	0.051 ** (0.023)	0.050 ** (0.023)
Entrepreneurial capabilities		0.156 *** (0.029)	0.156 *** (0.029)	0.155 *** (0.029)
Opportunity recognition capabilities		0.141 *** (0.023)	0.140 *** (0.023)	0.139 *** (0.023)
Product innovation capabilities		0.198 *** (0.024)	0.197 *** (0.024)	0.198 *** (0.024)
Legitimation		0.007 (0.025)	0.006 (0.025)	0.007 (0.025)
Country level control variables				
GDP per capita growth rate (t−1)	0.026 (0.018)	0.017 (0.018)	0.009 (0.018)	0.008 (0.018)
Country level variables				
Agricultural competitiveness (t−1)			-0.059 ** (0.025)	-0.072 *** (0.026)
Interaction terms				
Product innovation Capabilities x Agricultural competitiveness (t−1)				0.042 * (0.024)
Constant	0.420 *** (0.059)	0.177 *** (0.063)	0.193 *** (0.063)	0.195 *** (0.063)
Model fit statistics				
$N_{country}$	90	90	90	90
N_{year}	11	11	11	11
Variance of random intercept country	0.086	0.076	0.068	0.068
Variance of random intercept year	0.011	0.011	0.012	0.012
$ICC_{country}$	0.111	0.102	0.092	0.092
ICC_{year}	0.015	0.015	0.016	0.016
Observations	5,770	5,770	5,770	5,770
Log Likelihood	-7,151.9	-7,070	-7,067.4	-7,065.9
Chi-square	105.07	268.87	274.07	276.98
Probability>chi-square	***	***	***	***
AIC	14,321.78	14,169.99	14,166.78	14,165.87
Pseudo R^2	0.173	0. 194	0. 194	0. 195
LR test of model fit	-	***	**	*

Note: Level of significance: '***' 1% '**' 5% '*' 10%. Standard errors in parentheses. Continuous variables are standardised. A likelihood ratio test was conducted, comparing Models 1 through 4 between each other to test the improvement of the goodness of fit when we introduced individual and country-year variables as well as the interaction term. AIC, Akaike Information Criterion.

As we can see from the results shown in Table 2, the addition of individual and country-year variables increases the explanation of the country variance that exists in the dependent variable, which is reflected in the decreasing value of the variance component of the intercept from 0.075 to 0.065 in models 2 and 3 respectively. It assumes that the addition of individual level variables explains an additional 12.8% (((0.086-0.075)/ 0.086)*100) of the country level variance, and the addition of the second level variable (i.e. agricultural competitiveness) explains an additional 13.3% (((0.075-0.065)/ 0.075)*100). Regarding the year level variance, results show how the country-year variable explains more variability, with less variability being explained by the individual level variables (Peugh, 2010).

The moderating effect of agricultural competitiveness on the relationship between product innovation capabilities and the growth orientation of new agri-ventures is statistically significant ($p<0.10$) and positive as is shown in Model 4 in Table 2, indicating that when agricultural competitiveness was stronger, new entrants' product innovation capabilities were a stronger influence on the growth orientation of the new agricultural ventures. To facilitate the interpretation of the moderating effect of agricultural competitiveness, the interaction was plotted in Figure 2 and shows how individuals with higher levels of product innovation capabilities are about twice as likely to become growth-oriented agro-entrepreneurs in more highly competitive agricultural countries.

Figure 1. A country's agricultural competitiveness as a moderator of the relationship between product innovation capabilities and agro-entrepreneurs' employment growth aspirations.



Control variables at individual and country level provided interesting findings. The effect of age is positive and statistically significant, but the effect of age squared is negative and statistically significant in Model 4 in Table 2. Thus, the relationship between age and growth-oriented agro-entrepreneurship is curvilinear (inverse U-shaped). Furthermore, being male is positively and statistically significant associated to growth-oriented agro-entrepreneurship. At the country-year level, the control for the national business cycle measured by GDP per capita growth rate is non-statistically significant, reinforcing the role that industry dynamics play on entrepreneurial outcomes.

5. DISCUSSION

Assuming that growth-oriented entrepreneurs can be found in all sectors and are identified as those entrepreneurs who have greater capacity to contribute to regional economic development and invigorate the industries where they operate (Autio and

Rannikko, 2016; Coad et al., 2014), it is interesting to understand what triggers these growth-oriented new ventures within strategic sectors such as agriculture, where the characteristics of the agricultural business and rural work force, together with their strong linkages with the rural environment, institutions and related industries, shape the entrepreneurial outcomes of new entrants into the economic activity.

This study analyses, therefore, new agricultural entrants' resources and capabilities, as well as the institutional factors and industry specific economic conditions which influence the starting of a new venture with a clearly entrepreneurial orientation towards growth in the agricultural sector. For this purpose we employed a multilevel-framework that includes individual and country-year level variables. We analysed data for 90 countries from 2004 to 2014, which allowed us to analyse the new farmer's entrepreneurial growth orientation from an international perspective capturing the heterogeneity of the process between countries and their multidimensional nature.

The analysis presented in this paper confirms the value of general human capital as a resource for entrepreneurial outcomes in agriculture. The results indicate a positive relationship between new entrants' education level and their growth orientation, which highlights the importance of the knowledge base of the new entrants when it comes to identifying and exploiting profitable business opportunities (Qian and Acs, 2013; Unger et al., 2011). This result is also in line with the literature stating that better educated new entrants tend to more easily acquire knowledge which could be translated into managerial and practical skills, thus allowing better economic performance (Barbieri and Mshenga, 2008; Fall and Magnac, 2004).

Additionally, our findings suggest that new farmers' bridging social capital developed by weak ties with other entrepreneurs has a positive effect on the growth orientation of new agricultural ventures. This supports the view that social capital

provides access to new information and learning required to identify more profitable entrepreneurial opportunities within changing industries (Liao and Welsch, 2005; Stam et al., 2014). As Lans et al., (2016) have shown, farmers' external networks provide access to key resources (e.g. consumer trends and product development) that significantly impact the growth of agricultural business in the short run, outweighing the disadvantages of their relative isolation from markets.

However, our results suggest that agro-entrepreneurs' resources provide an incomplete explanation of their entrepreneurial outputs and need to be complemented with the appropriate capabilities to successfully manage their resources and accomplish entrepreneurial goals. In fact, our study showed that entrepreneurial and opportunity recognition capabilities significantly increase the probability of being an agricultural entrepreneur with high-potential for growth. These results are in line with earlier studies that found that entrepreneurial capabilities are, unequivocally, positively related to competitive advantage and firm growth (Eggers et al., 2013). During the growth of the new agricultural venture, contexts continuously change (e.g. geographic expansion or internationalization suppose new challenges for farmers), and therefore a set of entrepreneurial capabilities is required (e.g. creativity, resource and finance management to set up and maintain the firm) which allow for the better managing of these changes, exploiting market trends and overcoming barriers (Macpherson and Holt, 2007). Furthermore, prior research has also shown how entrepreneurs with higher levels of opportunity recognition capabilities are able to more effectively exploit growth opportunities as they implant better exploitation strategies and anticipate future challenges (Mayer-Haug et al., 2013; Sambasivan et al., 2009). Hence, our findings reinforce the view that agricultural entrepreneurs need to have the capabilities necessary

not only to perceive opportunities but also those required to capitalize on them and adapt to the changing environment during the initial stages of firm growth (Grande, 2011).

In addition to these capabilities that influence the decision-making processes of new agricultural entrants (i.e. the decision to exploit an opportunity and how to do it), our study reveals the importance of product innovation capabilities on new agricultural ventures with a clear growth orientation. It means that new entrants who have the technical skills and product development capacity to translate the opportunity identified into an effective new product realization meeting the needs of their customers have a greater chance of achieving a competitive advantage (Choi and Shepherd, 2004; Stenholm, 2011). This finding is further evidence for the positive effect that product innovation and adoption have on agricultural smallholders' performance, despite the fact that the literature has pointed out the risk of failure of early adoptions by young firms (Reece and Sumberg, 2003; Stam and Wennberg (2009), Schipmann and Qaim, 2010).

The empirical results of this study also provide evidence of the multidimensional nature of the agro-entrepreneurial process, and how contextual factors affect the strategic behaviour and results of new agricultural ventures. Thus, our results do not support the idea that the perceived legitimation of the entrepreneurial activity by new farmers in their environment positively impacts the growth orientation of their new ventures. This is consistent with Stenholm and Hytti (2014), who emphasized that entrepreneurial farmers tend to be independent from their local communities' social norms and values and act as change agents in relation to them.

However, our findings clearly indicate that national industry conditions influence the growth orientation of new agricultural entrants. This was reflected in the substantial variance explained (13.3%) in the dependent variable by the specific country-year level of agricultural competitiveness. We found that agro-entrepreneurs in countries with lower

levels of agricultural competitiveness have a greater probability of becoming growth-oriented. This means that agro-entrepreneurs operating in countries with less competitive agriculture have greater marginal returns on entrepreneurial opportunities as a consequence, for example, of lower costs of specialized inputs (Delgado et al., 2014; Zilberman et al., 2017). Thus, in terms of growth of new agricultural ventures, it corroborates the findings of Martin and Mitra (2001) about the convergence dynamics that exist in the agricultural sector across nations.

Furthermore, we also found the role of industry context to be significant as a moderator of the relationship between product innovation capabilities and the growth orientation of the new agricultural ventures. New entrants' innovation capabilities are more effective in supporting the growth orientation of agro-entrepreneurs in highly competitive agricultural countries. This reflects that for new agri-ventures operating in highly competitive contexts product innovation is a key strategy to break out of the price-based competition that characterizes these environments and leads to a higher level of competitive advantage (Curzi and Olper, 2012; Lumpkin and Dess, 2001). Nevertheless, previous studies have noted how the normative barriers and high entry costs of these environments, together with the inherent uncertainty of agricultural production, determine that new entrants usually choose conservative strategies to compete (McDonald et al., 2014).

Considering the above, this study contributes to the existing literature in the following ways: first, it contributes to the agricultural economics literature shedding light on what makes new agricultural entrants become entrepreneurially oriented with a greater inclination to expand their ventures. Further, this study is based on an international sample of new agricultural entrants capturing different entrepreneurial capabilities and perceptions, which provides a broader and complete view of the entrepreneurial process

within the sector. Moreover, our study extends to agricultural entrepreneurship the theoretical basis of strategic management that firms' entrepreneurial outcomes are self-determined by applying an approach that integrates the resource-based view, institutional theory and an industry-based view (Bamiatzi et al., 2016). We confirm that despite the influences of institutions and industry conditions on new agricultural ventures' outcomes, the role of new farmers is crucial to the new venture's orientation and results, which supports the view that new agricultural entrants can be characterized as entrepreneurs instead of price takers (Pindado and Sánchez, 2017).

Additionally, our research contributes to the entrepreneurship literature by moving beyond cross-countries studies based on GEM surveys and focusing on a specific sector, thus responding to recent calls for analysis of the contextual influences on entrepreneurial outcomes (Krasniqi and Desai, 2016; Stam and Bosma, 2015). In this regard, we encourage researchers to investigate the relationship between the entrepreneur's capabilities and their financial rewards within specific technological and market conditions, which may provide useful insights to understanding the entrepreneurial behaviour of new entrants (Prajogo, 2016).

Finally, new agricultural ventures labelled as "value-added agriculture" have been a mantra for policy-makers that want to promote higher incomes than traditional commodity production and distribution to contribute to rural welfare and agricultural development (Gray et al., 2004). Consequently, policies seeking to promote entrepreneurship in rural areas and agriculture represent a significant amount of governments' resources. However, their effectiveness has been limited (Knudson et al., 2004; Stephens et al., 2013). In rural areas and in the agricultural sector in particular, there exists a scarcity of entrepreneurs with a high potential for growth (Pindado and Sánchez, 2017).

This research, therefore, could facilitate the design of policies aimed at increasing the entrepreneurial behaviour of new agricultural entrants as well as specific measures and programmes boosting growth-oriented agricultural ventures. Since new farmers' entrepreneurial capabilities to set up a business and to recognize market opportunities play a central role in triggering agricultural ventures with high potential for growth, education and training programs for new entrants need to include and support the learning of this set of skills (Seuneke et al., 2013; Schmit and Gomez, 2011). Given that farmers not only need the managerial capabilities necessary to exploit the opportunity identified, but also those necessary to identify it in the first place, entrepreneurial education programs within the sector should include idea generating techniques and opportunity search strategies (Heinonen et al., 2011). Furthermore, these programs should develop the creative thinking of new farmers, especially in highly competitive markets where product innovation capabilities have been identified as key to new ventures' competitive advantage (Martins and Terblanche, 2003). The development of these capabilities among farmers directly relates to the role that social ties with other entrepreneurs play in this entrepreneurial process by increasing information sharing, the learning of new capabilities and fostering the legitimation of the entrepreneurial activity (Lans et al., 2016). Therefore rural policies should facilitate social interaction among rural entrepreneurs (i.e. regardless of their economic activity) and prevent agricultural entrepreneurs from being isolated from their peers. However, we must not forget that entrepreneurial outcomes are largely self-determined even in farming. Thus, new agricultural business owner managers should concern themselves with developing their entrepreneurial capabilities and competencies through training and education, as well as increasing their exposure to new information and professional networks outside agriculture.

Although the current study provides interesting findings on agricultural entrepreneurship, it has some limitations that need to be acknowledged. Despite the fact that GEM data provides the most relevant source for cross-country research on entrepreneurial activity, larger and more complex databases which include farm variables (e.g. size, land tenure, farm type and financial support) and external variables (e.g. agricultural innovation systems) for the same entrepreneur over time are needed for a better understanding of the agro-entrepreneurial process (Barbieri and Mshenga, 2008).

Likewise, the use of secondary data such as GEM limits the research on the role that specific human capital (i.e. new farmers' background) plays in the information and knowledge flows within the sector and subsequently in opportunity identification (Methorst et al., 2016). Moreover, the role that strong social ties play in this process is restricted in GEM data since there is no measure that captures farmers' bonding social capital, although research has stated its relevance in agricultural start-up phase (Mailfert, 2007). Moreover, prior research has shown how the family context determines the farming practices and entrepreneurial orientation of new generations of farmers (Vesala and Vesala, 2010; Zagata and Sutherland, 2015). Future research should explore how the succession process, women's involvement and the resources and capabilities resulting from family interactions shape and shift new entrants' strategic choices (Chrisman et al., 2003; López-Fernández et al., 2016).

Another concern is the inherent link between agriculture and rurality, which implies high variability between regions in terms of productivity and infrastructures supporting enterprise formation and development (North and Smallbone, 2006). This study has used country-level predictors limited by the cross-country nature of the dataset. Therefore, additional cross-regional research is needed to improve understanding of these growth-oriented entrepreneurs. Differences at the regional-industry level, as well as between

related industries within regions, such as the presence of specialized institutions and the structure of regional social networks may determine convergence or divergence patterns in entrepreneurial returns (Delgado et al., 2014). In this regard, an interesting topic for further research could be to examine the influence of knowledge intensive business services (KIBS) on the entrepreneurial outcomes of new entrants based on their different knowledge bases and sector affiliation (Pina and Tether, 2016).

We also acknowledge that the growth orientation of the new entrants could be measured in different ways with a narrower definition of growth oriented new agro-ventures. Nevertheless, the variable used allowed for investigating the process from an international perspective and obtain representative results. Additionally, the cross-sectional nature of our data limited us to carrying out panel data estimations analysing how changes in capabilities or industry dynamics shape growth-oriented ventures.

Another limitation of our study is the potential endogeneity of the effect of household income and education on new entrants' growth aspirations (see, Grilo and Thurik, 2008, and Parker and Van Praag, 2006,) which cannot be ruled out due to lack of suitable instruments in our dataset. However, the exclusion of both factors, independently, does not change the estimated effects shown in the results section, which suggests that their inclusion does not appear to bias the analysis[2]. In this sense, the entrepreneurship literature analysing these concerns indicates that endogeneity bias may be more severe in the analysis of entrepreneurial earnings than entrepreneurial growth (Van der Sluis et al., 2008). Moreover, the GEM survey measure of household income does not necessarily capture the new business investment, financial constraints and personal earnings (Honjo, 2015). Thus, future research should investigate — through the use of appropriate

[2] Results are available from the authors on request.

measures and instruments proposed in the literature— the endogeneity and quantitative importance of the effect of these factors within the agricultural setting.

6. CONCLUSION

Based on a multilevel-framework, this study analyzed the entrepreneurs' resources and capabilities, institutional factors and industry competitive context which influence the starting of a growth-oriented venture in the primary sector. Specifically, we found that the context matters; our results indicate that the growth orientation of new agricultural ventures is influenced by the convergence between countries' levels of agricultural competitiveness, which means that new farmers in less competitive countries have a greater orientation towards growth. Even so, the role that the agricultural entrepreneur plays in the determination of this orientation towards growth is crucial. Their level of formal education and social interactions with other entrepreneurs increase their likelihood of becoming growth-oriented. The analysis also indicates that the capabilities necessary to identify market opportunities and to set up a firm to exploit these opportunities strongly support the growth orientation of these ventures. Furthermore, the capabilities to effectively develop and offer new products to their customers (i.e. product innovation capabilities) determine the growth orientation of these agro-entrepreneurs. The study also revealed that the influence of product innovation capabilities on growth are to some extent contingent upon the industry environment, being more effective in supporting the growth orientation of agro-entrepreneurs in highly competitive agricultural countries. This study contributes to the literature on agricultural entrepreneurship and its strategic orientation in different competitive environments and highlights the role of new farmers as individuals acting as entrepreneurs to achieve success in the markets.

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Appendix

Table A1. List of countries and observations used in the analysis.

Algeria	12	Greece	20	Poland	21
Argentina	24	Guatemala	6	Portugal	6
Australia	40	Hungary	81	Qatar	12
Austria	9	Iceland	60	Romania	113
Bangladesh	41	India	23	Russia	30
Barbados	16	Indonesia	55	Saudi Arabia	2
Belgium	27	Iran	137	Serbia	12
Belize	3	Ireland	42	Singapore	1
Bolivia	113	Israel	5	Slovakia	23
Bosnia and Herzegovina	159	Italy	14	Slovenia	19
Botswana	163	Jamaica	345	South Africa	31
Brazil	59	Japan	10	Spain	463
Canada	17	Kazakstan	32	Suriname	3
Chile	157	Korea	11	Sweden	24
China	210	Latvia	71	Switzerland	37
Colombia	205	Lithuania	35	Thailand	210
Costa Rica	17	Luxembourg	1	Trinidad & Tobago	47
Croatia	92	Macedonia	66	Tunisia	10
Czech Republic	3	Malaysia	55	Turkey	154
Denmark	30	Mexico	12	Uganda	267
Dominican Republic	4	Montenegro	19	United Arab Emirates	5
Ecuador	154	Morocco	3	United Kingdom	104
Egypt	38	Namibia	13	United States	64
El Salvador	5	Netherlands	54	Uruguay	64
Estonia	26	New Zealand	18	Vanuatu	108
Ethiopia	25	Nigeria	96	Vietnam	12
Finland	74	Norway	52	West Bank & Gaza Strip	37
France	32	Pakistan	41	Zambia	181
Georgia	27	Panama	5		
Germany	36	Peru	228		
Ghana	202	Philippines	80		

Table A2. Correlation matrix.

	V1	1	2	3	4	5	6	7	8	9	10
V1. Agro-entrepreneurs' employment growth aspirations											
1. Age	-0.046***										
2. Gender	0.105***	-0.007									
3. Household income	0.108***	-0.007	0.075***								
4. Forma education	0.099***	-0.029*	0.025	0.262***							
5. Weak ties	0.068***	-0.096***	0.060***	0.138***	0.070***						
6. Entrepreneurial capabilities	0.131***	-0.009	0.099***	0.107***	0.111***	0.141***					
7. Opportunity recognition capabilities	0.122***	-0.093***	0.043**	0.045***	-0.051***	0.180***	0.145***				
8. Product innovation capabilities	0.147***	0.002	0.015	0.073***	0.085***	0.050***	0.030*	0.049***			
9. Legitimation	0.037**	-0.040**	0.008	-0.024	-0.099***	0.013	0.036**	0.116***	0.018		
10. GDP per capita growth rate (t−1)	0.035**	-0.083***	-0.039**	-0.115***	-0.122***	0.041**	-0.073***	0.071***	0.097***	0.066***	
11. Agricultural competitiveness (t−1)	-0.125***	0.134***	-0.009	0.031*	0.243***	-0.041**	-0.015	-0.142***	-0.084***	-0.138***	-0.292***

Source: Cross-sectional GEM data 2004-2014 and World Bank Indicators. Statistics reported are based on observations used in multilevel estimations (5,770 observations). For correlation matrix parameters, continuous variables were standardised. Level of significance: '***' 1% '**' 5% '*' 10%