Universitat Autònoma de Barcelona

ANTECEDENTS AND CONSEQUENCES OF CORPORATE ENTREPRENEURSHIP: AN INTERNATIONAL STUDY

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Doctoral thesis

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International Doctorate in Entrepreneurship and Management

January 2016

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PREFACE

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When I became a university student at the age of 18, I quickly realized that the idea of pursuing a career in academia was something very appealing to me. I remember discussing with other students the pros and cons of working at a university and I could only see advantages. I liked everything: working with people from around the world that are experts in their fields, the idea of spending working time to learn new things, having the opportunity to meet some very smart and wise people, the informal and friendly relationships some professors had with each other and with some students… There was something special about the life and atmosphere at university beyond being irreverently young at that time.

What I did not know back then is the extent to which pursuing a life in academia requires huge personal, intellectual and emotional effort and commitment. After five years (two for the Master's in research and three working on my thesis), I can state categorically that I would not have written my thesis without the help and support provided by many other people. Hence, I would like to spend this very first section of the thesis expressing my thanks and gratitude to them.

First, I thank my PhD supervisor, David Urbano, for his active support during these last years. David has always been there and I have felt accompanied throughout the process. His wise comments and advice have definitely had a fundamental impact on the overall outcome and have made it possible for us to publish some articles in international journals. In addition, beyond his academic support, I am also grateful for his personal support, offering encouragement and motivation and reminding me at all times that this process is senseless if you cannot enjoy "the journey".

I would also like to thank the Business Economics Department (from the Universitat Autònoma de Barcelona) and all the professors I had the pleasure to learn from. I would especially like to thank Dr Diego Prior, Dr Josep Rialp, Dr Alex Rialp, Dr Joan Lluís Capelleras and Professor Pere Caba for their advice, suggestions and help during the process. I would also like to thank Mireia Cirera, Laura Sans and Marta San José for sheding light on all the administrative and paperwork-related aspects, especially considering that I am a complete disaster in such matters.

I would like to express my gratitude to the Department of Innovation and Entrepreneurship at Imperial College Business School (London, UK) for accepting me

as a visiting researcher. In particular, I would like to thank Dr Mike Wright for supervising my work during my stay in London. Overall, working at another university in a different environment gave me a better understanding of the way academic research works internationally. Indeed, I consider research stays should be mandatory in all PhD programmes.

Thank you also to Maria Noguera and to the "Centre d'Iniciatives Emprenedores Universitàries" for allowing me to collaborate with them and enabling me to understand the real problems and challenges new companies face.

I am also thankful to the PhD committee for their comments and suggestions that have contribute to improving my thesis and helped me become a better researcher. I would also like to thank all the anonymous reviewers and editors of the journals who have contributed to improving the overall quality of the thesis. Related to is, I am also grateful to Claudia Alvarez, whose comments and advice on Chapters 3 and 8 played a crucial role in publishing them.

Ultimately, beyond the professional environment, other people have had a fundamental role in this process. First, I would like to thank my family and friends for their patience and for always supporting me regardless of which decisions I take in life. Finally, I would like to express my profound gratitude to Berta for her unconditional support and for helping me keep things in perspective.

Andreu Turró Sol

Bellaterra, January 2016

ABSTRACT

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It is widely agreed that corporate entrepreneurship is a crucial element in organizational and economic development due to its beneficial effects on the revitalization and performance of firms. Consequently, both policy makers and researchers have shown particular interest in understanding this phenomenon.

The main objective of this investigation is to examine the antecedents and consequences of corporate entrepreneurship. The methodology used is quantitative and based mainly on data from the Global Entrepreneurship Monitor (GEM). These data are complemented with other sources of information, such as the International Monetary Fund (IMF), the Doing Business project and the EU-EFIGE/Bruegel Unicredit database. Several statistical techniques are used in the thesis: logistic regression, generalized linear multilevel logistic regression and a two-stage probit. In addition, the research is grounded in three different theoretical frameworks: Human Capital Theory, Resource-Based Theory and Institutional Economics.

The main findings of this research show how a set of different factors at different levels of analysis (individual, company and environmental) condition corporate entrepreneurship. In addition, the moderating effect of informal institutions is highlighted throughout the research. Subsequently, the results confirm the positive relationship between engaging in corporate entrepreneurship activities and firm growth.

Finally, this thesis has theoretical and practical implications. From a theoretical point of view, the research may contribute to the generation of knowledge as some aspects in this field remain understudied. Similarly, it might contribute to the advancement of Human Capital Theory, Resource-Based Theory and Institutional Economics as these frameworks have rarely been used in this particular context. From a policy maker and practitioner point of view, the study has implications for managers who are interested in fostering and promoting corporate entrepreneurship in their companies. Equally, the results could also be helpful to government policies that are meant to support the development of entrepreneurial initiatives in established companies (in particular for companies operating in different institutional contexts).

Keywords: Corporate entrepreneurship, intrapreneurship, Human Capital Theory, Resource-Based Theory, Institutional Economics.

JEL: B52, L25, L26, M13

CHAPTER 1

INTRODUCTION

1. INTRODUCTION

1.1. Problem statement and research objectives

There is consensus among scholars that entrepreneurship is a key determinant of firm, regional and national economic performance (Gupta et al., 2004). Thus, in the last few decades researchers have paid attention to the role of entrepreneurship in productivity, employment and economic and social development (Wennekers et al., 2005). Entrepreneurship research has been expanding its boundaries by exploring and developing explanations and predictions of entrepreneurship phenomena in terms of events, such as new venture creation, innovation and entrepreneurial organizations (Antoncic and Hisrich, 2003). In this regard, many authors have highlighted that established firms must adopt entrepreneurial strategies (Ireland et al., 2009) as a path to revitalizing existing organizations and making them more innovative.

Given its importance to corporate vitality and wealth generation in today's global economy, corporate entrepreneurship has generated considerable attention in research (Dess et al., 2003). Past studies from several complementary fields, such as management, strategy, finance, entrepreneurship and marketing, have contributed to a better understanding of complex and dynamic entrepreneurship within established organizations (Hornsby et al., 2013). Corporate entrepreneurship is considered to facilitate a firm's efforts to exploit its current competitive advantages, as well as explore new opportunities and the competencies required to pursue them successfully. Hence, it has also been considered to contribute to the evolution of a firm's corporate strategy (Ireland et al., 2003) by building new capabilities and businesses that enable renewal, foster strategic change and enhance a company's profits and growth (Zahra and Hayton, 2008; Narayanan et al., 2009). Overall, there is agreement in the literature on the positive effect corporate entrepreneurship has on firm performance (Zahra, 1991), especially in firms that operate in hostile and dynamic/turbulent environments (Covin and Slevin, 1991).

The concept of corporate entrepreneurship has been evolving over the last 25 years (Peterson and Berger, 1972). Terms such as intrapreneuring (Pinchot, 1985), corporate entrepreneurship (Guth and Ginsberg, 1990), corporate venturing (Vesper, 1990), and internal corporate entrepreneurship (Schollhammer, 1982) have been used to describe

the phenomenon. Perhaps one of the broadest and most widely accepted definitions of intrapreneurship is “entrepreneurship within an existing organization” (Antoncic and Hisrich, 2001, p. 496). Overall, corporate entrepreneurship has become a flourishing research field because it is widely advocated as a means of organizational innovation and has many other advantages at both the organizational and individual level (Antoncic and Hisrich, 2001; Phan et al., 2009).

This has led a significant number of researchers to study the antecedents of corporate entrepreneurship activity (e.g., Guth and Ginsberg, 1990; Zahra, 1991; Antoncic and Hisrich, 2001; Zahra et al., 2009). Their discussions have emphasized the importance of a variety of sources, such as the firm’s environment (Covin and Slevin, 1989), its organizational culture (Zahra, 1991) and structure (Miller, 1983) or the presence of some strategic leaders in the firm (Guth and Ginsberg, 1990). In addition, the development of entrepreneurial activities within established companies has been investigated in different contexts, for instance Canada (Thornhill and Amit, 2000), some Eastern European countries (Filatotchev et al., 1999), France (Messeghem, 2003), Germany (Plambeck, 2012), Netherlands (Wakkee et al., 2010), Turkey (Ağca et al., 2012), Slovenia (Antoncic and Hisrich, 2001), Italy (Iacobucci and Rosa, 2005), Spain (Farinós et al., 2011), Thailand (Sebora and Theerapatvong, 2010), Sweden (Brundin et al., 2008), Switzerland (Tajeddini and Mueller, 2012) or the USA (Zahra, 1991). Overall, these studies identify different types of factors at different levels of analysis that can have an influence on corporate entrepreneurship: individual (employee) factors, company-related factors and environmental factors (Zahra, 1991).

Despite all this, there are some aspects in the literature analysing the antecedents of corporate entrepreneurial activity that might require further understanding, as the role of some of the conditioning factors has not always been clear. In particular, the effect of some environmental antecedents (i.e. culture and legal matters) might be studied in more detail. An enhanced explanation of this is provided in the next section (and within the different chapters that form this thesis). In addition, knowledge of the consequences of developing corporate entrepreneurship activities has also been considered to require more study (Phan et al., 2009). Research on the effects of corporate entrepreneurship for firm growth and performance is normally focused in a specific context (US firms), which could limit the generalization of the results.

Overall, the main objective of this investigation is to examine the antecedents and consequences of corporate entrepreneurship. In this regard, this thesis places particular emphasis on different levels of analysis, specific contexts and theoretical frameworks. The specific objectives of the research are outlined below, with each specific objective corresponding to a different research phase:

1) To explore the content and evolution of corporate entrepreneurship research and to develop and suggest an agenda for future research (phase 1).
2) To examine the internal and environmental antecedents of corporate entrepreneurship activity (phase 2).
3) To analyse the role of a set of corporate entrepreneurship specificities – in economic crisis, taking a gender perspective and through regional analysis (phase 3).
4) To study the effect of corporate entrepreneurship on firm growth (phase 4).

The methodology used in the research is quantitative and fundamentally based on data from the Global Entrepreneurship Monitor (GEM). More specifically, two different GEM tools are used in the investigation, the Adult Population Survey and the National Experts Surveys. In addition, this information is complemented with data from the International Monetary Fund (IMF), from the Doing Business project (developed by the World Bank) and from the EU-EFIGE/Bruegel Unicredit database. The period of time covered in the different chapters of the thesis ranges from 2003 to 2011. The thesis combines several research techniques: systematic literature review, logistic regression, generalized linear multilevel logistic regression and a two-stage probit model. Finally, the research is grounded in three different theoretical frameworks: Human Capital Theory (HCT), Resource-Based Theory (RBT) and Institutional Economics (IE). In the third section of this introduction, further information on the relationship between these theories and corporate entrepreneurship is provided.

1.2. Research contributions

The objectives outlined in the previous section relate to the existence of some areas in the corporate entrepreneurship field where further knowledge may be generated. In this section, an overview of the main academic and practical reasons that justify each

specific goal is presented. In addition, the specific research gap addressed in each of the chapters is highlighted.

The first specific objective of this research (Chapter 2) explores the content and evolution of corporate entrepreneurship research and aims to develop an agenda for future research. From this perspective, the research benefits from the fact that there are very few recent systematic literature reviews in this field, although a very significant part of the overall research on corporate entrepreneurship has been published recently. In addition, reviews are considered to play an important role in the development of a research field by summarizing published work in a specific area and offering new ideas (Wales et al., 2013). Ultimately, the different areas for further research outlined could contribute to the development of future investigations.

The second specific objective examines the role of internal (individual and company-related) and external (environmental) antecedents for corporate entrepreneurship activity. In this case, the research is grounded in HCT (Chapter 5), RBT (Chapter 3) and IE (Chapters 4 and 5). Specifically, the use of these theoretical frameworks might be one of the contributions of this phase of the research as most quantitative studies in the field are not explicitly grounded in any theory. In particular, the results contribute to the operationalization of the variables related to these theories which have generated some discussion among scholars (Dutta et al., 2005).

Previous literature studying the antecedents of entrepreneurial activity in established companies differentiates between factors at different levels of analysis. Therefore, aspects such as certain person-related values or having organizational support (Antoncic and Hisrich, 2001), organizational learning (Dess et al., 2003) and the appropriate management of the company's strategic resources (Ireland et al., 2003) have been conceptualized as corporate entrepreneurship antecedents at an internal level. Similarly, competitive intensity and the rate of technological change (Ireland et al., 2009) and industry growth or market dynamism (Antoncic and Hisrich, 2001) have been highlighted as conditioning factors at an environmental level. This thesis contributes to the discussion by showing the effect of a specific set of internal and environmental factors. In addition, some of these environmental factors have rarely been tested empirically (such as culture) and play a significant role. Furthermore, some of these factors also play a moderating role between other antecedents and corporate entrepreneurship.

The third specific objective aims to study the role of the factors conditioning corporate entrepreneurship in three specific cases. In Chapter 6, the focus is placed on how an economic crisis affects the antecedents of corporate entrepreneurship. Surprisingly, the literature in the entrepreneurship field has not participated much in the debate about the causes and effects of an economic downturn for new business creation. Following this reasoning, some authors agree that an economic downswing should have a negative effect on entrepreneurship in established companies (Klapper and Love, 2011) due to factors such as financial markets uncertainty or rising unemployment (Tsai and Kuo, 2011). Others, however, suggest that recessions are propitious for firms to innovate (Filippetti and Archibugi, 2011). The results contribute to this discussion by showing few but significant differences in the antecedents of corporate entrepreneurship between a period of crisis and a period without it.

The results also contribute to the existing literature by showing the differences between men and women when developing corporate entrepreneurship activities (Chapter 7). Literature on individual entrepreneurship has studied the role of gender when creating new businesses extensively (Debrulle et al., 2014); however, to the best of my knowledge, the corporate entrepreneurship literature has not studied this issue. Therefore, the research benefits from this and provides evidence on the factors that affect men and women when developing corporate entrepreneurship initiatives. In addition, in Chapter 8 the research draws attention to the Spanish case and its different regions. In this respect, the thesis contributes by showing relevant differences depending on the level of economic development of the region. Hence, it is shown that public policies aimed at fostering corporate entrepreneurship should differ depending on the region.

Finally, the fourth and last specific objective deals with the consequences of corporate entrepreneurship, more specifically focusing on the effect of companies' entrepreneurial activities on firm growth (Chapter 9). Although researchers agree that corporate entrepreneurship has a positive effect on firm performance, the wide majority of studies use data only for US companies (Keil et al., 2008). In addition, there are very few multi-country studies focusing on this issue (for an exception, see Zahra and Hayton, 2008). Hence, this chapter contributes by testing the results with data for seven European countries. Ultimately, previous research has already highlighted the importance of

developing cross-cultural research, as it contributes to the generalization of concepts and theories (Hills and LaForge, 1992).

1.3. Linking corporate entrepreneurship to Human Capital Theory, Resource Based Theory and Institutional Economics

Despite the growing attention paid to corporate entrepreneurship, a significant proportion of existing quantitative studies do not make explicit use of any theoretical framework (for more information, see Chapter 2 of this thesis). In this section, the rationale behind the theoretical frameworks used and their relationship to corporate entrepreneurship is explained.

Individual-level studies of corporate entrepreneurship have taken into account the role of human capital (Parker, 2011; Guerrero and Pena-Legazkue, 2013). In addition, human capital has been studied in many fields and therefore there are several different definitions (Kungwansupaphan and Siengthai, 2012). Some researchers define human capital as the knowledge, skill and abilities that reside within individuals and are utilized by them (Schultz, 1961), or as the knowledge, skills, competencies and experiences related to the task at hand (Dess and Picken, 1999). In the organizational context, Joia (2000) defines the concept of human capital as the sum of the expertise and skills of the employees of an organization. Dakhli and De Clercq (2004) argue that human capital is embodied in the people's skills, knowledge and expertise that can be improved especially by education and work experience. In addition, a distinction is often made in the literature between generic and specific components of human capital. Generic human capital relates to the general knowledge acquired by individuals through both formal education and professional experience. Specific human capital consists of capabilities that entrepreneurs and corporate entrepreneurs can apply directly to the entrepreneurial job in the newly created firm (Colombo and Grilli, 2005).

Some studies that have examined human capital in the strategy literature have focused on human capital as the resources of the firm (e.g., Hitt et al., 1997; Alpkan et al., 2010). From this perspective, human capital resources include the "training, experience, judgment, intelligence, relationships, and insight of individual managers and workers in a firm" (Barney, 1991, p. 101). Overall, HCT suggests that firms with a higher degree of human capital developed through access to employees with higher education and

expansive personal experience achieve higher performance (Barney, 1991). Hence, human capital is considered an important source of competitive advantage (Coleman, 1998; Javalgi and Todd, 2011).

In addition, previous research on the relationship between organizational elements and corporate entrepreneurship has also focused on the characteristics of internal organizational environments and their relationships with entrepreneurship in existing organizations (Schollhammer, 1982; Pinchot, 1985; Antoncic and Hisrich, 2001; Parker, 2011).

From this perspective, RBT defines a company as a unique collection of resources and capabilities that cannot be bought and sold freely on the market. Hence, differences in resources, capabilities, or basic competences are a source of a sustainable competitive advantage (Penrose, 1959). This approach views the firm as a historically determined collection of assets or resources which are tied semi-permanently to the firm's management (Wernerfelt, 1984). Some users of RBT distinguish resources which can be fully appropriated, such as physical capital or brand names, from less tangible assets, such as organizational routines and capabilities (Lockett and Thompson, 2001). Similarly, distinctions may be drawn between static and dynamic resources (Dierickx and Cool, 1989). The logic of generating and sustaining rents suggests that these are derived from the services of durable resources that are relatively important to customers and are simultaneously superior, imperfectly mobile, imperfectly imitable, specialized, imperfectly substitutable and unable to be appropriated entirely by others when they are non-tradeable or are traded in imperfect trading markets (Rumelt, 1984; Barney, 1991; Peteraf, 1993).

RBT has often been used in the traditional entrepreneurship literature to gain a better understanding of venture processes and strategic orientations (Ray et al., 2004). In addition, there are many empirical papers that study entrepreneurial factors using RBT (see Hult and Ketchen, 2001, among others). However, in the corporate entrepreneurship literature, most studies do not use a specific theoretical framework (see Ahuja and Lampert, 2001, among others). Yet in recent years, increasing attention has been focused on the combination and management of resources which enable the firm to pursue new business opportunities (Zahra et al., 1999) and develop innovative actions (Castrogiovanni et al., 2011) and which lead to more effective processes (Meyskens et al., 2010). These studies are consistent with the traditional RBT approach, which

emphasizes the importance of a firm's resources as drivers of its growth (Penrose, 1959), high profits (Wernerfelt, 1984) and competitive advantage (Barney, 1991).

In addition, most studies in the corporate entrepreneurship literature also highlight the importance of the environment (Guth and Ginsberg, 1990; Antoncic and Hisrich, 2001; Ireland et al., 2003). For instance, Guth and Ginsberg (1990) consider the effects of the competitive, technological, social and political environment on corporate entrepreneurship. In the individual entrepreneurship literature, the role of the environment has been widely studied using an IE approach (Bruton et al., 2010).

IE suggests that human behaviour is influenced by the institutional environment (North, 1990, 2005). Hence, institutional theory is traditionally concerned with how people and organizations better secure their positions and legitimacy by conforming to the rules and norms of the institutional environment (Meyer and Rowan, 1991). There are many definitions of institutions. Scott (2008) suggests that institutions consist of cognitive, normative and regulative structures and activities that provide stability and meaning in social behaviour. These institutions are derived from rules, such as regulatory structures, governmental agencies, laws, courts, professions and scripts and other societal and cultural practices that exert compliance pressures (Di Maggio and Powell, 1983). Overall, these institutional patterns strongly influence economic behaviour (North, 1990), organizational behaviour (Tello et al., 2010) and innovation and entrepreneurship (Baumol, 1996).

Most scholars follow North's (1990) definition, according to which institutions can be formal, such as political and economic rules and contracts, or informal, such as codes of conduct, conventions, attitudes, values and norms of behaviour. Formal institutions are subordinate to informal institutions in the sense that they are the deliberate means used to structure the interactions of a society in line with the norms and values that make up its informal institutions. North's definition implies that policy making which attempts to change the formal institutions of society without measures to adjust the informal institutions in compatible ways will have marginal success (Bruton et al., 2010).

The application of institutional theory has proven to be especially helpful to entrepreneurial research (Pinchot, 1985) and therefore IE has been widely used in the field of entrepreneurship (Aidis et al., 2008; Welter and Smallbone, 2011) and research relating the institutional environment to entrepreneurship is attracting growing attention (Lim et al., 2010; Liñán et al., 2011). However, in the corporate entrepreneurship field,

limited attention has been paid to the influence of the institutional environment (Camelo-Ordaz et al., 2012); this is even more striking if we consider that many authors have deemed the environment an important antecedent for corporate entrepreneurship (Sathe, 2003).

1.4. Structure of the research

This section presents a more detailed overview of the contents of the thesis, which is divided into four phases and eight chapters (plus the introduction and conclusion chapters). Specifically, the main objectives and methodologies of each phase are highlighted.

The investigation starts with a literature review phase (Chapter 2) in which the current state of the art is assessed and subsequently several areas for potential future research are proposed. Based on some of these ideas for future investigation, phase 2 (Chapters 3, 4 and 5) focuses on the role of some conditioning factors for corporate entrepreneurship at different levels of analysis (internal and environmental). In phase 3 (Chapters 6, 7 and 8), we deepen the analysis of corporate entrepreneurship antecedents by studying its effect in three different specific contexts (economic crisis, the role of gender and regional analysis). Finally, in phase 4 (Chapter 9), the consequences of corporate entrepreneurship for firm growth are studied.

Phase 1: Literature review

Chapter 2 develops a systematic literature review focusing on the corporate entrepreneurship phenomenon. The study provides an analysis of the historic evolution and current situation of the research in the corporate entrepreneurship field. This information is later used to propose several areas where further research might be developed.

The papers studied were found through the Social Sciences Citation Index (SSCI), which is available online through the Web of Science service. The search was conducted according to the terms in the literature most commonly used to describe the entrepreneurial activities that occur within the organization: “corporate entrepreneurship”, “intrapreneurship”, “corporate venture”, “corporate venturing”,

"internal corporate entrepreneurship" and "internal entrepreneurship" (Antoncic, 2007). All the articles with one of these words in the title, abstract or text were selected to be studied in the research. Overall, a total of 186 different papers were analysed.

The results of the study show the importance of the number of publications and impact factors of the main journals, authors, articles, countries, research techniques and types of studies in this field. The results confirm that despite the development of the literature in this field in recent years, there is still room for further research. In this respect, the study differentiates between three main lines of future investigation: corporate entrepreneurship dimensions, antecedents and consequences.

Based on some of these areas for potential future research, phases 2 and 3 place emphasis on research on the antecedents of corporate entrepreneurship and phase 4 expands the literature to consider the consequences of corporate entrepreneurship.

Phase 2: Internal and environmental antecedents of corporate entrepreneurship

In phase 2, the effect of different conditioning factors on corporate entrepreneurship is examined. Specifically, the investigation focuses on internal factors (Chapter 3) and environmental factors (Chapter 4) and then a general multilevel model with both internal and environmental factors is tested (Chapter 5).

Chapter 3 explicitly uses RBT to test a model that aims to investigate how a set of different factors considered internal (company-related) increase (or decrease) the probability of engaging in corporate entrepreneurial activities. The research applies a logistic regression analysis and GEM data for 39 countries in year 2008. The study demonstrates how the six factors studied (knowledge, previous entrepreneurial experience, having the intention to start up a new business, considering that one has the necessary entrepreneurial competences, knowing other entrepreneurs and being able to identify business opportunities in the short term) have a positive and significant impact on corporate entrepreneurship and none of the hypotheses posed can be rejected.

Chapter 4 makes explicit use of IE to examine the environmental (external) factors that condition entrepreneurship in established firms. This study applies a logistic regression technique and a GEM database for the years 2004–2008 with information for 62 countries. The results highlight the impact of environmental factors on corporate entrepreneurship. Specifically, the role of four different factors is tested: culture and

media exposure (informal factors), the number of procedures necessary to create a new business and access to finance (formal factors). All of them appear to be significant. In addition, informal factors (culture and media) also have an indirect effect as they behave as moderators between formal factors and corporate entrepreneurship.

Chapter 5 presents an integrated model that includes both internal and environmental factors. In addition, in this case a generalised linear multilevel logistic regression technique and GEM data for 67 countries for the period 2003–2011 is used. In this chapter, Human Capital Theory (HCT, for individual level factors) and IE (for environmental level factors) are used. The results show that having previous entrepreneurial experience, being able to identify business opportunities (individual factors), being involved in an entrepreneurial culture and living in a country where policy makers support the creation of new firms (environmental factors) have a direct impact on corporate entrepreneurship. In addition, institutional culture has a significant indirect (moderating) effect.

Phase 3: Corporate entrepreneurship specificities

In phase 3 the emphasis is placed on the behaviour of corporate entrepreneurship antecedents in three different specific contexts. Therefore, in Chapter 6 the research focuses on the effect of an economic crisis, in Chapter 7 the role of gender is studied and, finally, in Chapter 8 the case of Spain and the differences between its different regions are examined.

Chapter 6 examines the effect of the antecedents of corporate entrepreneurship differentiating between two different levels of analysis (individual and environmental) and considering two different periods of time (before the crisis and during the crisis). In this case, a generalized linear multilevel logistic regression technique is applied to GEM data for the period 2003–2011 and for 14 different countries. The results show the direct impact that a set of individual-level factors (previous entrepreneurial experience and the capability to recognize opportunities) and environmental-level factors (living in an entrepreneurial culture and government regulations) have on corporate entrepreneurship. Besides, few but some differences between the two periods of time studied are highlighted. Ultimately, culture is also shown to have an indirect (moderating) effect on corporate entrepreneurship.

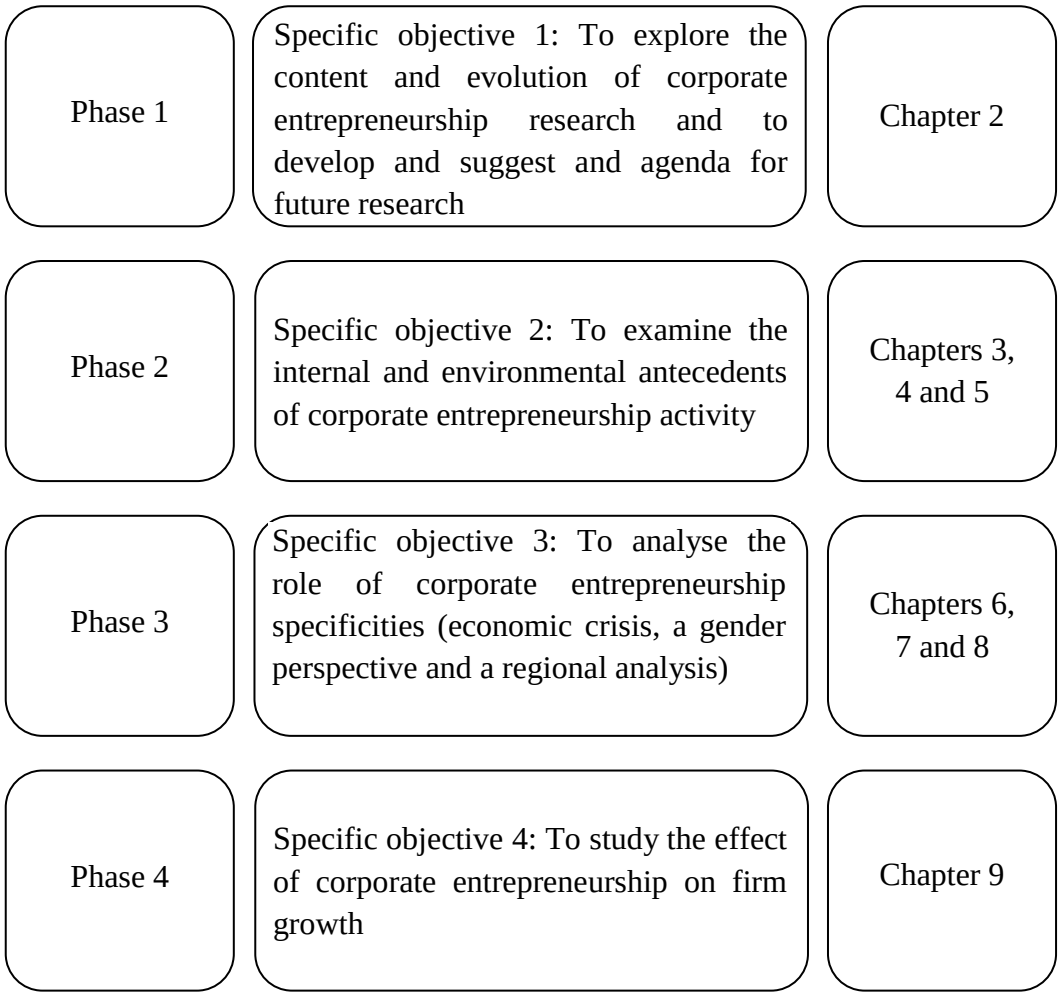
Chapter 7 places emphasis on the role of gender. More specifically, the research applies a generalized linear multilevel logistic regression technique and GEM data for the period 2003–2011 and for 14 different countries. The results show significant differences depending on gender. Specifically, the individual level factors studied (previous entrepreneurial experience and knowing other entrepreneurs) and the environmental aspects (involvement in an entrepreneurial culture and government regulations) have a direct effect on the likelihood of developing corporate entrepreneurship activities. In addition, the role of culture is reinforced again as it plays a direct and indirect (moderating) effect.

Chapter 8 examines the influence of internal and environmental conditioning factors on corporate entrepreneurship in Spain; specifically, the differences between three regions are emphasized. In this case, the research applies a logistic regression analysis to individual-level data from the 2011 GEM. The results show relevant differences in the impact that a set of variables (being able to identify business opportunities, social capital, having a fear of failure and educational level) have on corporate entrepreneurship depending on the region of analysis. Finally, the moderating role of informal institutions is underlined again in this chapter; in this case, having a fear of failure moderates the relationship between the rest of the variables and corporate entrepreneurship.

Phase 4: Corporate entrepreneurship consequences

In the final phase, the research draws attention to the effect of corporate entrepreneurship on firm growth. Hence, Chapter 9 studies not only the effect of a set of factors on corporate entrepreneurship but the consequences of developing entrepreneurial initiatives for firm growth. In this case, a two-stage probit least squares technique is applied to data from the EU-EFIGE/Bruegel-UniCredit dataset for the year 2008 with information for seven European countries. The results show the effect of six different factors on corporate entrepreneurship (international experience, having foreign executives, having employees with fixed-term contracts, labour regulations, access to external financing and training). In addition, it is confirmed that developing entrepreneurial activities within established companies has a positive effect on firm growth.Finally, Figure 1.1 summarizes the different phases of the thesis.

Figure 1.1. Main phases of the thesis



CHAPTER 2

CORPORATE ENTREPRENEURSHIP: A SYSTEMATIC LITERATURE REVIEW AND FUTURE RESEARCH AGENDA

2. CORPORATE ENTREPRENEURSHIP: A SYSTEMATIC LITERATURE REVIEW AND FUTURE RESEARCH AGENDA

2.1. Introduction

As mentioned above, in the last few years research in the corporate entrepreneurship field has increased significantly, however, some authors consider that there are some aspects that still need to be understood (Hornsby et al., 2009; Phan et al., 2009). For instance, Kuratko and Audretsch (2013, p. 324) state that "the theoretical and empirical knowledge about the domain of corporate entrepreneurship and the entrepreneurial behavior on which it is based are key issues that warrant a deeper understanding." In this regard, there are very few systematic literature reviews focusing specifically on the corporate entrepreneurship phenomenon (Dess et al., 2003; Narayanan et al., 2009; Phan et al., 2009; Kuratko and Audretsch, 2013). Moreover, some of these articles focus on some specific areas of the corporate entrepreneurship phenomenon, and thus they do not provide a global perspective on the literature in this field. For instance, Narayanan et al. (2009) examine corporate venturing and propose an organising and integrative framework that can guide future research. Dess et al. (2003) try to identify emerging issues in corporate entrepreneurship by focusing on its role in inducing and cultivating organisational learning. Phan et al. (2009) also suggest future research, arguing, in particular, for the need to appreciate the heterogeneity of corporate entrepreneurship in relation to new contexts (and to suggest strategies for such contexts).

In addition, although a very significant part (around one third) of the overall corporate entrepreneurship research has been published in the last five years, most literature reviews were published before that. Therefore, they are missing an important part of the knowledge and advances generated in the field. Reviews are considered significant in the development of a research field by summarising the major contributions in the literature (Bland et al., 1995). In addition, analysing the bibliometric structure of a specific body of literature allows for increased objectivity (compared with other forms of literature review) and enables the researcher to sift through large amounts of data (Wallin, 2012). Bibliometrics (combined with author citation analysis techniques) has served to identify the academic groups that are formally related within specific research areas (Teixiera and Mota, 2012). These types of techniques have found some advocates

in the fields of entrepreneurship and innovation (Schildt et al., 2006; Keupp and Gassmann, 2009; Alvarez et al., 2014). However, to our knowledge, this approach has not yet been undertaken in the specific corporate entrepreneurship literature.

The objective of this chapter is twofold; on the one hand, it aims to explore the content and evolution of corporate entrepreneurship research, and, on the other hand, it develops and suggests an agenda for future research. The systematic literature review analyses a total of 186 papers published in the top journals of the management and entrepreneurship fields. The results of the chapter show the importance of the number of publications and impact factors of the main journals, authors, articles, countries, research techniques and type of studies in this field. In addition, through a citation and co-citation analysis, we provide a map that explains the intellectual structure of the corporate entrepreneurship phenomenon. Overall, this information is used to highlight potential future research. In this regard, the study differentiates between three main lines for future investigation: corporate entrepreneurship dimensions, antecedents and consequences.

The rest of the chapter is structured as follows. In the next section we provide an introduction to the literature on corporate entrepreneurship. In section 2.3, we detail the methodology of the study (journals selection and systematic literature review). Section 2.4 describes the main findings. Finally, we position our findings in relation to existing literature and suggest future research directions.

2.2. Corporate entrepreneurship literature

Corporate entrepreneurship research focuses on ways in which companies could create new businesses that generate new revenue streams and value for shareholders (Narayanan et al., 2009). In this regard, the concept of corporate entrepreneurship has evolved over the last decades and several definitions have appeared. For instance, Guth and Ginsberg (1990) explained that corporate entrepreneurship summarises two different types of phenomena: new venture creation within existing organisations and the transformation of on-going organisations through strategic renewal. One of the most extensively used definitions is that by Sharma and Chrisman (1999, p. 18). They define it as “the process whereby an individual or a group of individuals, in association with an existing organisation, create a new organisation or instigate renewal or innovation

within that organisation". Other authors, such as Antoncic and Hisrich (2001, p. 497) use an even broader definition as they consider it to be "entrepreneurship within an existing organization". Overall, organisations that exhibit corporate entrepreneurship are viewed as dynamic, flexible entities able to take advantage of new opportunities when they arise (Morris et al., 2008). Among such organisations, there is an acceptance of risk and an understanding that the outcomes of innovation are uncertain (Bloodgood et al., 2015). Corporate entrepreneurship is concerned with various forms of newness (e.g. organisational renewal, innovation, and establishing new ventures) and affects organisational survival, growth and performance (Zahra, 1991; Dess et al., 2003).

Research has focused on which conditioning factors have an effect on the development of intrapreneurial initiatives. The literature has highlighted at least three different types of factors at different levels that can influence corporate entrepreneurship: environmental, company related and individual. For instance, in Guth and Ginsberg's (1990) model, they explain the influence of the environment (competitive, technological, social and political), the organisation (strategy, structure, process and values) and the existence of strategic leaders on corporate entrepreneurship. Similarly, Antoncic and Hisrich (2001) differentiate explicitly between environmental and organisational (including person-related) factors. Other theoretical models such as Zahra et al. (2009) or Morris et al. (2011) follow similar approaches by grouping the conditioning factors at these different levels of analysis.

The relationship between corporate entrepreneurship and firm performance has also been of research interest over the past four decades. There is general agreement that corporate entrepreneurship can renew a company's capabilities and increase its capacity to acquire and use new competencies that improve performance (Zahra et al., 2000; Gerasymenko et al., 2015). In fact, Antoncic and Hisrich (2001, p. 504) state that "organizations that engage in intrapreneurial activities are expected to achieve higher levels of growth and profitability than organizations that do not".

Overall, research shows that companies become involved in corporate entrepreneurship for several reasons: to seize opportunities that complement or extend their existing business, to utilise resources more effectively, to motivate employees and increase morale or to retain managerial talent (Pinchot, 1985; Zahra, 1991). These factors can result in the creation of new businesses that can generate new revenue streams that

enhance a company's productivity, competitive position and profitability (Guth and Ginsberg, 1990).

2.3. Methodology

As performed by other authors in the management and entrepreneurship fields (Schildt et al., 2006; Choi et al., 2012, among others), the Social Sciences Citation Index (SSCI) (available online through the Web of Science service) was used to search for empirical and theoretical papers. The search was conducted according to the most commonly used terms in the literature to describe the entrepreneurial activities that occur within the organisation: "corporate entrepreneurship", "intrapreneurship", "corporate venture", "corporate venturing", "internal corporate entrepreneurship" and "internal entrepreneurship" (Antoncic, 2007). We searched for these words in the title, abstract and text of the articles. Since the objective was to study the literature on corporate entrepreneurship globally, we did not limit the search to any specific period of time. Hence, the oldest paper dates back to 1969 (Westfall, 1969) and the most recent were published in 2014 (the search ended in January 2015).

The first search round focused on the 10 journals with the highest five-year impact factor in the Journals Citations Report (JCR)[1] (Alvarez et al., 2014; Busenitz et al., 2014). These are: *Academy of Management Review* (AMR, 2013 five-year impact factor of 9.698), *Academy of Management Journal* (AMJ, 8.443), *Journal of Management* (JOM, 8.027), *Administrative Science Quarterly* (ASQ, 7.057), *Strategic Management Journal* (SMJ, 5.929), *Journal of International Business Studies* (JIBS, 5.534), *Journal of Management Studies* (JOMS, 5.196), *International Journal of Management Reviews* (IJMR, 4.468), *Academy of Management Perspectives* (AMP, 3.766) and *Journal of World Business* (JWB, 3.039). This first search round yielded 250 articles, however, only 56 remained as many (194) were discarded because they did not use any of the keywords required.

Subsequently, the search was extended to the seven entrepreneurship and small business journals indexed in the JCR. These are: *Journal of Business Venturing* (JBV, 2014 five-year impact factor of 4.571), *Entrepreneurship Theory and Practice* (ETP, 3.899),

[1] The journals are part of the Business and Management categories. Initially, we searched in the Finance and Economics categories as well. However, no articles were found in them. For the same reason, the Marketing and Consumer research journals were also dismissed.

Strategic Entrepreneurship Journal (SEJ, 2.724), *Small Business Economics* (SBE, 2.621), *Journal of Small Business Management* (JSBM, 2.298), *International Small Business Journal* (ISBJ, 1.938), *Entrepreneurship and Regional Development* (ERD, 1.633). In this second round, out of a total of 299 articles, 130 remained. Overall, this research consisted of 186 papers[2].

The bibliometric approach used in this chapter refers to the mathematical and statistical analysis of patterns that appear in the publication and use of documents (Diodato, 1994). Particularly, we use a citation and a co-citation technique. Both methods are considered to be indicators of scientific communication and flows of knowledge between domains and disciplines (Garfield, 1979). In addition, they have been used to map the intellectual structure of various fields of research such as the diffusion of innovations (Cottrill et al., 1989), macroeconomics (McCain, 1983) or strategic management (Ramos-Rodriguez and Ruiz-Navarro, 2004; Shafique, 2013).

Citation analysis is based on the assertion that citations can be used as indicators of present and past activities of scientific work (Garfield, 1983). Hence, it is based on the idea that authors cite those documents they consider to be important for their research. Similarly, co-citation analysis of documents records the number of papers that have cited any particular pair of documents and it is interpreted as a measure of similarity of content of the two documents (Ramos-Rodriguez and Ruiz-Navarro, 2004).

2.4. Results

The results of literature reviews are often explained by differentiating between their quantitative and qualitative analysis (Clark et al., 2014). From a quantitative point of view, research describes, measures and counts the main results of the analysis. This may include the sources of publication, authors, articles, citations or publishing countries (Alvarez et al., 2014). On the other hand, a qualitative analysis (e.g. content analysis) of the results includes the study of the main topics and trends, generally by explaining whether and how the content of the topic has changed over time (Clark et al., 2014).

[2] For more information on the papers studied please see the appendix.

Descriptive analysis

When studying the number of articles per journal and year (table 2.1), results show that in the last decade research in the corporate entrepreneurship field has increased significantly. In the period 2006–2010, 57 papers were published, more than three times the number of articles that came out in the previous five years (17 articles in 2001–2005). This trend continued as in 2011, 2012, 2013 and 2014, 56 papers were published. Therefore, more than 60% of research in the corporate entrepreneurship field published in top journals has appeared in the last nine years (113 papers out of the 186 studied came out in 2006 or later).

The publication of some special issues has contributed to this tendency in recent years. Our research found two special issues on corporate entrepreneurship. The first dates back to 1990 in *SMJ* and the second to 2009 in *JBV*. In addition, in 2010, *ERD* published a special issue on "Entrepreneurial families and family firms", in which some articles considered the corporate entrepreneurship phenomenon (Casillas and Moreno, 2010; Marchisio et al., 2010). Similarly, in 2011, *ETP* published a special issue on the topic of entrepreneurial orientation (Covin and Lumpkin, 2011).

Finally, table 2.1 also shows that *JBV* accounts for the vast majority of publications (37% of the articles; 69 out of 186 papers). Moreover, *JBV*, *SMJ* and *JOM* are the most consistent journals over time as they have been publishing on corporate entrepreneurship continuously since the 1980s.[3]

To analyse the impact of the articles we used the number of total citations according to the SSCI. The most cited article by far is the one by Burgelman (1983) (649 citations), which reports the process by which a diversified major company transforms R&D activities into new businesses through corporate venturing. This work is followed by the relatively new paper of Ahuja and Lampert (2001) (422 citations) and Zahra and Covin (1995) (336 citations). Table 2.2 presents information on the most cited articles.

[3] It should be noted that not all the journals studied have been part of the JCR list all the time.

Table 2.1. Journals and published articles per year

Journal	Total	<1980	1981-1985	1986-1990	1991-1995	1996-2000	2001-2005	2006-2010	2011-2014
Journal of Business Venturing (JBV)	69			8	17	11	5	19	9
Entrepreneurship Theory and Practice (ETP)	20						2	11	7
Strategic Management Journal (SMJ)	17		2	3	2	2	2	3	3
Journal of Management (JOM)	14			1	4	2	1	2	4
Small Business Economics (SBE)	12						1	2	9
Strategic Entrepreneurship Journal (SEJ)	10							3	7
Journal of Management Studies (JOMS)	7						2	5	
Entrepreneurship and Regional Development (ERD)	7						1	5	1
Academy of Management Journal (AMJ)	7	1				1		3	2
International Small Business Journal (ISBJ)	7						1	1	5
Journal of Small Business Management (JSBM)	5						1		4
Journal of World Business (JWB)	4						1	1	2
Administrative Science Quarterly (ASQ)	3		1						2
Journal of International Business Studies (JIBS)	2				1			1	
Academy of Management Perspectives (AMP)	1							1	
International Journal of Management Reviews (IJMR)	1								1
Total	186	1	3	12	24	16	17	57	56

Table 2.2. Most cited articles

Article	Total citations in SSCI
Burgelman (1983)	649
Ahuja and Lampert (2001)	422
Zahra and Covin (1995)	336
Birkinshaw (1997)	270
Zahra (1996)	254
Zahra (1991)	229
Zahra (1993)	229
Guth and Ginsberg (1990)	221
Barringer and Bluedorn (1999)	179
Dess et al. (2003)	163
Stopford and Baden-Fuller (1994)	161
Antoncic and Hisrich (2001)	157
Zahra et al. (2000)	153
Westhead and Wright (1998)	144
Yiu et al. (2007)	133
Zahra and Garvis (2000)	132
Zahra (1996)	128
Lyon et al. (2000)	124
Walter et al. (2006)	121
Hornsby et al. (2002)	117

Overall, the articles reviewed are written by 327 authors. Hence, on average, each article has 1,76 authors. The most prolific in terms of publications are Zahra (16 articles) and Covin (nine articles). Table 2.3 shows that, for instance, the 16 articles published by Zahra have produced 1985 citations in SSCI, which represents 24% of the total citations produced by the 186 articles studied. In addition, in 71% of these articles at least one of the authors is from a US university (table 2.4). This percentage is more than four times higher than the following country, the UK (16,7%); 31 articles (out of 186) have at least one author from a British university. This prevalence of American (and Anglo-Saxon) based researches has already been highlighted by some authors as a possible gap for future research (Antoncic, 2007).

Table 2.3. Authors sorted by number of publications

Author	Nº of articles	Nº of citations	Overall % citations	Author's affiliation
Zahra, SA	16	1985	24,0	USA
Covin, JG	9	681	8,2	USA
McMillan, IC	6	300	3,6	USA
Wright, M	6	240	2,9	UK
Kuratko, DF	5	320	3,9	USA
Dushnitsky, G	5	232	2,8	USA/UK
Keil, T	5	196	2,4	Canada/ Finland
Maula, MVJ	5	149	1,8	Finland
Shepherd, DA	5	98	1,2	USA
Simsek, Z	4	129	1,6	USA
Sykes, HB	4	105	1,3	USA
Birkinshaw, J	4	310	3,7	Sweden/UK

Table 2.4. Countries and published articles[4]

Country	Nº of articles	%
USA	132	71,0
UK	31	16,7
Canada	12	6,5
Finland	7	3,8
France	6	3,2
Holand	6	3,2
Spain	10	5,4
Sweden	8	4,3
Germany	6	3,2
Italy	5	2,7
Switzerland	5	2,7
Singapur	5	2,7
Others	28	15,1
Total	261	140,3

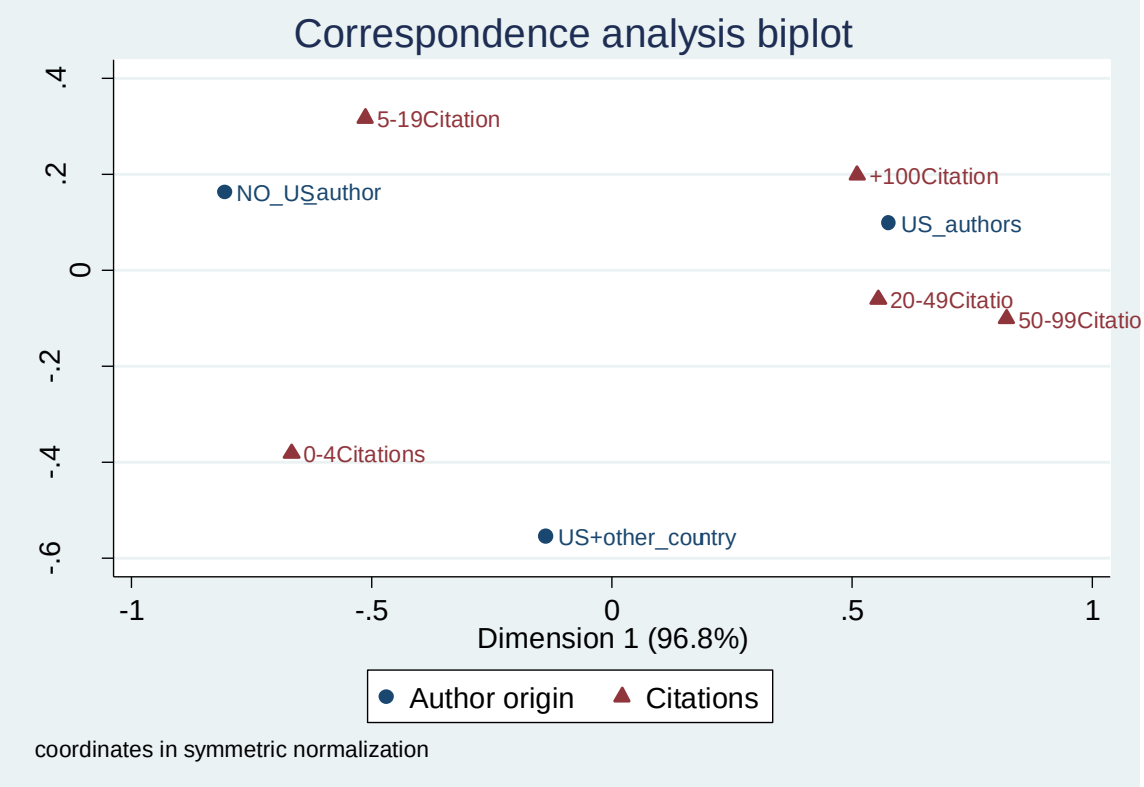
In addition, we explored the relationship between the author's country of origin[5] and the number of citations per paper, and we found significant differences (chi-square = 47,35 with 185 degrees of freedom). The papers whose authors are only from US universities

[4] The total number of articles (261) does not match the above tables (186) because an article can have multiple authors. In addition, in table 4 the percentage is calculated for the real number of articles (186), this way data shows the percentage of papers that have at least one author from a specific country of origin. Finally, the authors country refers to the country associated with the first affiliation institution in which he/she was developing his/her scientific activity at the time of publication and not the country of origin or residence.

[5] The author's country refers to the country associated with the first affiliation institution in which he/she was developing his/her scientific activity at the time of publication and not the country of origin or residence.

have an average of 62 citations. The papers whose authors are a combination of US authors and authors from other countries have an average of 32 citations. Finally, when the authors are from non US universities, they have an average of 25 citations. Part of these significant differences may be explained by the longer tradition of publishing among US universities (older papers tend to have more citations and older papers are written mainly by US authors). A graphical representation helps to visualise this relationship. Figure 2.1 presents the scatter diagram between the authors' country of origin and the number of citations per paper. For each variable on the graph, the distances between the category points reflect the relationship between the categories with similar categories being closer to each other.

Figure 2.1. Authors' origin vs citations



As shown in table 2.5, most papers are empirical (79%) and quantitative (65,6%). In addition, we studied the differences in the number of citations among qualitative and quantitative papers and found no significant differences. Qualitative researches have an average of 49 citations, whereas quantitative works have an average of 43.

Table 2.5. Type of analysis in the articles

Type of article	Nº of articles	%
Empirical	147	79,0
Quantitative	120	64,5
Qualitative	24	12,9
Both (quanti+quali)	3	1,6
Theoretical	39	21,0
Introduction to special issue	5	2,7
Literature review	24	12,9
Presentation of a theoretical model	9	4,8
Other	1	0,5

The main technique applied is a multiple regression (50,4% of the cases, see table 2.6) typically coming from a database on US companies or individuals (65%, see table 2.7). Following this reasoning, it is remarkable that less than 8% of the databases have information at a multi country level.

Table 2.6. Main statistical technique used in the analyzed articles

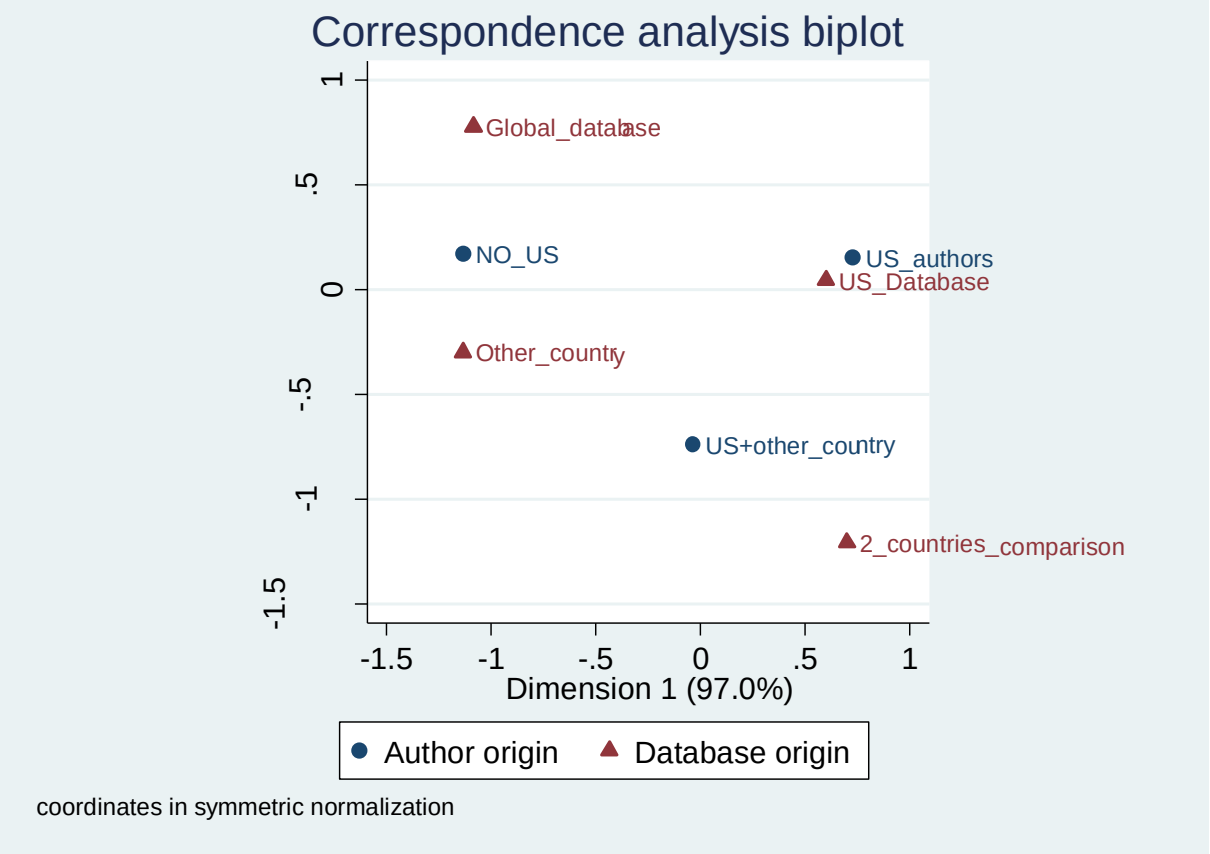
Main research tecnique	Nº of articles	%
Multiple regression model	62	50,4
Logit, probit, tobit and negative binomial regression models	15	12,2
Variance and covariance analysis (ANOVA, ANCOVA, MANOVA, MANOCOVA)	13	10,6
Panel data models	14	11,4
Structural Equation models	10	8,1
Combination of multiple regression & logit, probit, tobit or binomial regression	4	3,3
Other	5	4,1
Total	123	100,0

Table 2.7. Origin of the databases used in the quantitative articles

Database origin	Nº of articles	%
USA	80	65,0
3 or more different countries	10	8,1
Spain	7	5,7
2 different countries	4	3,3
Italy	3	2,4
Sweden	4	3,3
Ireland	2	1,6
Japan	2	1,6
China	2	1,6
Others	9	7,3
Total	123	100,0

In this regard, figure 2.2 shows information on the significant relationship that exists between the authors' affiliation and the databases they use. Overall, the lack of global data use could hamper the generalisation of the results and the development of the existing theoretical frameworks.

Figure 2.2. Author origin vs database origin



Finally, following previous literature (Ramos-Rodriguez and Ruiz-Navarro, 2004; Schildt et al., 2006; Teixiera and Motta, 2012; Wallin, 2012), figure 2.3 shows the main intellectual structure of corporate entrepreneurship research (only the most co-cited researches are shown in the graph). Specifically, the size of the points is proportional to the frequency of citation, and documents with similar co-citation profiles tend to show up close to each other (in clusters). That is, if two articles are cited in the same paper, they are considered to be closely related to each other either because they belong to the same topic area or their topic areas are closely connected (Schildt et al., 2006). Thus, works that are closely related to others tend to occupy a central position in the "intellectual space", while those that are only loosely related tend to appear on the periphery. Therefore, it is easy to see wether intellectual groups are central or peripheral (Ramos-Rodriguez and Ruiz-Navarro, 2004). Overall, most works are placed in the top

left space, thus, indicating that these papers tend to be cited together. For this reason, some seminal works on individual entrepreneurship and strategy research appear close to each other in the graph (e.g. Porter, 1980; Miller, 1983; Shane and Venkataraman, 2000). Subsequently, we find some of the most cited papers in the more specific corporate entrepreneurship field. These highlight the relationship between corporate entrepreneurship and strategy (Burgelman, 1983b; Barringer and Bluedorn, 1999), the effect of corporate entrepreneurship on firm performance (Zahra, 1991; Zahra, 1993) or, in some cases, they discuss the main definitions and issues in the field (Guth and Ginsberg, 1990; Sharma and Chrisman, 1999). In the bottom right hand side, we find some more recent papers emphasising the work of Dushnitsky and Lenox. Ultimately, corporate venturing is the most studied dimension of corporate entrepreneurship among the papers in figure 2.3.

Content analysis

The results show that the main research questions associated with corporate entrepreneurship have evolved over time. The main objectives of the first studies in the field (published during the 1960s and 1970s) were to explain how to stimulate the development of corporate entrepreneurship activities (Westfall, 1969). Later, in the 1980s, the literature was mainly concerned with the organisational renewal process and the combination of resources necessary to commit to develop an innovative project (Schollhammer, 1982; Burgelman, 1983; Pinchot, 1985). In addition, the first papers focusing on the compensation and incentive practices for venture managers were published (Block and Ornati, 1987) in this period. In the late 1980s, the researchers also started studying the relationship between performance and engagement in corporate entrepreneurship activities (McMillan and Day, 1988; Miller et al., 1988; Shortell and Zajac, 1988; Siegel et al., 1988).

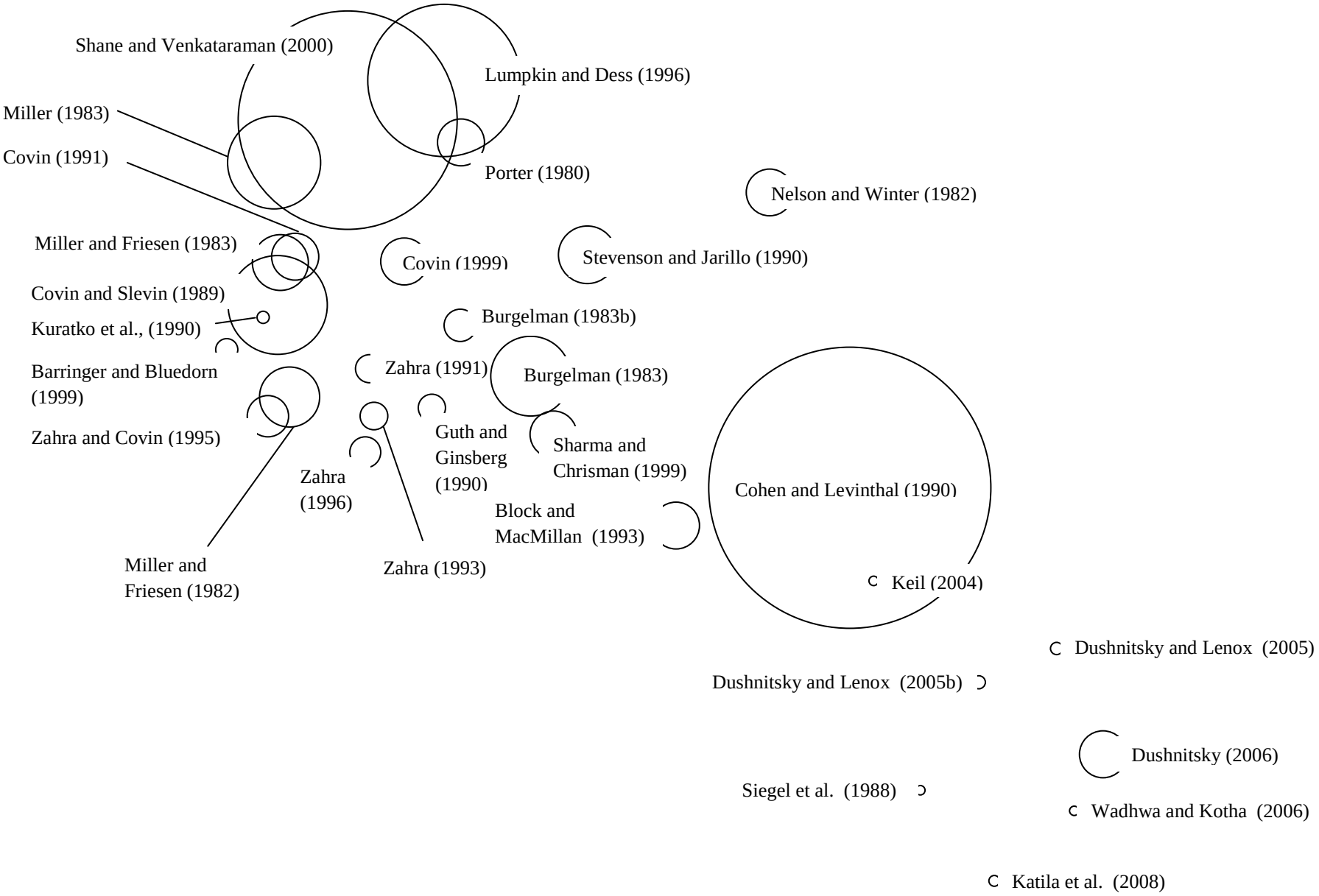
During the 1990s, the positive effect of corporate entrepreneurship on firm performance became more evident. Furthermore, corporate entrepreneurship was more clearly associated with the creation of new businesses within established companies (Zahra, 1991; Bosma et al., 2013). During this decade, some papers focused on the antecedents of corporate entrepreneurship activity (Sykes, 1990; Zahra, 1991). Generally, researchers examined company related factors (i.e. Gupta and Sapienza, 1992), although

some started taking into account the role of environmental factors (Tsai et al., 1991). For instance, Morris et al. (1993) studied the effect of culture on corporate entrepreneurship and innovation. Similarly, in these years some researchers made for the first time explicit use of some theoretical frameworks such as Population Ecology (Tsai et al., 1991) or Resource-Based View (McGrath et al., 1994).

As explained in the previous section, the number of articles published at the beginning of the twenty first century increased significantly. This led researchers to study a much greater number of topics: the role of managers at different hierarchical levels for corporate entrepreneurship (Zahra et al., 2000; Hornsby et al., 2002; Hornsby et al., 2009), international corporate entrepreneurship (Zahra and Garvis, 2000), corporate entrepreneurship in family firms (Kellermanns and Eddleston, 2006) or the development of some theoretical models explaining different areas of corporate entrepreneurship (Kuratko et al., 2005; Ireland et al., 2009). Overall, in the first decade of the century, corporate entrepreneurship was established as a set of entrepreneurial actions by which individuals make judgements informed by a degree of uncertainty (McMullen and Shepherd, 2006; Kuratko and Audretsch, 2013). Besides, entrepreneurial culture and strategy were highlighted as fundamental for the development of entrepreneurial projects in changing environments.

In the last five years, the different dimensions that constitute the corporate entrepreneurship phenomenon have become more evident as researchers increasingly study them separately. Particularly, the corporate venturing dimension is the most researched (Stopfod and Baden-Fuller, 1994). In addition, several studies have focused on the differing nature of corporate entrepreneurship activities compared with those of individual entrepreneurship (e.g. Parker, 2011; Bertoni et al., 2013; Martiarena, 2013). Finally, results also show that most studies are not grounded on any explicit theoretical framework. Specifically, only 26,9% of the articles studied (50 out of 186) make explicit use of an existing theoretical framework (84% – 42 out of 50 – are empirical). Resource-Based Theory is the most used framework (15 papers) followed by Agency Theory (seven papers) and by Institutional Economics (five papers). Ultimately, it is noteworthy that in the last five years researchers seem to have realised this lack of theoretical framework as almost half of the papers were published recently (52%). Specifically, 26 (out of 50) were published in 2011 or later.

Figure 2.3. Intellectual structure of corporate entrepreneurship research



2.5. Discussion

Overall, a chronologic analysis of the literature on corporate entrepreneurship shows that research can be grouped into three main areas: corporate entrepreneurship dimensions (Guth and Ginsberg, 1990; Covin and Slevin, 1991; Ireland et al., 2009; Phan et al., 2009; Covin and Lumkpin, 2011), corporate entrepreneurship antecedents (Marvel et al., 2007; Simsek et al., 2007; Yang et al., 2009; Zahra et al., 2009) and corporate entrepreneurship consequences (Zahra, 1991; Zahra, 1993; Zahra and Hayton, 2008; Bojica and Fuentes, 2012).

Corporate entrepreneurship dimensions

Despite the growth of the corporate entrepreneurship field in the last decades, the literature still does not agree completely on which are its main dimensions (Ireland et al., 2009). In addition, the relationship between corporate entrepreneurship and the entrepreneurial orientation construct (Miller, 1983; Covin and Slevin, 1991) has not been studied in depth. However, some scholars consider entrepreneurial orientation to be an aspect of the "larger" topical domain of corporate entrepreneurship (Covin and Lumkpin, 2011). In this regard, Lumpkin and Dess (1996, p. 136) state that "firms that want to engage in successful corporate entrepreneurship need to have an entrepreneurial orientation". Based on this, researchers usually classify corporate entrepreneurship into three to five dimensions (Covin and Slevin, 1991; Fayolle et al., 2010) – new business venturing, product, service and process innovativeness, self-renewal and proactiveness (Guth and Ginsberg, 1990; Zahra, 1993; Covin and Miles, 1999) are the most common. In addition, some researchers also consider the risk taking dimension as a component of corporate entrepreneurship (Agca et al., 2012). Others, such as Phan et al. (2009), consider that innovation and corporate venturing activities, on the one hand, and renewal and the ability to compete and take risks, on the other, are two distinct but related phenomena. Some authors such as Kuratko and Audretsch (2009) define this latter aspect of corporate entrepreneurship as strategic entrepreneurship. Overall, corporate venturing is the most visible and researched dimension of corporate entrepreneurship, since it is associated with new business creation of an existing organisation (Stopfod and Baden-Fuller, 1994).

The results of the study show that there are few works studying the dissimilarities among the different forms of corporate entrepreneurship (for an exception, see Verbeke et al., 2007). However, since entrepreneurial activities are essential if companies are to adapt to changes, a fuller appreciation of the factors that determine such activities should have both theoretical and practical implications (Zahra et al., 1999). The lack of studies in this particular area reflects lack of consensus on the main forms of the entrepreneurship that occur within established companies. For instance, although radical innovation and corporate entrepreneurship are normally considered to be two distinct phenomena, some of the research on corporate entrepreneurship has begun to draw from this literature (Phan et al., 2009). Overall, efforts to clarify the domain of corporate entrepreneurship should also shed light on the determinants and effects of these different types of entrepreneurial initiatives.

In addition, there have recently been some attempts to compare the nature of corporate entrepreneurship (intrapreneurship) and independent entrepreneurship as two separate phenomena (instead of the former being a sub-field of entrepreneurship) (Martiarena, 2013). Hence, the antecedents that make individuals choose between becoming self-employed or corporate entrepreneurs have been well documented (Hellman, 2007; Kacperczyk, 2012). However, some issues could be further explored. For instance, a better understanding of the design of contracts and work environments that minimise the risk that the employees seek to avoid by starting their own ventures, could generate interesting findings for managers (Parker, 2011). In addition, both independent entrepreneurship and corporate entrepreneurship, it is agreed, are important drivers of economic growth. However, the net effect of both types of ventures is not clear. Therefore, further studies could investigate and compare the performance of internal versus external ventures to assess better their weights and impacts on economic growth (Kacperczyk, 2012).

Similarly, despite the fact that some authors have explained that corporate entrepreneurship can be relevant for large corporations as well as small and medium sized enterprises (Carrier, 1994), there are few studies focusing on the different sizes of corporate entrepreneurial projects. There is little information on the extent to which major and minor intrapreneurial initiatives have the same characteristics; on their contribution to the general economy and to firm performance; or on their antecedents.

Overall, there seems to be a need for further studies focusing on the nature of corporate entrepreneurship among large multinationals and SMEs.

Corporate entrepreneurship antecedents

The studies that emphasise the organisational and individual levels of analysis have focused on issues such as the organisational structure (Covin and Slevin, 1991; Zahra, 1991), the incentive and control systems (Sathe, 1985), the managerial support towards entrepreneurial initiatives (Hornsby et al., 2002) or the personal traits and values (Antoncic and Hisrich, 2001). On the other hand, when studying which environmental factors can have an effect on corporate entrepreneurship, the emphasis is normally placed on industry related factors. Hence, other environmental variables that could have a significant influence, such as culture or legal regulations are usually not taken into account.

To our knowledge, since the pioneering works of Morris et al. (1993, 1994), there have appeared few empirical papers analysing the role of culture related factors at a country (or specific region) level of analysis (for an exception see Gomez-Haro et al., 2011). Nevertheless, theoretical research has pointed out the importance that institutional variables could have for corporate entrepreneurship. For instance, Hornsby et al. (2013b, p. 312) state that "it is important to consider how cultural factors may also influence the internal dynamics of the corporate entrepreneurship process". Some researchers have considered the companies' internal corporate culture and values (Antoncic and Hisrich, 2001; Zahra et al., 2009). Although corporate values inside companies may be affected by the more general cultural setting, the literature considers it to be an organisational factor rather than an environmental one. Similarly, despite the fact that public policies are considered to have a direct impact on the development of entrepreneurial initiatives (Gnyawali and Fogel, 1994), there are very few papers on the role of government regulations in the corporate entrepreneurship field (Henrekson and Sanandaji, 2011).

This fact is even more striking if we consider that the literature on independent entrepreneurship has repeatedly highlighted the impact of informal and formal institutional factors (e.g. culture or regulations) (McGrath et al., 1992; Kreiser et al., 2002). Since culture is considered to reinforce certain personal characteristics and

penalise others, these types of studies show how entrepreneurship differs from culture to culture as some cultural values favour entrepreneurial behaviour more than others (Mueller and Thomas, 2001; Felin et al., 2014). In addition, the literature agrees on the effect that regulations can have on entrepreneurship (Begley et al., 2005; Harmon et al., 2015). It is widely accepted that inefficient government regulations in the economy may be perceived negatively by entrepreneurs and, hence, this may discourage them from starting new businesses (Djankov et al., 2002).

Furthermore, the role of the sector to which the company belongs has rarely been taken into account. However, it is considered that a sector can significantly influence corporate entrepreneurship as it affects the rate of change of the competitive environment (Burgers et al., 2009). Besides, we could find very few exceptions (Schildt et al., 2005) of empirical researches not focusing upon the manufacturing sector. However, service sectors also develop corporate entrepreneurship activities.

In addition, despite the fact that the literature agrees on the multilevel nature of corporate entrepreneurship antecedents (Antoncic and Hisrich, 2001; Ireland et al., 2009), the results of our study show that no other article uses a multilevel regression technique (or any other type of hierarchical linear modelling method – Autio et al., 2013). Hence, future research could exploit this methodological approach.

Finally, special emphasis has been placed on the differing levels of managers involved in corporate entrepreneurship. From a top management team perspective, managers are considered to have multiple and critical roles in corporate entrepreneurship activity, mainly because they are centrally involved in the defining processes of both the corporate venturing and strategic renewal forms of corporate entrepreneurship (Kuratko and Audretsch, 2013; Ridge et al., 2014). In addition, attention has been placed on the vital role that middle managers can have in creating an environment that encourages innovation and entrepreneurship (Kanter, 1985; Wooldridge et al., 2008). The literature highlights that mid level professionals focus mainly on effectively communicating information between the firm's two internal managerial stakeholders (top-level managers and operating-level managers). Hence, they facilitate information flows in ways that support project development and implementation efforts (Kuratko et al., 2005). Ultimately, the role of first level managers has been less researched. However, some authors have suggested that bottom-up procedures are important for corporate entrepreneurship and that first level managers play a key role in this process (Hornsby et

al., 2009). Similarly, the effects of managers' compensation (regardless of the hierarchical level) on corporate entrepreneurship have not been studied in depth (Hornsby et al., 2002). Issues such as which kind of compensation methods should be used with corporate entrepreneurs to foster their entrepreneurial initiatives could be further developed. Moreover, the nature of compensation for management has already been considered important for corporate entrepreneurship since it can influence time horizons and strategic behaviours (Block and Ornati, 1987; Phan et al., 2009).

Corporate entrepreneurship consequences

Researchers agree that some corporate entrepreneurship initiatives have strategic objectives, while others pursue financial goals. From a strategic perspective, firms may engage in corporate entrepreneurship because of several benefits: learning, successful integration of a company's operations, improved responsiveness, successful standard setting (Narayanan et al., 2009) or acquiring new skills or technologies (Dushnitsky and Lenox, 2005). However, research has normally focused on the financial consequences of entrepreneurial activities (which may be easier to measure) and, therefore, there is a need to study the non-financial goals of corporate entrepreneurship initiatives.

From a financial perspective, there is general agreement in the literature that corporate entrepreneurship has a positive effect on firm performance (Zahra, 1991) by increasing the company's proactiveness and risk taking, and by promoting product, process and service innovations (e.g., Lumpkin and Dess, 1996; Walter et al., 2006). These capabilities, it is argued, allow the firm to improve its competitive position and can enable it to enter new industries in pursuit of profitability and growth (Zahra et al., 2000; Clark et al., 2014). Corporate entrepreneurship is considered to have an effect on the firm's ability to compete, adapt and perform in increasingly turbulent environments, by enabling the ongoing rejuvenation of product, market and strategic positions and the revitalisation of knowledge and intellectual capital (Zahra et al., 1999). Thus, it has become a central construct for explaining performance differences across firms (Heavey and Simsek, 2013).

Despite this, our results show shortcomings and areas to develop further research in terms of corporate entrepreneurship consequences. Papers which study the relation between corporate entrepreneurship and firm financial performance typically use

measures such as return on investment (Zahra, 1991), return on sales (Zahra, 1993), return on equity (Zahra and Hayton, 2008), market share gain (Bojica and Fuentes, 2012) or cash flow (Miller et al., 1988). Previous literature has already highlighted the difficulties of measuring performance in organisational studies, particularly among new ventures, since even successful start ups often do not reach profitability for a long period of time (Tsai et al., 1991). Hence, some researchers have explained the benefits of using other types of performance measures (Miller et al., 1991).

Another main area for further research concerns the fact that most studies focus only on US firms. Out of the 19 papers on the financial outcomes of developing entrepreneurial initiatives in established companies, 15 use data for US companies. The remaining studies focus on European companies (Walter et al., 2006; Bojica and Fuentes, 2012), a cross country comparison between the US and Slovenia (Antoncic and Hisrich, 2001) and only one examines this phenomenon using global data (Zahra and Hayton, 2008). Therefore, perhaps researchers should be less enthusiastic about the positive effect that corporate entrepreneurship has on firms' performance, as this effect has rarely been tested globally. The practical relevance of corporate entrepreneurship and its implications emerge mainly from this positive effect on firm's growth and profits. Hence, addressing this issue appears to be an urgent and potentially fruitful area of future research. However, in the last few years the financial consequences of corporate entrepreneurship have been less studied than in previous years; 17 of the 19 papers identified as focusing on this issue were published in 2008 or before.

Ultimately, this fact could be explained by the lack of suitable databases – most studies collect their own data (i.e. Maula et al., 2009). Among the secondary sources of information, the Profit Impact of Marketing Strategy (PIMS) start up database (employed mostly at the beginning of the 1990s) and the VentureXpert database (Park and Steensma, 2012) are the most employed. Finally, in these studies the number of observations normally ranks between 47 (Zahra, 1995) and 247 (McDougall et al., 1992), which could limit the use of some techniques that require larger samples.

2.6. Conclusion

There is general agreement in the literature on the main role that reviews play in the development of a research field (Bland et al., 1995). However, despite the recent

increase in the number of publications in the corporate entrepreneurship area, there are few systematic literature reviews focusing on it. In addition, most were published before that increase. Therefore, through a systematic literature review this chapter provides information on the content and evolution of corporate entrepreneurship. Specifically, 186 papers published in the highest ranked journals in the business, management and entrepreneurship fields are studied. The results indicate several areas where further research could be developed. It is shown how existing literature can be grouped into three areas (corporate entrepreneurship dimensions, antecedents and consequences) and, subsequently, we present an agenda for further research in each of these areas.

Finally, the present chapter has some limitations. First, the focus is on top journals in the management and entrepreneurship fields. However, relevant studies might have been published elsewhere (congress proceedings, doctoral theses, books or other journals), but not considered here. In the future, an analysis taking all these sources into account could be developed. However, the impact of this limitation might be lessened because in many cases (particularly among congress proceedings and doctoral theses) these studies are the first step before publication in a top journal. Second, all the data presented could be compared with a general benchmark in order to have greater understanding of the corporate entrepreneurship phenomenon. This general benchmark could be the individual entrepreneurship literature, the management literature or even social science articles in general. In this way, a clearer view of the trends, the shortcomings or research opportunities is attained. For instance, when we explain that "… in the last decade research on the corporate entrepreneurship field has increased significantly…," it would be interesting to compare this trend with the general entrepreneurship or management literatures. Third, citation and co-citation techniques have some inherent flaws. Mainly, when compiling citations, it is impossible to distinguish their objectives. Authors may refer to other articles to explain, justify or build their own ideas. However, citations may be used for other purposes such as to criticise another author's work or to mention one's own articles. Fourth, if literature on corporate entrepreneurship continues to grow as fast as it has in the last few years, in the future it might be possible to develop another systematic literature review using other bibliometric techniques. For instance, it could be possible to develop a macro citation (and co-citation) study. Previous literature differentiated between macro and micro bibliometric analysis (Schildt et al., 2006). Our study belongs to the micro-oriented

stream of research. However, it could be developed on a more general basis focusing on the overall structure of other areas of knowledge. Fifth, in the future a cluster analysis in order to identify the new trends of the literature (based on the intellectual structure of the corporate entrepreneurship) could be developed.

Finally, some of the areas for future research suggested are addressed in the next chapters (particularly the ones that have to do with the antecedents and consequences of corporate entreprenership activity). In this regard, in the next chapter (3) the study focuses on the company internal factors that might condition entrepreneurship in established firms.

CHAPTER 3

CONDITIONING FACTORS FOR CORPORATE ENTREPRENEURSHIP: AN INTERNAL APPROACH

3. CONDITIONING FACTORS FOR CORPORATE ENTREPRENEURSHIP: AN INTERNAL APPROACH

3.1. Introduction

As discussed in previous chapter, there are some areas in the corporate entrepreneurship literature were further knowledge could be generated. Specifically, this chapter aims to deepen in the study of (internal) corporate entrepreneurship antecedents. From this view, it is noteworthy that few articles use empirical data or a specific theoretical framework to analyse ventures' corporate business. The main purpose of this chapter is to identify the resources and capabilities that affect the probability of becoming a corporate entrepreneur. The research uses Resource-Based Theory (RBT) as a conceptual framework. Previous literature has highlighted the role of organizational antecedents for corporate entrepreneurship activity. For instance, Antoncic and Hisrich (2001) present a model where a set of factors at the company level (communication, formal controls, organizational support...) influence corporate entrepreneurship. Hornsby et al. (2002) model specifies how resource availability and the ability to overcome barriers affect in the implementation of entrepreneurial strategies. Similarly, Kuratko et al. (2005) outline the importance of identifying, acquiring and deploying the resources needed to pursue entrepreneurial opportunities. Overall, this chapter contributes to this type of studies by using a logistic regression analysis, and data from the Global Entrepreneurship Monitor (GEM) for 39 countries. The study demonstrates that entrepreneurial resources and capabilities, such as previous entrepreneurial experience, entrepreneurial competences and the ability to detect business opportunities, increase the probability of becoming a corporate entrepreneur.

The implications of this chapter are both conceptual and practical. On the one hand, the study advances the theory of corporate entrepreneurship and contributes to an improvement in the measurement of the resources and capabilities variables. On the other hand, this chapter provides valuable insights for the design of policies to foster corporate entrepreneurship activities.

The chapter is structured as follows. After this brief introduction, in section 3.2 the hypotheses are proposed. Section 3.3 presents the detail of the research methodology. Section 3.4 discusses the empirical results of the study. Finally, the chapter points out the most relevant conclusions and suggests some future lines of research.

3.2. Conceptual framework

Following previous researches in the corporate entrepreneurship field (Shrader and Simon, 1997; Teng, 2007; Yiu and Lau, 2008; Dushnitsky and Lavie, 2010), this chapter is grounded on RBT. As broadly defined in chapter 1, the central aim of RBT is to explain sustained competitive advantage where a competitive equilibrium is present (Barney, 1991). From this view, firms are best gauged by the resources they employ, suggesting that they have the ability to achieve high returns through the way they employ their resources (Penrose, 1959). In the light of RBT, this section presents 6 different hypotheses that explain how some resources and capabilities impact on corporate entrepreneurship activity.

Hypotheses and proposed model

Individuals with more or higher quality human capital should be better at perceiving profitable opportunities, once engaged in the entrepreneurial process, and such individuals should also have superior ability at successfully exploiting opportunities. Formal education is one of the main components of human capital, as education may assist in the accumulation of explicit knowledge that may provide skills useful to entrepreneurs (Davidsson and Honig, 2003; Revuelto-Taboada and Simon-Moya, 2012). The evidence suggests that people who start businesses have a higher level of education than people who do not (Bowen and Hisrich, 1986). If a company has well-qualified employees, the implementation and development of corporate entrepreneurship projects will become easier, and, besides, the chances of success will increase. In fact, academic entrepreneurs are likely to employ more people than their non-academic counterparts (Parker, 2011), and founders with university education apparently make higher investments in their business than non-academic entrepreneurs (Reynolds et al., 1994). Besides this, it is considered to be necessary for a company to offer specific training to its workers and to hand down skills from one generation of workers to the next in order to implement and develop innovative projects (Hayton and Kelley, 2006). Therefore, we pose the following hypothesis:

> Hypothesis 1: It is more likely that individuals develop corporate entrepreneurship activities when they have higher knowledge.

Different people will discover different opportunities in a given context because they possess different prior knowledge and experience (Shane, 2000). According to Wright et al. (1997) "an entrepreneur's past experience is undoubtedly of importance" as experience is often associated with a variety of assets, which may include managerial and technical skills as well as a network of contacts that can be utilized in subsequent ventures. As a result, at any given time only some people, and not others, will know about particular customer problems or market characteristics, or the ways to create particular products or services (Venkataraman, 1997). Therefore, entrepreneurial experience may facilitate the identification and exploitation of business opportunities (Shane and Khurana, 2003). Moreover, experience causes a potential reduction in adverse selection problems because of the information gained in the past (Wright et al., 1997). Therefore experienced entrepreneurs would be expected to be more creative and innovative. According to Shane and Khurana (2003), the liability that new firms have to face "is particularly severe for inexperienced entrepreneurs. Inexperienced founders do not have a set of stable ties to resource holders, who are often relied upon to provide the resources necessary to found an organization". Ultimately, we have the following hypothesis:

> Hypothesis 2: It is more likely that individuals develop corporate entrepreneurship activities when they have previous entrepreneurial experience.

An important part of entrepreneurship is intentional. The opportunity recognition process, for example, is clearly an intentional process, so entrepreneurial intentions merit researchers' attention (Krueger et al., 2000). Entrepreneurial intentions are considered to have a significant impact on the organizations, because they guide entrepreneurs' goal setting, communication, commitment, etc. (Bird, 1988). Intentions have been shown to be good predictors of subsequent behaviour (Ajzen, 2001). Thus understanding the nature of the antecedent factors that influence entrepreneurial intentions becomes essential to the study of entrepreneurial behaviour (Fitzsimmons and Douglas, 2011; Shane and Venkataraman, 2000). Existing theory on the development of entrepreneurial intentions has basically used two different models: Shapero's (1982) entrepreneurial event model and Ajzen's (1987) theory of planned behaviour. In Shapero's model, entrepreneurial intentions are derived from perceptions of feasibility

and desirability, and a propensity to act upon opportunities. On the other hand, the theory of planned behaviour identifies three attitudinal antecedents to intention: (1) attitude towards the act; (2) subjective norms; and (3) perceived feasibility (Shook et al., 2003). Thus, we pose the following hypothesis:

> Hypothesis 3: It is more likely that individuals develop corporate entrepreneurship activities when they have entrepreneurial intention.

A principal mechanism through which an organization develops new competitive advantages is through the pursuit of new initiatives – attempts to add new products, markets and technologies to its current repertoire. Such attempts require the firm to obtain new resources and combine them with resources it already possesses, or reconfigure those existing resources (McGrath et al., 1995; Morris and Sexton, 1996). This process requires having an entrepreneurial vision. Vision is what Carland et al., (1996) meant by "seeing what is not there": it is not the ability to recognize opportunities, but the ability to see how to change the environment to create opportunities (Ensley et al., 2000). New initiatives tend to occur in conditions where information is either missing or difficult to interpret. This implies that decisions and actions must be pursued in the face of uncertainty and ambiguity (Daft and Weick, 1984). So concepts of planning, control and learning, which are perhaps appropriate for the management of more mature businesses, are inappropriate or destructive to new initiatives (Block and MacMillan, 1985). Innovative business ideas require people to make decisions based on very little evidence, which requires high levels of self-confidence (Koellinger, 2008) and, in fact, it is a characteristic of overconfident people that they can make these decisions (Cooper et al., 1995). According to this evidence we pose the following hypothesis:

> Hypothesis 4: It is more likely that individuals develop corporate entrepreneurship activities when they consider that they have the necessary entrepreneurial competences to create a start-up.

The concept of social capital is widely agreed to be ambiguous. It has many different connotations and consequently the scope for confusion is considerable (Anderson and Jack, 2002; Casson and Della Giusta, 2007). There are tensions between the way the

concept is used in sociology and political science on the one hand and in economics and management on the other. Burt (1992) characterizes social capital as a resource that brings a higher rate of return on investments. He suggests that social capital creates an advantage in "… the way in which social structure renders competition imperfect by creating entrepreneurial opportunities for certain players and not for others" (1992, p. 57). Indeed, the literature on both entrepreneurship and social capital has emphasized the importance of connections and networks for the establishment of new ventures and for innovation in general (De Carolis and Saparito, 2006). Networks facilitate the acquisition of resources by promoting a constant flow of information from diverse sources (Fernandez et al., 2000). Networks may also help to understand how resources are integrated and recombined in firms with dynamic capabilities (Grant, 1996). Finally, in mobilizing resources for one purpose, social capital also acts to release other resources (Blyler and Coff, 2003). Ultimately, we present the following hypothesis:

> Hypothesis 5: It is more likely that individuals develop corporate entrepreneurship activities when they know other entrepreneurs.

One of the fundamental reasons for the fascination with entrepreneurs and the inventions that they develop seems to centre on why and how they see and create new opportunities (Alvarez and Busenitz, 2001). In fact, understanding the opportunity identification process represents one of the core intellectual questions in the domain of entrepreneurship (Gaglio and Katz, 2001). Before an individual can earn an entrepreneurial profit from an opportunity, he or she must discover that it has value (Shane, 2000). Previous researchers have argued that entrepreneurial opportunities exist primarily because different members of society have different beliefs about the relative value (the potential to transform them into a different state) of resources (Kirzner, 1997). Assuming these different beliefs, all opportunities are not obvious to everyone all of the time (Hayek, 1945).

In order that these ideas are materialized into corporate entrepreneurship actions, the corporate entrepreneur has to possess the capacity to identify opportunities in the environment (Shane and Venkataraman, 2000). Therefore, the generation of ideas depends not only on the education and entrepreneurial spirit of the employee but also on

the employee's ability to detect opportunities. Based on these explanations, the following hypothesis is posed:

> Hypothesis 6: It is more likely that individuals develop corporate entrepreneurship activities when they are able to identify business opportunities.

3.3. Methodology

Description of the variables

The dependent variable comes from the GEM 2008 database. The GEM project is currently the most relevant study on entrepreneurial activity worldwide. GEM's main objectives are to facilitate cross-national comparisons of the level of national entrepreneurial activity, to estimate the role of entrepreneurial activity in national economic growth, to determine the factors that account for national differences in levels of entrepreneurship, and to facilitate policies that may be effective in enhancing entrepreneurship. 39 countries and 36,325 individuals were included in the final sample. In this chapter, the binary variable corporate entrepreneurship activity is used as the dependent variable.

Two vectors of independent variables are considered in this study: resources and capabilities. Each vector is measured by three different variables from the GEM database (table 3.1 shows the definition of the variables used in the research).

Although we are interested in developing a RBT model, other factors may also influence entrepreneurial activity. Recent research has shown the importance of socio-demographic factors (Arenius and Minniti, 2005), and countries' economic development, in explaining entrepreneurial behaviour. Thus we have included several control variables, to ensure that the results were not unjustifiably influenced by such factors. In each model, we controlled the individuals' socio-demographics characteristics (gender and age) and macro variables (country per capita income).

Previous research indicates that women's participation rates in entrepreneurship are significantly lower than men's rates (Arenius and Minniti, 2005), and that men are more likely to start a business than women (Blanchflower, 2004). A binary variable for *gender* is included in this study to test for the significance of gender effects. In addition,

empirical evidence indicates the existence of a significant relationship between age and entrepreneurial activity (Evans and Leighton, 1989; Levesque and Minniti, 2006), therefore, the study also controls for *age*. Finally, several authors identify a negative relationship between the level of new business activity and economic development, measured by income per capita, in emerging economies (Wennekers et al., 2005). We therefore include the natural logarithm of Gross Domestic Product (GDP) at purchasing power parity (PPP) per capita.

Table 3.1. Description of the variables

	Variable	Description and database
Dependent variable	Corporate entrepreneur	Binary variable equal to 1 if individuals are, alone or with others, currently trying to start a new business or a new venture for their employer - an effort that is part of their normal work (Yes/No)
Independent variables (resources and capabilities)	Knowledge	Binary variable which indicates if the respondent has any graduate program experience (with or without degree) (Yes/No)
	Entrepreneurial experience	Binary variable which indicates if the respondent has discontinued a business (Yes/No)
	Entrepreneurial Intention	Binary variable which indicates if the respondent intends to start a business within three years (Yes/No)
	Entrepreneurial competences	Binary variable which indicates if ‘‘You have the knowledge, skill, and experience required to start a new business’’ (Yes/No)
	Social capital	Binary variable which indicates if ‘‘You know someone personally who started a business in the past two years’’ (Yes/No)
	Opportunity recognition	Binary variable which indicates if “In the next six months, there will be good opportunities for starting a business in the area where you 1ive” (Yes/No)
Control variables	Gender	Respondents were asked to specify their gender (GEM)
	Age	Respondents were asked to specify their year of birth (GEM)
	lnGDP	Natural logarithm of gross domestic product (GDP) at purchasing power parity (PPP) per capita (U.S. dollar). International Monetary Fund IMF, World Economic Outlook Database

Data analysis and model

Given the binary nature of the dependent variable, we analysed the effect of resources and capabilities on corporate entrepreneurship activity through binary response models, usually known as probability models. In a similar way to regression analysis, models for binary response extend the principles of generalized linear models in order to give a better treatment of dichotomous dependent variables. In fact, models for binary response are extensions of the standard log-linear model, and allow the study of a mixture of categorical and continuous independent variables with respect to a categorical dependent variable. Binomial logistic regression (logit) estimates the probability of an event happening. The binomial logit model assumes that the decision of an individual i depends on an unobservable utility index Ui (also known as the latent variable), which is determined by one or more explanatory variables. Thus, the larger the value of the Ui index, the greater the probability that the dependent variable takes the value of one. Consequently, we express the index Ui as:

$$U_i = P(I_i = 1) = \delta_1 Z_{1i} + \delta 2 Z_{2i} + \beta_1 X_{1i} + \mu_i \qquad (1)$$

Where:

Z_{1i} collects information related to resources;

Z_{2i} collects information related to capabilities;

X_{1i} collects the effect of the control variables; and

μ_i is the random disturbance.

3.4. Results and discussion

We conducted a multi-collinearity diagnostic test (examining the variance inflation factors – VIFs – of all variables in the analysis), and we found that multi-collinearity is not likely to be a problem for this dataset. Also, to address the possibility of heteroscedasticity and autocorrelation among observations pertaining to the same country, robust standard errors, clustered by country, were estimated (Hoetker, 2007). In Table 3.2, the correlation matrix is presented, in Table 3.3, Model 1 presents the logistic regression results with the control variables only, and Models 2 and 3 separately

introduce resources and capabilities and the control variables. Model 4 is the full model with all the significant variables.

Table 3.2. Correlation matrix

	Mean	Standard deviation	1	2	3	4	5	6	7	8	9
1. Corporate entrepreneurship	0,03	0,18	1								
2. Knowledge	0,73	0,24	0,065***	1							
3. Entrepreneurial experience	0,04	0,19	0,097***	-0,009	1						
4. Entrepreneurial intention	0,12	0,32	0,137***	0,053***	0,125***	1					
5. Entrepreneurial competences	0,53	0,49	0,114***	0,059***	0,125***	0,244***	1				
6. Social capital	0,43	0,49	0,105***	0,070***	0,095***	0,188***	0,251***	1			
7. Opportunity recognition	0,37	0,48	0,099***	0,003	0,071***	0,211***	0,203***	0,212***	1		
8. Gender	0,53	0,49	0,051***	-0,063***	-0,03***	-0.062***	-0,129***	-0.100***	-0,070***	1	
9. Age	42,8	14,9	-0,059***	0,068***	-0,026***	-0,193***	-0,059***	-0,145***	-0,087***	0,032***	1
10. lnGDP	29112,52	12126,65	-0,047***	0,042**	-0,032***	0,085***	-0,061***	-0,068***	0,047***	0,019	0,016

As mentioned, Model 1 includes only the control variables. Thus, following Arenius and Minniti (2005), we entered variables measuring the individuals' socio-demographic characteristics (gender and age) as well as a macro variable (lnGDP). Consistent with the existing literature on entrepreneurship, the results suggest that an individual's socio-demographic characteristics are quite important for understanding the likelihood of him or her becoming a corporate entrepreneur. The overall model is significant since the log pseudolikelihood statistic is -5621.584 with a p-value of 0.000; it predicts 96.23% of the responses correctly. All coefficients are significant with a p-value ≤ 0.001 and they have the expected sign. According to the existing empirical research on entrepreneurship (Arenius and Minniti, 2005, p. 234), being male increases the probability of becoming a corporate entrepreneur. The age negative coefficient indicates that the probability of becoming a corporate entrepreneur decreases with age (Levesque and Minniti, 2006). Finally, the lnGDP negative coefficient indicates that a lower income in one's country increases the probability of one becoming a corporate entrepreneur. This finding is similar to results for entrepreneurial activity (Reynolds et al., 2001).

In order to explain the impact of resources on corporate entrepreneurship activity, Model 2 adds three variables to the control variables: knowledge, entrepreneurial experience and entrepreneurial intention. Model 2 correctly predicts 96.23% of the responses; Model 1 correctly predicts the same percentage, but in the case of this second model the pseudo R-squared increases. As expected, having knowledge (to be more specific, having a degree), having previous entrepreneurial experience and having entrepreneurial intention increase the probability of becoming a corporate entrepreneur ($p < 0.01$).

In Model 3 we incorporate the variables of capabilities (entrepreneurial competences, personal network and opportunity recognition) and the control variables. The percentage correctly predicted in Model 3 is 96.23%, the same percentage as in Models 1 and 2, but the pseudo R-squared increases even more. Moreover, according to the Akaike criterion (AIC) and the Schwarz criterion (BIC'), Model 3 is better than Model 2 in explaining the probability of an individual becoming a corporate entrepreneur. Also, all variables (entrepreneurial competences, personal network and opportunity recognition) are significant ($p \leq 0.001$) and they have the expected positive sign.

Finally, Model 4 shows the coefficients for the resources and capabilities variables and the control variables. In this case, R-squared is the largest of all the models, and the

model correctly predicts 96.23% of the responses. The Akaike criterion (AIC) and the Schwarz criterion (BIC') are lower than in all previous models. Also, in Model 4 the importance of gender, age, and lnGDP remains unchanged. The resources (knowledge, entrepreneurial experience and entrepreneurial intention) and capabilities (entrepreneurial competences, personal network and opportunity recognition) are statistically significant in explaining the corporate entrepreneurship activity.

Overall, the results indicate that all the resources and capabilities analysed have an influence on corporate entrepreneurship activity, as all of them are significant. Hypothesis 1 from the literature review cannot be rejected, which means that education plays a role in the development of corporate entrepreneurship activities because it assists in the accumulation of knowledge (Davidsson and Honig, 2003) that can become a key source for promoting internal entrepreneurship (Chandler et al., 2005). Hypotheses 2 and 3 cannot be rejected neither, so previous entrepreneurial experience and intention are considered to have a significant impact on an organization's corporate entrepreneurship activities. Experience seems to be associated with a variety of assets, as it can provide expertise in running a business (Wright et al., 1997) and benchmarks for judging the relevance of information (Cooper et al., 1995). From the capabilities point of view, the fact that the employee considers that he or she has the necessary competence to create a new business influences internal entrepreneurship. Having confidence that one has the knowledge, skills, and experience necessary to create a start-up positively influences corporate business ventures; therefore, Hypothesis 4 is not rejected. Hypothesis 5 is not rejected neither: corporate entrepreneurship is more likely to happen if personal networks exist. These networks can be seen as the structures through which entrepreneurs obtain information, resources, and social support to identify and exploit opportunities (Aldrich and Zimmer, 1986). Similarly, Floyd and Wooldridge (1999) consider social capital and personal networks as one of the main drivers of cooperation and collective action among employees. Finally, the fact that an employee is able to identify business opportunities in the short term (6 months) also has a positive effect. Thus, Hypothesis 6 is not rejected, and the importance of opportunity recognition in entrepreneurial behaviour is highlighted (Stevenson and Jarillo, 1990).

Table 3.3. Logistic regression. Dependent variable: Corporate entrepreneurship

	Model 1		Model 2		Model 3		Model 4	
	dF/dx	**Std. Err.**	**dF/dx**	**Std. Err.**	**dF/dx**	**Std. Err.**	**dF/dx**	**Std. Err.**
Resources								
Knowledge			0.017***	(0.004)			0.009***	(0.003)
Entrepreneurial experience			0.053***	(0.013)			0.025***	(0.007)
Entrepreneurial intention			0.003***	(0.001)			0.002***	(0.000)
Capabilities								
Entrepreneurial competences					0.031***	(0.005)	0.028***	(0.005)
Social capital					0.016***	(0.002)	0.014***	(0.002)
Opportunity recognition					0.001***	(0.002)	0.015***	(0.002)
Control variables								
Gender	0.017***	(0.0316)	0.016***	(0.029)	0.007***	(0.002)	0.007***	(0.002)
Age	-0.000***	(0.000)	-0.000***	(0.001)	-0.000***	(0.000)	-0.000***	(0.000)
lnGDP	-0.017***	(0.004)	-0.015***	(0.003)	-0.008***	(0.003)	-0.008***	(0.002)
Number of obs	36325		36325		36324		36325	
Pseudo R-squared	0.0370		0.0542		0.0932		0.1088	
Log pseudolikelihood	-5.621.584		-5.521.280		-52.542.552		-52.022.043	
Percent correctly predicted	96.23%		96.23%		96.23%		96.23%	
AIC	11251.17		11056.56		10522.51		10424.41	
BIC’	11285.17		11116.06		10582.01		10509.41	

Note: *** significant at $p \leq 0.001$; ** significant at $p \leq 0.01$; *significant at $p \leq 0.05$.
AIC: Akaike Information Criteria, BIC: Bayesian information criterion or Schwarz Criterion

3.5.Conclusion

Assuming that corporate entrepreneurship is an important element in organizational and economic development (Antoncic and Hisrich, 2001), it is interesting to understand which factors contribute to fostering and enhancing it. Using data from the 2008 GEM for 39 countries, this research has analysed the influence of resources and capabilities on corporate entrepreneurship. The results show the effect of a set of variables on the likelihood of developing internal entrepreneurship (Alpkan et al., 2010; Ireland et al., 2009). Specifically, this chapter demonstrates (through a logistic regression analysis) that some factors that could be associated to entrepreneurial resources and capabilities, such as previous entrepreneurial experience, entrepreneurial competences and the ability to detect business opportunities, increase the probability of becoming a corporate entrepreneur. In other words, the research does not show explicit significant differences between individual entrepreneurs and corporate entrepreneurs, since they are affected by similar bases of resources and capabilities. The factors which determine whether new start-up opportunities are commercialized via corporate venturing or entrepreneurship have already been studied in the literature (Parker, 2011). However, a deeper understanding of the relationship between corporate entrepreneurship and individual entrepreneurship could generate new insights in the literature.

The contributions of this study are both conceptual and practical. From the theoretical perspective, the work advances the application of RBT in the analysis of corporate entrepreneurship. To our knowledge very few studies have quantitavely analysed the factors affecting corporate entrepreneurship using RBT explicitly. Besides this, empirically measuring resources and, especially, capabilities has sometimes generated discussion among scholars (Dutta et al., 2005). This study contributes to the improvement of the operationalization of the variables of resources and capabilities by using the GEM database. In addition, the results basically show how some factors make it more likely that a company will develop corporate entrepreneurship activities. Thus, from a practical point of view, the study could be useful for the design of policies to promote and foster corporate entrepreneurship. In fact, as both individual entrepreneurship and corporate entrepreneurship seem to be affected by the same bases of resources and capabilities, individual entrepreneurship would be supported by policies designed to foster corporate entrepreneurship, and vice versa.

The study suggests several future research lines. First, a more in-depth study of the relationship between resources and corporate entrepreneurship is needed (in this regard, chapter 9 of this thesis develops a bit more the relationship between RBT and corporate entrepreneurship). Second, according to the RBT, a larger number of new variables could be used as proxies (both from resources and from capabilities). Additionally, corporate entrepreneurship could be measured in different ways (with a wider or a narrower definition). Third, the research could be complemented by the analysis of environmental conditioning factors. Precisely, next chapter (4) focuses on the corporate entrepreneurship conditioning factors from an environmental perspective. In this case, the study is grounded on Institutional Economics (IE; North, 1990) and GEM data for a wider period of time (years 2004-2008) is used.

CHAPTER 4

CONDITIONING FACTORS FOR CORPORATE ENTREPRENEURSHIP: AN ENVIRONMENTAL APPROACH

4. CONDITIONING FACTORS FOR CORPORATE ENTREPRENEURSHIP: AN ENVIRONMENTAL APPROACH

4.1. Introduction

Whereas in chapter 3, the emphasis was placed on the internal antecedents of corporate entrepreneurship activity, this chapter focuses on the conditioning factors at an environmental level. In this regard, previous literature has highlighted that the external factors that determine corporate entrepreneurship in firms still remain somewhat unclear (Camelo-Ordaz et al., 2012). In addition, it is noteworthy that most empirical articles in this field do not use an explicit theoretical framework. Precisely, this chapter uses Institutional Economics (IE) as a conceptual framework with the objective of analysing the environmental or external factors that condition corporate entrepreneurship within the firms. Specifically, the study determines the moderating effect of cultural values on corporate entrepreneurship. Previous research has tried to identify which organizational and environmental factors influence corporate entrepreneurship (Pinchot, 1985; Zahra, 1993). However, despite the fact that the institutional perspective has been widely used in entrepreneurial research (Bruton et al., 2010), to our knowledge very few quantitative researches in the corporate entrepreneurship field are grounded in this IE (Gomez-Haro et al., 2011). Besides, the institutional environment has historically been viewed as a determinant of entrepreneurial activity at both the individual and organizational levels (Thornton et al., 2011). The list of environmental conditions that can trigger entrepreneurship in established firms is quite extensive (Covin and Slevin, 1991; Sathe, 2003). Schindehutte et al. (2000) use a review of literature in the areas of corporate entrepreneurship to identify no less than 40 “key triggers” of corporate entrepreneurship activity, roughly half of which would be considered “environmental” in nature. Thus, in terms of influencing corporate entrepreneurship, the environment appears to be an important determinant. In addition, in terms of analyzing the environment, IE is the most used theoretical approach (Thornton et al., 2011).

This chapter uses a logistic regression technique and a Global Entrepreneurship Monitor (GEM) database from the years 2004–2008. In addition, these data is complemented with data from the Doing Business project and from the International Monetary Fund (IMF). The Doing Business project provides objective measures of business regulations

and their enforcement across 183 economies. The results highlight the impact of the environmental factors on corporate entrepreneurship. Variables such as living in an entrepreneurial culture and media exposure (informal factors), and the number of procedures necessary to create a new business or access to finance (formal factors), appear to be significant for corporate entrepreneurship. Moreover, informal factors also have an indirect effect as they behave as moderators between formal factors and corporate entrepreneurship. The chapter has several implications from both theoretical perspective (advancing in the application of IE for the study of entrepreneurship within the firms) and from the practical point of view (providing insights for governmental policies interested in fostering corporate entrepreneurship).

This chapter is structured as follows. After this brief introduction in section 4.2 the conceptual framework and the research hypotheses are presented. In section 4.3 the methodology used in the empirical part is detailed. Section 4.4 provides the results and discussion. Finally, section 4.5 presents the main conclusions of the study.

4.2. Conceptual framework

As mentioned above, corporate entrepreneurship is an important element in organizational and economic development. Scholars and practitioners have shown interest in the concept since the beginning of the 1980s due to its beneficial effect on the revitalization and performance of firms (Antoncic and Hisrich, 2001). The fact that corporate entrepreneurship is considered an important remedy for a lack of innovative and competitive capabilities within organizations has led the research in this field to flourish (Kuratko et al., 1990; Zahra, 1993).

Corporate entrepreneurship has typically been characterized as a multidimensional construct. It has been defined as "the sum of a company's innovation, renewal, and venturing efforts" (Zahra, 1995: 227). In this case, innovation refers to the firm's commitment to introducing new products, production processes and organizational methods (Agca et al., 2012). Venturing refers to new business creation (Lumpkin and Dess, 1996; Thornton et al., 2011) and strategic renewal (or self-renewal) refers to the creation of new wealth through new combinations of resources (Guth and Ginsberg, 1990). In addition, corporate entrepreneurship has been linked to the entrepreneurial orientation concept. In this regard, Miller (1983) defined an entrepreneurial firm as one

that "…engages in product-market innovation, undertakes somewhat risky ventures, and is first to come up with proactive innovations, beating competitors to the punch". In contrast, "…a non-entrepreneurial firm is one that innovates very little, is highly risk averse, and imitates the moves of competitors instead of leading the way…" (Miller, 1983, p. 771).

Following previous research this chapter uses IE as a conceptual framework (Souitaris et al., 2012; Dokko and Gaba, 2013; Gentry et al., 2013). As broadly explained in chapter 1, this theoretical approach is concerned with the regulatory, social, and cultural influences that promote survival and legitimacy of an organization rather than focusing solely on efficiency-seeking behavior (Bruton et al., 2010). In the light of IE, this section presents the hypotheses that explain how a set of institutional factors may influence corporate entrepreneurship.

Hypotheses: Informal factors

The literature suggests that the formation of different cultural values in different societies influences the decision to create new businesses (Bruton et al., 2010); therefore, not all societies foster entrepreneurial activity with equal effectiveness. Shapero and Sokol (1982) observed how business formation rates vary from society to society. They argue that these differences occur because different cultures hold different beliefs about the desirability and feasibility of beginning a new enterprise (McGrath et al., 1992). Similarly, Shane (1992) demonstrated (using a Hofstede approach) that the national cultural values of individualism and power distance explain national differences in rates of inventiveness.

These differences in the socio-cultural context may influence, among others, the status and social recognition of corporate entrepreneurs, promoting or inhibiting entrepreneurial career choice (Gnyawali and Fogel, 1994). Culture influences the cognitive framework that affects how members in an organization perceive issues, as well as how they view their firm's competitive landscape (Johnson, 2002). It facilitates and accommodates the entrepreneurial activities of the firm and makes more likely to engage in entrepreneurial ventures seeking opportunities (Dimitratos et al., 2012). Overall, culture, as distinct from political, social, technological or economic contexts,

has relevance for economic behaviour, innovation and entrepreneurship (Shapero and Sokol, 1982). Therefore, we posit the following hypothesis:

> Hypothesis 1: It is more likely that individuals will become corporate entrepreneurs when they are involved in an entrepreneurial culture.

The day-to-day selection and display of news by journalists can focus the public's attention and influence its perceptions (Deephouse, 2000). The specific ability to influence the salience of topics and their images among the public has come to be called the agenda-setting role of the news media. The core proposition of this view is that the prominence of elements in the news influences the prominence of those elements among the public (Carroll and McCombs, 2003). The public uses these salience cues from the media to organize their own agendas, to decide which issues, persons or other objects are the most important. Over time, the set of priorities visible on the agenda of the news media becomes, to a considerable degree, the agenda of the public (Fombrun and Shanley, 1990). Therefore, stories reported by the media can play a critical role in the processes that enable new businesses to emerge. Stories that are told by or about entrepreneurs define a new venture in ways that can lead to favourable interpretations of the wealth-creating possibilities of the venture; this enables resource flows to the new enterprise (Carroll and McCombs, 2003). These stories can be helpful to potential entrepreneurs, venture capitalists and other institutional actors (such as investment banks, foundations, innovative organizations, etc.) (Lounsbury and Glynn, 2001; Pollock and Rindova, 2003).

> Hypothesis 2: It is more likely that individuals will become corporate entrepreneurs when the media often report stories about successful new businesses.

Hypotheses: Formal factors

One of the main steps that can be taken by SME and Entrepreneurship policy makers seeking to increase rates of innovation and new firm formation is to enable the starting of a business to take place as quickly and cheaply as possible (Van Stel et al., 2007). Djankov et al. (2002) suggest that the time and cost necessary to create a business varies significantly among countries and consequently affects its rate of business creation. For

example, even aside from the costs associated with the corruption that exists in some countries, business entry is considered to be more expensive in developing economies (Van Stel et al., 2007). Similarly, Gnyawali and Fogel (1994) found that governmental regulation is generally perceived negatively by potential entrepreneurs. However, other studies, such as that of Van Stel et al. (2007), posit that the relation between the time and cost of starting a business and entrepreneurship is not as clear as implied by Djankov et al. (2002) and Gnyawali and Fogel (1994). Nevertheless, corporate entrepreneurs may be discouraged from starting a business if they have to follow many rules and procedures. Overall, inefficient government regulation in the economy may be perceived negatively, especially by those interested in starting new businesses. Hence, we formulate the following hypothesis:

> Hypothesis 3: The more procedures that are necessary to create a company, the less likely it is that individuals will become corporate entrepreneurs.

Economic research has focused intensely on the role played by financial markets and institutions in real economic activity (Begley et al., 2005); capital emerges as a critical success factor when starting a business (Ahlstrom and Bruton, 2006; Cetorelli and Strahan, 2006). Evans and Leighton (1989) and Evans and Jovanovic (1989) argue that entrepreneurs face liquidity constraints, and Blanchflower and Oswald (1998) cite lack of capital as one of the main impediments entrepreneurs have to face and suggest this might be a reason for nascent entrepreneurs to abandon the start-up process. Similarly, in a study of individuals who had business ideas but who had not created a firm, van Auken (1999) found that financial constraints were the main obstacle. Therefore, a key challenge for entrepreneurs and corporate entrepreneurs is to find a means of accessing bank loans efficiently (Le et al., 2009). Research evidence shows that policies which increase access to bank credit, credit with low interest rates, and credit guarantee schemes, lead to the creation of investment in companies and contribute significantly to the promotion of new businesses (Gnyawali and Fogel, 1994; Van Gelderen et al., 2006). However, most firms start out with a small amount of capital provided by the firm founder(s) (Aldrich, 1999). Overall, therefore, we advance the following hypothesis:

Hypothesis 4: The greater the access to finance to create a company, the more likely it is that individuals will become corporate entrepreneurs.

Hypotheses: The moderating role of informal factors

One of the difficulties in examining the cultural affects and effects in relation to corporate entrepreneurship is the lack of a precise and commonly understood definition of culture (McGrath et al., 1992). Some authors, such as Scott and Lane (2000: 49), define culture as "an interpretive framework through which individuals make sense of their own behavior, as well as the behavior of collectivities in their society". However, much of the research in entrepreneurship and innovation that considers cultural variables has followed Hofstede's (1980, 2001) seminal work showing how culture is manifested in various forms and how cultural values at individual or societal levels are influenced by national culture.

Overall, most of the research agrees that entrepreneurial activity may vary across countries due to differences in cultural values and beliefs. Shapero and Sokol (1982), for example, observed that business formation rates vary from society to society. They argue that this is so because different cultures carry different beliefs about the desirability and feasibility of beginning a new enterprise. Similarly, Timmons (1999) found that being well organized, being highly committed to work and willing to accept responsibility for outcomes resulting from it, and having a desire for high standards, are among the attributes associated with an effective entrepreneurial culture. In addition, national culture has also been linked to corporate entrepreneurship. Using a Hofstede approach, Morris et al. (1993) found that corporate entrepreneurship is highest in moderately individualistic cultures, while Venkataraman et al. (1993) argued that the cultural values of uncertainty avoidance and power distance explain the different approaches to the corporate venturing process in different countries.

From an institutional approach, both formal and informal institutions can legitimize and delegitimize business activity as a socially valued or attractive activity, and can promote and constrain the entrepreneurial spirit (Adis et al., 2008; Welter and Smallbone, 2011). Institutions are constituted by culture and social relations, and human, social and cultural capital are often antecedents to acquiring financial capital and other resources needed to start a business (Bruton et al., 2010). For example, developing countries tend

to have higher rates of informal work rates (greater unofficial economies) than high-income countries. In such contexts there is less social and legal pressure on enforcing rules and regulations and thus several formalities and procedures for starting a business are avoided by entrepreneurs (Alvarez and Urbano, 2011). Similarly, Djankov et al. (2002) found that heavier regulation of entry is generally associated with greater corruption and a larger unofficial economy. Also, entry is regulated more heavily by less democratic governments and such regulation does not seem to yield visible social benefits. In terms of access to bank credit, developing countries are characterized by larger unofficial economies and so entrepreneurs have even fewer bank guarantees than is the case in developed countries and the access to credit is also more difficult (Gnyawali and Fogel, 1994). Overall, therefore, we propose the following hypotheses:

> Hypothesis 5a: The impact of the number of procedures for corporate entrepreneurship is moderated by culture; in a country with an entrepreneurial culture, the more procedures that are necessary to create a company, the less likely it is that individuals will become corporate entrepreneurs.
>
> Hypothesis 5b: The impact of access to finance for corporate entrepreneurship is moderated by culture; in a country with an entrepreneurial culture, the greater the access to finance, the more likely it is that individuals will become corporate entrepreneurs.

The media assist in transmitting the accepted values of a society, both reflecting public perceptions of what is desirable and tolerated in a society and having an impact on these public perceptions (Habermas, 1991). Society legitimizes or restricts entrepreneurial actions because culturally accepted role models have an influence on the recognition of entrepreneurship as a viable career option, as well as on the types of entrepreneurship (Achtenhagen and Welter, 2011). In this context, public discourses as transmitted by mass media play an important role as journalists disseminate their perceptions and opinions on a large scale and are seen as authoritative sources of information (Deephouse, 2000), thereby performing the role of institutional intermediaries (Pollock and Rindova, 2003) and critics. The media play a unique role in transmitting information to mass audiences and supply most of the information people use in consuming (Stromberg, 2004). The role of the media as “a visible and enduring public

of critics who act as a primary audience for product offerings" and guide to the public's evaluations of these offerings (Zuckerman, 1999: 1404) is particularly important in contexts where stakeholders face high levels of uncertainty, such as emerging markets or entrepreneurial activities. Several studies have shown the powerful role of mass media in creating public discourses (Rindova et al., 2007). Bruni et al. (2004) point out that the role of media in the social construction of entrepreneurship is "all the more important because they replicate themes and notions in the specialist literature, which they merely popularize".

Entrepreneurial stories serve as inspiration for legions of aspiring entrepreneurs. In addition, these stories act as accounts that legitimate individual entrepreneurs to networks of investors, competitors, and visionaries, who make resource decisions and take strategic actions based upon what the stories mean to them (Lounsbury and Glynn, 2001). Given that most start-ups lack proven track records, obvious asset value and profitability, stories can provide needed accounts that explain, rationalize and promote a new venture to reduce the uncertainty typically associated with entrepreneurship (Aldrich and Fiol, 1994). Therefore, we pose the following hypotheses:

> Hypothesis 6a: The impact of the number of procedures for corporate entrepreneurship is moderated by the media; in a country where the media often report stories about successful new businesses, and the more procedures that are necessary to create a company, the less likely it is that individuals will become corporate entrepreneurs.
>
> Hypothesis 6b: The impact of access to finance for corporate entrepreneurship is moderated by the media; in a country where the media often report stories about successful new businesses, and the greater the access to finance, the more likely it is that individuals will become corporate entrepreneurs.

4.3. Methodology

The study uses a GEM database. The GEM research programme is an annual assessment of the national level of entrepreneurial activity. The project was initiated in 1999 with 10 countries; in 2011 the database included information for 62 economies worldwide. Thus, the GEM has become the largest survey-based study of entrepreneurship in the world; since its creation it has surveyed about a million people

and has interviewed around 11,000 experts. The GEM research has three main objectives: to measure differences in the level of entrepreneurial activity among countries, to uncover factors determining national levels of entrepreneurial activity, and to identify policies that may enhance the national level of entrepreneurial activity. In addition, in 2011, a total of 106 articles had been published in JCR-indexed publications using a GEM database (Alvarez et al., 2014).

To ensure the quality of the data, the individual national team surveys are collected in exactly the same way and at exactly the same time of year. The individual national team surveys are harmonized into one master data set that allows users to investigate entrepreneurial activity at various stages of the entrepreneurial process, as well as to study a variety of factors characterizing both entrepreneurs and their businesses in each participating nation and across countries. This research uses two different GEM tools. First, the adult population survey (APS), which gathers information randomly from people aged from 18 to 64 years. The main objective of the survey is to measure the attitudes towards entrepreneurship in the general population (Reynolds et al., 2005). In addition, the study also uses the national experts survey (NES), in this case, it is a survey instrument administered to a minimum of 36 experts in each GEM country, allowing the measurement of nine different key entrepreneurial frameworks. Overall, the specific database used in this research contains information for the period 2004-08, it provides information of 62 different countries and it has a total of 718.758 observations.

In addition, to gauge the variable "procedures" (formal institution), the research complements the GEM data with data from the Doing Business project. This project provides objective measures of business regulations and their enforcement across 183 economies. It was launched in 2002, and looks at domestic small and medium-size companies and measures the regulations applying to them through their life cycle. The fundamental premise of Doing Business is that economic activity requires good rules; thus, this database is an adequate proxy for formal institutions. Finally, the control variables are measured with data from the International Monetary Fund.

Description of variables

The dependent variable measures corporate entrepreneurship, it is a binary variable that indicates "if you are alone or with others, currently trying to start a new business or a new venture with your employer-an effort that is part of your normal work." Other studies in the innovation and entrepreneurship fields have used this type of binary dependent variables form a GEM database (Arenius and Minniti, 2005; Arenius and Kovalainen, 2006; Minniti and Nardone, 2007). Informal factors are measured with two different variables (*entrepreneurial culture* and *media impact*), both variables have been used in other studies (Arenius and Kovalainen, 2006; Tominic and Rebernik, 2007). In addition, the dependent variable and the informal factor variables come from the 2004-2008 GEM-APS database. On the other hand, formal factors are gauged with two different variables (*procedures* and *credit*). Both variables have also been used in other studies (Djankov et al., 2002; Van Stel et al., 2007). The variable *procedures* comes from the Doing business project and the variable *credit* from the GEM-NES database. Finally, given that the level of development of countries is a key factor in explaining entrepreneurial activity (Wennekers et al., 2005), we include the gross domestic product (GDP) at purchasing power parity per capita as a measure of the development of countries. This data was obtained from the International Monetary Fund (IMF) World Economic Outlook database. Table 4.1 summarizes the variables used in the study.

Table 4.1. Description of the variables

	Variable	Description	Source
Dependent variable	Corporate entrepreneurship	Binary variable that indicates if "you are alone or with others, currently trying to start a new business or a new venture with you employer - an effort that is part of your normal work?" (Yes/No)	GEM APS 2004-2008
Independent variables (informal factors)	Entrepreneurial culture	Binary variable which indicates that the respondent agrees with the statement that in their country, "those succesful at starting a new business have a high level of status and respect" (Yes/No)	GEM APS 2004-2008
	Media impact	Binary variable which indicates that the respondent agreed with the statement "In your country, you will often see stories in the public media about succesful new businesses" (Yes/No)	GEM APS 2004-2008
Independent variables (formal factors)	Procedures	Number of days that are officially required for an entrepreneur to start up and formally operate an industrial or commercial business	Doing Business 2004-2008
	Credit	Categoric variable (5 item likert scale) which indicates that "in your country there is sufficient debt funding available for new and growing firms"	GEM NES 2004-2008
Control variable	Per capita income	Gross domestic product at purchasing power parity per capita (US dollars)	IMF 2004-2008

The binary nature of the dependent variable means that we measure corporate entrepreneurship through a logistic regression model. The model can be expressed as:

$$P(E_i=1) = \delta_1 IF_i + \delta_2 FF_i + \delta_3 MOD_{i+} \beta_1 X_i + \mu_i$$

where:

IF_i collects information related to informal factors,

FF_i collects information related to formal factors,

MOD_i collects information related to the moderating effect of informal factors,

X_i collects information related to control variables,

μ_i is the random disturbance.

4.4. Results and discussion

Table 4.2 shows that some variables may be highly correlated (specifically, entrepreneurial culture and media impact; and procedures and credit). Hence, we

conducted a multicollinearity diagnostic test (examining the variance inflation factors – VIFs – of all variables in the analysis) and we found that for these variables it is not likely to be a problem. Also, to address the possibility of heteroskedasticity and autocorrelation among observations pertaining to the same country, robust standard errors were estimated (Hoetker, 2007). In addition, we tried to develop a panel data analysis; however, the Breusch and Pagan test (for random effects) and the significance F-test (for fixed effects) showed that it was more appropriate to estimate using a pool regression.

Aiming to analyse and compare the role of the environment for corporate entrepreneurship, we created two different models. Model 1 includes the effect of informal and formal factors for corporate entrepreneurship, whereas Model 2 includes the moderating effect of culture and media for corporate entrepreneurship (see Table 4.3).

In Model 1, the informal institutions' *entrepreneurial culture* and *media impact* played a significant role as they were significant at the 99.9% level and with the expected sign. Thus, living in a country where entrepreneurship has a high level of status and respect, or where the media often report stories of successful businesses, increases the probability of corporate entrepreneurship behaviour. Ultimately, we cannot reject the first two hypotheses. Entrepreneurial culture conditions corporate entrepreneurship as culture affects the desirability and feasibility of beginning a new business (McGrath et al., 1992). Therefore, Hypothesis 1 cannot be rejected. Similarly, media emerged as a significant variable. Hence, we cannot reject Hypothesis 2 either, since the results confirmed that stories explained by the media play an important role in the processes that enable new businesses to emerge (Lounsbury and Glynn, 2001).

The formal factors in Model 1 behaved in a similar way. The two formal institutions *procedures* and *credit* also play a significant role as they were significant at the 99.9% level and with the expected sign. As expected, the variable *procedures* was significant with a negative sign. This means that the more days that are required for the creation of a new company, the less likely it is that corporate entrepreneurship will occur. Thus, Hypothesis 3 is not rejected; having to follow many rules and procedures has a negative effect on corporate entrepreneurship (Djankov et al., 2002). However, the impact of this variable is limited (compared to the rest of the variables). Finally, the variable *credit* shows that access to finance is a significant factor and hence nor can Hypothesis 4 be

rejected. This finding agrees with most of the literature, as capital emerges as a key success factor when developing innovative projects (Evans and Jovanovic, 1989).

Model 2 shows that in countries with an entrepreneurial culture the number of days necessary to create a new business and the access to finance are significant variables. Hence, we cannot reject Hypothesis 5a and Hypothesis 5b. Therefore, the fact that entrepreneurial projects may be associated with a high level of status and respect can affect the decision to create new businesses (Bruton et al., 2010). A culture that emphasizes and supports the pursuit of entrepreneurial opportunities impacts on the quality and quantity of innovativeness inside firms (Baker and Sinkula, 1999; Wai and Yeung, 2002). This finding is in line with studies that show that culture has an impact on economic behaviour and on entrepreneurial activities (Shapero and Sokol, 1982). Hence, culture has both a direct and indirect effect for corporate entrepreneurship (as it behaves as a moderator as well). Similarly, the media also moderate the relationship between *procedures* and *credit*; and corporate entrepreneurship. That is, in countries where media often reported stories about successful new businesses, the variables *procedures* and *credit* were significant with the expected sign. Hence, we cannot reject Hypothesis 6a and Hypothesis 6b. Exposure to stories reported by the media about successful new businesses have a positive effect on the development of intrapreneurial activities. Media may act as an account that legitimates entrepreneurial activitities to networks of investors, competitors, and visionaries, who make resource decisions and take strategic actions based upon what the stories mean to them (Lounsbury and Glynn, 2001).

Table 4.2. Correlation matrix

	Mean	**Standard deviation**	**1**	**2**	**3**	**4**	**5**	**6**
1. Corporate entrepreneurship	0,03	0,16	1					
2. Entrepreneurial culture	0,68	0,47	0,018***	1				
3. Media impact	0,56	0,50	0,040***	0,19***	1			
4. Procedures	33,55	32,36	-0,019***	-0,04***	-0,043***	1		
5. Credit	2,97	0,43	0,011***	-0,023***	-0,014***	-0,204***	1	
6. Per capita income	27.332,93	11127,92	-0,062***	-0,025***	-0,066***	0,436***	0,423***	1

Table 4.3. Logistic regression. Dependent variable: Corporate entrepreneurship

	Model 1	**Model 2**
	Coef. (std. error)	**Coef. (std. error)**
Instiutional factors		
Entrepreneurial culture	0,122*** (0,020)	
Media impact	0,389*** (0,019)	
Procedures	-0,005*** (0,000)	
Credit	0,146*** (0,022)	
Moderating factors		
Culture*Procedures		-0,003*** (0,000)
Culture*Credit		0,090*** (0,009)
Media*Procedures		-0,001** (0,000)
Media*Credit		0,157*** (0,008)
Control variable		
GDPxcapita	-0,000*** (0,000)	-0,000*** (0,000)
Number of obs	368.325	385.062
Prob>chi2	0,000	0,000
Pseudo R-squared	14,7	15,7

Note: *** Significant at $p \leq 0,001$, ** significant at $p \leq 0,01$, * significant at $p \leq 0,05$.

Discussion

Other studies, such as that of Antoncic and Hisrich (2001), have shown the influence that external factors may have on an organization's entrepreneurial activities. However, the role of the environment for the development of entrepreneurship has not always been clear. Some authors, such as Covin and Slevin (1991) and Hornsby et al. (2002), suggest that internal organizational factors play a more important role in encouraging corporate entrepreneurship than environmental factors. In the same line, Lewin and Massini (2003) explain that innovation main source is the internal R&D that draws on the firm accumulated knowledge. In this type of studies, the firms's internal culture, combined with appropriate accumulated knowledge stocks, are considered to engender the development or improvement of products and new methods for doing business (Knight, 2004). The results of this chapter contribute to this discussion by showing that the external environment also influences corporate entrepreneurship. These results are

in line with Ireland et al. (2009) who consider that certain environmental conditions can precipitate the need for a corporate entrepreneurship strategy. Similarly, Zahra (1991) argued that greater amounts of environmental hostility, dynamism and heterogeneity call for the development of entrepreneurial activities.

The study has several contributions. First, it advances the existing theory in the field of corporate entrepreneurship and IE as few empirical papers are grounded in this theory (Gomez-Haro et al., 2011). Second, the study has implications for managers who are interested in fostering and promoting corporate entrepreneurship in their companies as it identifies which factors affect it and how much they affect it. Specially, the findings could be especially useful to companies operating in different countries or in different institutional environments. Third, the results have implications for the design of governmental policies to promote corporate entrepreneurship.

4.5.Conclusion

Considering that corporate entrepreneurship is an important element in organizational and economic development (Schumpeter, 1934), understanding which factors contribute to fostering and enhancing it emerges as a relevant issue. The main objective of this chapter was to analyse the environmental or external factors that condition entrepreneurship within the firms. Specifically, using IE as a conceptual framework the study determined the moderating effect of cultural values on corporate entrepreneurship. The research uses data from the 2004–2008 GEM project (718.758 observations), for 62 countries (complemented with data from the Doing Business project and the IMF). The main findings outline the importance of the environmental factors on the corporate entrepreneurship; variables such as living in an entrepreneurial culture and media exposure (informal factors), and the number of procedures necessary to create a new business or access to finance (formal factors), appear to be significant for corporate entrepreneurship. Overall, both informal and formal institutions have a direct effect on corporate entrepreneurship, in addition, informal factors also behave as a moderator between formal factors and corporate entrepreneurship.

Finally, this chapter has some limitations that could become future research lines. First, more accurate proxies for both our dependent and our independent variables could be used. On the one hand, some authors consider corporate entrepreneurship (as a proxy to

innovation within the firms), to be a very wide concept (Antoncic, 2007), but most studies (including this research) measure only a part of the whole phenomenon (Zahra, 1991; Parker, 2011). On the other hand, using other (or more) environmental variables could be specially enriching as we could see if the role of informal and formal institutions is still the same (especially in the case of access to credit). Also, future studies could go beyond a pool regression and develop a panel analysis. From this view, the effect of time in each of the countries studied could be examined. In addition, the nature of organizations, corporate entrepreneurship makes the use of a multilevel analysis especially suitable, as it seems clear that variables at one hierarchical level can influence variables at another hierarchical level. In fact, numerous theoretical discussions and empirical investigations have identified relationships between variables that reside at different levels (Hofman, 1997). In this regard, the next chapter (5) presents a multilevel model that studies the corporate entrepreneurship phenomenon considering its antecedents at different levels of analysis.

CHAPTER 5

CONDITIONING FACTORS FOR CORPORATE ENTREPRENEURSHIP: A MULTILEVEL APPROACH

5. CONDITIONING FACTORS FOR CORPORATE ENTREPRENEURSHIP: A MULTILEVEL APPROACH

5.1. Introduction

Despite the extensive literature on the corporate entrepreneurship field (chapter 2) and the analysis of its antecedents developed on chapters 3 and 4, at least two important omissions in this regard remain. First, most theoretical models studying the corporate entrepreneurship phenomenon agree on its multilevel nature (Guth and Ginsberg, 1990; Antoncic and Hisrich, 2001; Ireland et al., 2003, 2009) and that several factors at different levels of analysis can have an effect on it. However, few empirical studies adopt a specific multilevel methodological approach. This is an important omission as it means that multi-level relationships cannot be adequately tested (Hitt et al., 2007).

Second, aspects of the role of the antecedents of corporate entrepreneurship warrant a deeper understanding (Kuratko and Audretsch, 2013). Specifically, despite the importance to environmental factors (Antoncic and Hisrich, 2001; Ireland et al., 2009; Rosenbusch et al., 2013), its analysis in the literature is incomplete. Most studies focus on industry related factors, such as the availability of resources and existence of opportunities (Tsai et al., 1991; Ireland et al., 2003), the degree of threat that stems from the competition (Zahra and Covin, 1995; Antoncic and Hisrich, 2001; Ireland et al., 2009), or the degree of change and unpredictability of the market (Ireland et al., 2009). Yet, other environmental features such as the role of culture related aspects or the role of regulations have rarely been researched (for an exception see Gomez-Haro et al., 2011). This omission is particularly striking considering that the independent entrepreneurship literature has extensively highlighted the fundamental importance of the formal and informal environment for the development of entrepreneurial initiatives (Thornton et al., 2011). Overall, the objective of this chapter is to examine the antecedents of corporate entrepreneurship, differentiating between two levels of analysis (individual and environmental).

The research uses a generalised linear multilevel logistic regression technique and Global Entrepreneurship Monitor (GEM) data for the period 2003–2011. The GEM data are complemented with data from the International Monetary Fund (IMF). The results show that having previous entrepreneurial experience, being able to identify business

opportunities (individual factors), being involved in an entrepreneurial culture and living in a country where policy makers support the creation of new firms (environmental factors) have a direct impact on corporate entrepreneurship. In addition, institutional culture has a significant indirect (moderating) effect.

This chapter makes a number of contributions for research and practice. First, results contribute to the discussion of whether internal or external factors are more important for the development of entrepreneurial initiatives within companies (Hornsby et al., 2009). Accumulated research findings suggest that internal factors play a major role in encouraging corporate entrepreneurship (Covin and Slevin, 1991). In this regard, the study provides insights into the personal characteristics of corporate entrepreneurs (Parker, 2011). In particular, our results show how some personal experiences (having started a business in the past) and skills (being able to identify business opportunities) make the development of corporate entrepreneurship activities more likely. In addition, our results contribute to reinforce the influence of external factors as both involvement in an entrepreneurial culture and policy support appear to be significant. Furthermore, the role of an entrepreneurial culture is particularly relevant as it plays both a direct and indirect (moderating) role. The chapter is structured as follows. In the next section we review the literature on corporate entrepreneurship. Subsequently, we present the hypotheses of the research. In section 5.3, we detail the methodology of the study. Section 5.4 presents the empirical results. Finally, we position our findings in the existing literature and suggest future research directions.

5.2. Conceptual framework

Corporate entrepreneurship has typically been characterised as a multidimensional construct involving a firm's actions relating to innovativeness, risk-taking and proactiveness (Covin and Slevin, 1991). It is considered to improve organisational profitability and enhance a firm's competitive position (Zahra, 1991), or the strategic renewal of existing business (Sathe, 1989; Zahra, 1991; Phan et al., 2009).

Gartner (1985) was one of the first authors to develop an integral framework for describing entrepreneurial activities. His work included four different perspectives: the individual, the organisation created, the environment surrounding the new venture and the process by which the new venture is started. In the specific corporate

entrepreneurship literature, Guth and Ginsberg (1990) developed one of the first models to study the corporate entrepreneurship phenomenon holistically. More recently, several articles have adopted an integral approach taking into account different levels of analysis (e.g., Antoncic and Hisrich, 2001; Dess et al., 2003; Ireland et al., 2003, 2009). Antoncic and Hisrich (2001), for instance, identify two main sets of antecedents of corporate entrepreneurship: organisation (including person-related factors) and environment. Dess et al. (2003) show how entrepreneurial roles and information exchange across multiple levels of management affect four different types of corporate entrepreneurship. Ireland et al. (2003) develop a theoretical framework to explicate strategic entrepreneurship. Several theoretical bases, including Resource-Based Theory, Human Capital, Social Capital, Organisational Learning and Creative Cognition are integrated in this multilevel approach. Finally, the model of Ireland et al. (2009) considers the antecedents of a corporate entrepreneurship strategy differentiating between external environmental conditions and individual entrepreneurial cognitions.

These studies are in line with the literature which explains that the relationship between the individual and the institutional context makes it improbable that entrepreneurial initiatives "can be explained solely by reference to a characteristic of certain people independent of the situations in which they find themselves" (Shane and Venkataraman, 2000, p. 218). From an institutional approach, human behaviour is influenced by the institutional environment (North 1990, 2005); hence, the decision to engage in corporate entrepreneurship activities is also determined by the institutions in which it occurs. Specifically, cognitive institutions are the axiomatic beliefs about the expected standards of behaviour specific to a culture, which are typically learned through social interactions by living or growing up in a community or society (Manolova et al., 2008). This view also reflects the cognitive structures and social knowledge shared by the people in a given country. Cognitive structures affect individual behaviour as they to a great extent shape the cognitive programmes, i.e., schemas, frames and inferential sets, that people use when selecting and interpreting information (Urbano and Alvarez, 2014).

Hypotheses

Human capital attributes (including education, experience, knowledge and skills) have

long been argued to be a critical factor for success in entrepreneurial firms (Unger et al., 2011). In this regard, research at the individual level has extensively studied the traits and characteristics that are antecedents to entrepreneurial activity. In particular, one of the most researched characteristics of individuals is previous experience (Reuber and Fischer, 1999; Campbell, 2013). From this perspective, some authors, such as Cooper et al. (1995), consider that experience can be studied as a two dimensional concept. One dimension would involve having experience in entrepreneurial activities. The second dimension of relevant experience would involve that related with work and managerial experience, i.e. knowledge about the products or services to be offered and markets to be served (Ucbasaran et al., 2008). Despite the opinion of some authors (e.g., Westhead and Wright, 1998), the literature agrees for the most part that both types of experience have a positive effect on entrepreneurs' and intrapreneurs' success rates. However, the impact of self-employment experience is usually considered to be even greater (Muñoz-Bullón and Cueto, 2010). In fact, some of the competences that an entrepreneurial experience can provide such as problem-solving skills, financial management expertise or networking experiences have been considered to be useful skills for rejuvenating a firm through corporate entrepreneurship (Guerrero and Pena-Legazkue, 2013). In addition, experience is also considered to provide some of the necessary attributes and skills that can make individuals more creative and innovative (Westhead et al., 2005). These arguments lead to the following hypothesis:

> Hypothesis 1: There is a positive relationship between having previous entrepreneurial experience and the likelihood to develop corporate entrepreneurship activities.

More than a decade after Shane's and Venkataraman's (2000) landmark paper, the entrepreneurial opportunity has become the central focus in entrepreneurship research (Stuetzer et al., 2014). Entrepreneurial opportunity recognition places emphasis on an individual's recognition and exploitation of potential business ideas and opportunities, which can be viewed as an entrepreneurial strategy in discovering resources to generate innovative outputs (Wang et al., 2013). Similarly, Davidsson (2012) describes opportunity perception as the assessment of a situation conducive to new economic activity. Overall, these opportunities are considered to exist primarily because different agents have different beliefs about the relative value of resources when they are

converted from inputs into outputs (Kirzner, 1979; Shane and Venkataraman, 2000).

There is vast theoretical and empirical literature that questions why some exploit opportunities and some do not (e.g. De Carolis and Saparito, 2006). Consequently, numerous models of opportunity recognition have been presented in recent years. These models are based on assumptions borrowed from various disciplines, ranging from cognitive psychology to Austrian economics. In short, identifying and choosing the right opportunities for creating new businesses is generally considered one of the most important abilities for a successful entrepreneur (Ardichvili et al., 2003). In addition, employees who are able to see and act on potential opportunities in the industrial environment that competitors do not pay attention to are also considered to be able to carve out a unique competitive advantage (Hostager et al., 1998). Based on these explanations, the following hypothesis is posed:

> Hypothesis 2: There is a positive relationship between the opportunity recognition capability and the likelihood to develop corporate entrepreneurship activities.

Few quantitative papers on the corporate entrepreneurship issue are explicitly grounded in IE (Gomez-Haro et al., 2011). IE refers to the different factors and enforcement mechanisms devised by society to conduct human behaviour or relationships (North, 1990, 2005). North (1990) differentiated between two different types of institution in terms of formal rules (e.g. constitutions, laws and regulations) and informal constraints (norms of behaviour, conventions and self-imposed codes of conduct). Overall, this theoretical approach attempts to explain how the institutional framework affects economic and social development.

Following this reasoning, some cultural values have been considered to influence the decision to create new businesses (Shinnar et al., 2012; Munari and Toschi, 2015). Thus, while economic conditions may explain part of the corporate entrepreneurship phenomenon, researchers are increasingly taking into account the social and cultural aspects of entrepreneurial activity (Thornton et al., 2011).

Culture has been defined by different authors from different disciplines. One of the most used approaches is the one by Hofstede (1980) who considers that ‘Culture determines the identity of a human group in the same way personality determines the identity of an

individual'. Some authors have studied specifically the role of culture for entrepreneurs (Mueller and Thomas, 2001). From this perspective, countries and societies are considered to have collective perceptions and images that lead them to admire more or less entrepreneurial activities (Fayolle et al., 2010; Fryges and Wright, 2014). Factors such as values and cultural norms are believed to shape individuals' perceptions of business opportunities. In this regard, Kreiser et al. (2002) have considered that if national culture affects the way that individuals behave within organisations and individual behaviour affects the strategic orientation displayed by these organisations, national culture may play a significant role in a firm's overall entrepreneurial orientation. Finally, we pose the following hypothesis:

> Hypothesis 3: There is a positive relationship between being involved in an entrepreneurial culture and the likelihood to develop corporate entrepreneurship activities.

Small firms have been extensively considered as important job creators (Birch, 1979). Hence, in the last three decades policies aimed at stimulating and improving the conditions for small and medium sized enterprises have been developed (Nystrom, 2013). From a formal factors perspective, the literature agrees that some regulations, procedural requirements, licensing or inspections can discourage business start-up (Begley et al., 2005). Some of the most studied formal factors include access to finance (De Clercq et al., 2013), corporate taxes (Djankov et al., 2010), corruption (Wennekers et al., 2005) or regulation of entry (Djankov et al., 2002).

For instance, the nature of a country's financial system is an important determinant of its level of new business activity (Levie and Autio, 2008). New businesses often require substantial external financial capital. Thus, individuals and established companies who start new entrepreneurial initiatives tend to depend on the presence of a financial system that takes into account the specific needs of entrepreneurial companies (Bowen and De Clercq, 2008). The effect of corporate taxes has also been extensively studied, as it is considered to affect entrepreneurial behaviour. The level of taxes can directly influence the start-up propensity of the companies and inhabitants of a region. Furthermore, low-level taxes can attract people and companies with certain characteristics that are related to entrepreneurial activity (Bergmann, 2011). In terms of corruption, Wennekers et al.

(2005) show that developed countries with good control over corruption increase entrepreneurial activities. In addition, the Doing Business reports (World Bank) have been promoting the reduction of entry barriers for new businesses, because it is considered to have a positive effect on entrepreneurial activities (Djankov et al., 2002). This includes measures of the regulatory burden for starting, operating and closing a business, such as the cost, number of days and number of procedures required to start a business (Acs et al., 2008). Ultimately, the following hypothesis is posed:

> Hypothesis 4: There is a positive relationship between public policies supporting new companies and the likelihood to develop corporate entrepreneurship activities.

Following previous studies, we further argue that cultural values may moderate some of these relationships (De Clercq et al., 2014). Culture, as the underlying system of values peculiar to a specific group or society, shapes the development of certain personality traits and motivates individuals in a society to engage in behaviors that may not be as prevalent in other societies (Mueller and Thomas, 2001). Entrepreneurial activity may be one of these behaviours, for instance, informal institutions such as values and cultural norms are believed to shape individuals' perceptions of business opportunities. In this regard, Short et al. (2010) explain that some environmental conditions could moderate key aspects of the entrepreneurial process such as opportunity recognition what could contribute to move this research stream forward. Similarly, Guerrero and Pena-Legazkue (2013) study how previous experience as a corporate entrepreneur may be affected by the environmental dynamism when developing corporate entrepreneurial initiatives. Following this line of reasoning, literature suggests that not all societies foster entrepreneurial activity with equal effectiveness as different cultures carry different beliefs about the desirability and feasibility of beginning a new enterprise (Shinnar et al., 2012). This argument has been widely supported in the literature. From this view, Ireland et al. (2003, p. 970) consider that an effective entrepreneurial culture "is one in which new ideas and creativity are expected, risk taking is encouraged, failure is tolerated, learning is promoted, product, process and administrative innovations are championed, and continuous change is viewed as a conveyor of opportunities". In these type of cultures, entrepreneurial initiatives tend to be more valued and socially recognized (Liñán et al., 2011), therefore, involvement in an entrepreneurial culture

should also make easier the development of certain personal traits positively related to entrepreneurship (i.e. the ability to identify business opportunities). Similarly, innovation culture has also been considered to facilitate the acquisition of knowledge, leading to capabilities that drive organisational performance (Knight and Cavusgil, 2004). Finally, the following hypotheses are posed:

> Hypothesis 5a: Involvement in an entrepreneurial culture moderates the relationship between previous entrepreneurial experience and corporate entrepreneurship, such that the relation is stronger for higher values of entrepreneurial culture.
>
> Hypothesis 5b: Involvement in an entrepreneurial culture moderates the relationship between opportunity recognition and corporate entrepreneurship, such that the relation is stronger for higher values of entrepreneurial culture.

5.3. Methodology

The study uses a GEM database, which contains information for the period 2003–2011. The GEM research programme is an annual assessment of the national level of entrepreneurial activity. It monitors entrepreneurial framework conditions in different countries through harmonised surveys in the field of entrepreneurship. The GEM has two main sources of primary data: The Adult Population Survey (APS) and the National Expert Survey (NES). On the one hand, the APS captures the measures of entrepreneurial attitudes, activity and aspirations. In advanced countries where the majority of the population lives in households with landline phones, these surveys are completed by phone. Generally, the first adult in the household who will serve as a respondent is asked to participate. In countries where a small proportion of households have landline phones (such as Brazil, China or India) a geographically stratified sampling procedure is used to locate households and respondents for face-to-face interviews. The normal minimum sample is 2000 adults per country and year (Reynolds et al., 2005; Ding et al., 2014).

On the other hand, the NES is administered to a minimum of 36 experts in each GEM country, allowing the measurement of nine different key entrepreneurial framework conditions (Finance, Government policies, Government programmes, Entrepreneurial education and training, R&D transfer, Commercial and professional infrastructure,

Internal market openness, Physical infrastructure and services, Cultural and social norms). GEM national teams are required to interview at least four experts for each entrepreneurial framework condition. For example, the team may choose to interview venture capitalists or business angles to cover "Finance"; they may interview researchers or scientists to cover "R&D transfer". There are no restrictions on the age range or gender for the target population for the GEM national expert surveys: experts are selected by their experience and specialisation in the concrete framework conditions. The central data team review the selection of experts by national teams in advance; the survey may begin only when they are satisfied that there is sufficient representation for each entrepreneurial framework condition. Experts should be residents in the country and are asked to cover all geographic regions (including urban as well as rural areas) in their assessments.

The number of academic papers that use a GEM database has been growing in the last years. According to Alvarez et al. (2014), in 2012, a total of 106 articles using a GEM database had been published in publications indexed by Journal Citation Reports (JCR). In addition, more than 10% of them (11 papers) combine both information sources. In our study a database with information on 67 different countries is used. Since not all countries participated in the GEM surveys in all years from 2003 to 2011, we included all countries that had participated at least once during these nine years. This approach is similar to the ones adopted by Stephan and Uhlaner (2010) and Autio et al. (2013). Overall, the database has a total of 486,219 observations. In addition, our research complements the GEM data with data from the International Monetary Fund (IMF).

The binary variable *corporate entrepreneurship* is used as the dependent variable, and is a measure of individuals who, alone or with others, are currently trying to start a new business or a new venture for their employer as part of their normal work. Other studies in the entrepreneurship field have used similar binary dependent variables from a GEM database (Arenius and Kovalainen, 2006).

The study uses four different variables to measure the conditioning factors of corporate entrepreneurship. On the one hand, the variables *entrepreneurial experience* (Koellinger, 2008) and *opportunity recognition* (Arenius and De Clercq, 2005) from the GEM APS database (individual level) are used. Both experience as well as some employees skills have been highlighted as human capital attributes by previous literature (Davidsson and Honig, 2003). On the other hand, the variables *entrepreneurial*

culture (Baughn et al., 2006) and *government policy* belong to the GEM NES database (environmental level), these variables have already been used in the literature as proxies for IE factors (Baughn et al., 2006; De Clercq et al., 2013).

Other factors may also have an influence on corporate entrepreneurship. At an individual level, we use the control variables *age, age_squared* and *gender*. Since corporate entrepreneurial activity may be influenced by demographic characteristics, these variables have been extensively used in the corporate entrepreneurship literature (Hornsby et al., 2009). In this regard, empirical evidence indicates the existence of an inverted U-shaped relationship between age and entrepreneurial activity (Urbano and Alvarez, 2014). Thus, we use the variables *age* and *aged_squared* to control for this relationship. In addition, results of previous research have indicated that female participation rates in entrepreneurship are significantly lower than the rates for men (Arenius and Minniti, 2005). Therefore, the variable *gender* is included to test for the significance of this effect.

At the country level, research has shown the importance of economic development in explaining entrepreneurial behaviour (Wennekers et al., 2005). Specifically, the research uses the variable *GDPcapita* to control for the gross domestic product at purchasing power parity per capita. In addition, as a proxy of the size and change of domestic markets, we also control for the *population* size of each country (Autio et al., 2013). Both control variables (*GDPcapita* and *population*) are obtained through the IMF World Economic Outlook Database. Table 5.1 shows the definition of the variables used in this research.

Table 5.1. Description of the variables

	Variable	Description	Source
Dependent variable	Corporate entrepreneurship	You are alone or with others, currently trying to start a new business or a new venture with your employer - an effort that is part of your normal work? (Yes/No)	GEM APS 2003-2011
Independent variables	Entrepreneurial experience	You have, in the past 12 months, shut down, discontinued or quite a business you owned and managed, any form of self-employment, or selling goods or services to anyone? (Yes/No)	GEM APS 2003-2011
	Opportunity recognition	In the next 6 months there will be good opportunities for starting a business in the area where you live? (Yes/No)	GEM APS 2003-2011
	Entrepreneurial culture	In my country, the national culture encourages entrepreneurial risk-taking (1= Completely false; 5=Completely true)	GEM NES 2003-2011
	Government policy	In my country, the support for new and growing firms is a high priority for policy at the national government level (1=Completely false; 5=Completely true)	GEM NES 2003-2011
Control variables	Gender	Respondents' gender	GEM APS 2003-2011
	Age	Respondents' age	GEM APS 2003-2011
	GDPcapita	Gross domestic product at purchasing power parity per capita (US dollars)	IMF 2003-2011
	Population	Number of people living in each country (millions)	IMF 2003-2011

Data analysis

Our data were grouped by country, thus resulting in a hierarchical and clustered dataset. Since we combined individual level observations with country level ones, the data were analysed using hierarchical linear modeling methods. More specifically, we follow an approach similar to the one of De Clercq et al. (2013) who apply a multilevel random effects logistic regression to a GEM dataset that combines both the APS (individual level) and the NES (country level).

Multilevel analysis methods have several advantages compared to single level designs. Multilevel models control for the assumption of the independence of observations in grouped data. In the case of our study, this allows higher level contexts to be explicitly taken into account when studying corporate entrepreneurship (Stuetzer et al., 2014). This means that it can be acknowledged that country characteristics may shape individual corporate entrepreneurial behavior, and that this context may not be independent for individuals because of such influences as country role models or

knowledge spillovers (Bosma and Sternberg, 2014). In addition, multilevel models can provide a systematic analysis of the effects of variables that operate at multiple levels, as well as of their cross-level interactions (Peterson et al., 2012). Multilevel random coefficients models also allow parameter variation across groups (i.e., countries), which is not the case in the fixed or random effects models in conventional panel data analyses (De Clercq et al., 2013). Finally, all the analyses were performed using STATA 12, specifically, the command *xtmelogit* was used to run the multilevel logistic regression.

5.4. Results

Table 5.2 provides means, standard deviations and pairwise correlation coefficients for the variables we studied; Table 5.3 provides the results of the multilevel regression. The correlations in Table 5.2 show that some variables may be highly correlated. However a multicollinearity diagnostic test showed that all the variance inflation factor (VIF) scores are below 2.0, indicating that multicollinearity is not a problem in the analysis.

Table 5.3 shows the regression results and the marginal effects for four different models. Model 1 includes only the control variables. In this first model, the intra-class correlation coefficient shows that 17.76% of the variance in developing corporate entrepreneurship activities resides between countries. This supports the application of multilevel analysis techniques over OLS (Autio *et al.*, 2013). Model 2 includes the individual level variables (*entrepreneurial experience* and *opportunity recognition*), model 3 adds the country level variables (*entrepreneurial culture* and *government policy*) and finally, model 4 is the full model, including also two variables testing the moderating role of culture.

Table 5.2. Correlation matrix

	Mean	Standard deviation	1	2	3	4	5	6	7	8	9
1. Corporate entrepreneurship	0.04	0.17	1.00								
2. Entrepreneurial experience	0.04	0.17	0.08***	1.00							
3. Opportunity recognition	0.39	0.48	0.08***	0.04***	1.00						
4. Entrepreneurial culture	2.45	0.51	0.05***	0.02***	0.02***	1.00					
5. Government policy	2.85	0.54	0.00***	-0.03***	0.02***	0.11***	1.00				
6. Gender	0.49	0.50	0.06***	0.04***	0.07***	0.01***	-0.00***	1.00			
7. Age	42.08	15.15	-0.05***	-0.01***	-0.07***	0.04***	0.04***	-0.03***	1.00		
8. GDP capita	26179.9	11513.74	-0.05***	-0.09***	-0.06***	0.22***	0.37***	-0.01***	0.16***	1.00	
9. Population	63.55	186.45	0.08***	0.07***	-0.01***	0.20***	0.01***	0.02**	-0.01***	-0.19***	1.00

Note: *** significant at $p \leq 0.001$; **significant at $p \leq 0.01$, *significant at $p \leq 0.05$

The dependent variables *entrepreneurial experience* and *opportunity recognition* remain significant and with the expected sign along all the models presented. Hence, we cannot reject hypothesis 1, that is, having previous entrepreneurial experience increases the likelihood of developing corporate entrepreneurship activities. Similarly, being able to identify business opportunities in the short term also appears as a significant variable with the expected sign. Hence, hypothesis 2 cannot be rejected. Therefore, the generation of ideas does not seem to depend only on factors such as the education or entrepreneurial spirit of the employee; it also depends on the ability to detect opportunities.

As expected, e*ntrepreneurial culture* appears as a significant variable. Therefore, hypothesis 3 is not rejected. This would suggest that cultural values have a direct effect on the desirability and feasibility of developing corporate entrepreneurship projects (McGrath et al., 1992). *Government policy* also appears as a significant and positive variable, and this finding would confirm that some regulations, procedural requirements, licensing or inspections can encourage (or discourage) business start-up (Begley et al., 2005). Overall, hypothesis 4 is not rejected either.

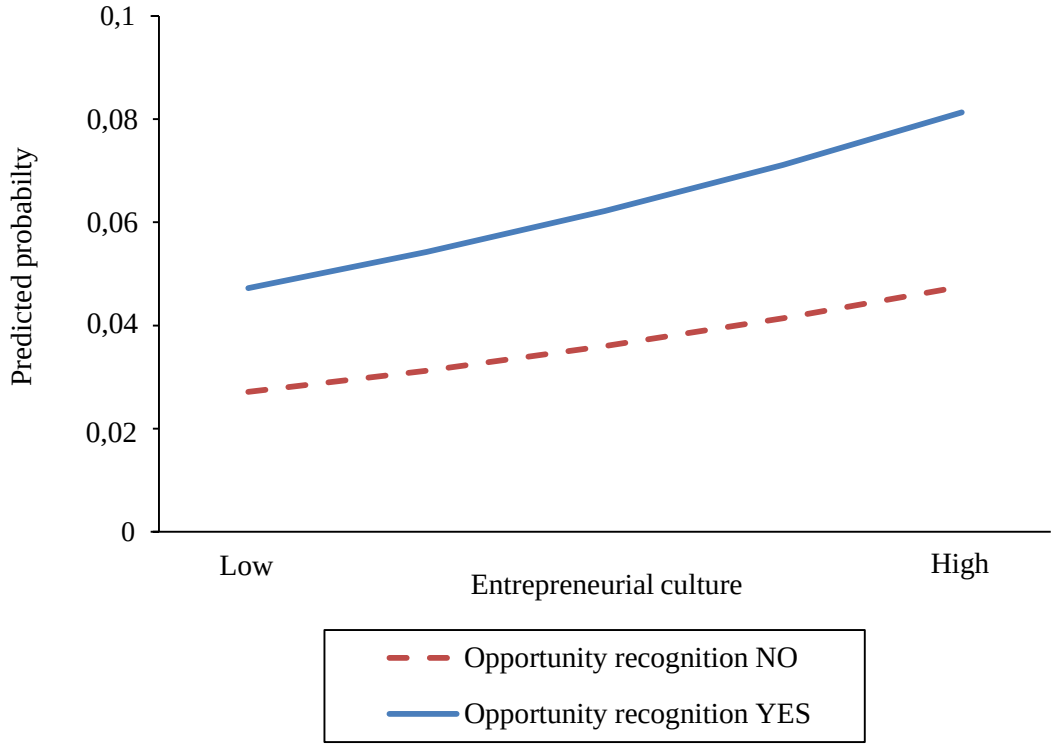
Finally, it is shown that *entrepreneurial culture* moderates the relationship between *opportunity recognition* and *corporate entrepreneurship*. This means that we do not reject hypothesis 5b. Figure 5.1 provides a graphical explanation of this relationship; it shows the effect of identifying business opportunities on corporate entrepreneurship behaviour for low (2 standard deviations below the average) and high (2 standard deviations above the average) values of entrepreneurial culture. Specifically, the graph illustrates that when individuals live in a country where national culture encourages entrepreneurial risk taking, the effect of identifying business opportunities on corporate entrepreneurship is higher. Therefore, the exploitation of business opportunities is affected by the institutional context (De Clercq et al., 2013). On the other hand, hypothesis 5a is rejected as the interaction between *entrepreneurial culture* and *entrepreneurial experience* is unexpectedly a non-significant variable. Overall, the results show that culture has both a direct (hypothesis 3) and an indirect (hypothesis 5b) effect on corporate entrepreneurship.

Table 5.3. Multilevel logit. Dependent variable: Corporate entrepreneurship

	Model 1		Model 2		Model 3		Model 4	
	Coef. (Std error)	**Marginal effect**	**Coef. (Std error)**	**Marginal effect**	**Coef. (Std error)**	**Marginal effect**	**Coef. (Std error)**	**Marginal effect**
Independent variables								
H1: Entrepreneurial experience			0.819*** (0.02)	0.030***	0.796*** (0.02)	0.029***	0.709*** (0.11)	0.026***
H2: Opportunity recognition			0.667*** (0.01)	0.024***	0.662*** (0.02)	0.024***	0.588*** (0.06)	0.022***
H3: Entrepreneurial culture					0.272*** (0.04)	0.009***	0.290*** (0.04)	0.011***
H4: Government policy					0.120*** (0.03)	0.004***	0.120*** (0.03)	0.004***
H5a: Culture x Entrep. experience							0.034 (0.04)	0.001
H5b: Culture x Opportunity rec.							0.054* (0.02)	0.011*
Controls: Individual level								
Gender	0.599*** (0.01)	0.019***	0.478*** (0.01)	0.017***	0.480*** (0.01)	0.018***	0.480*** (0.01)	0.018***
Age	0.081*** (0.00)	0.003***	0.068*** (0.00)	0.002***	0.067*** (0.00)	0.002***	0.067*** (0.00)	0.003***
Age_squared	-0.001*** (0.00)	-0.000***	-0.001*** (0.00)	-0.000***	-0.001*** (0.00)	-0.000***	-0.001*** (0.00)	-0.000***
Controls: Country level								
GDPcapita	0.000*** (0.00)	0.000***	0.000* (0.00)	0.000*	0.000*** (0.00)	0.000***	0.000*** (0.00)	0.000***
Population	0.001*** (0.00)	0.000**	0.000* (0.00)	0.000*	0.002*** (0.00)	0.000***	0.002 (0.00)	0.000***
Number of observations	481882		481882		481882		481882	
Number of groups (countries)	61		61		61		61	
Intraclass correlation (ICC)	17.76		11.02		15.58		15.59	
Degrees of freedom	7		9		11		13	
Prob > Chi2	***		***		***		***	
Log likelihood	-112045.12		-89535.91		-76120.44		-76119.38	
AIC	224104.2		179089.8		152262.9		152264.8	

Notes: *** significant at $p \leq 0.001$; ** significant at $p \leq 0.01$; *significant at $p \leq 0.05$.
For continuous variables, marginal effects are expressed in relative terms with respect to predicted probabilities for sample means. In the context of dummy variables, it reflects the impact for a discrete change of the dummy variable from 0 to 1.

Figure 5.1. Moderating effect of entrepreneurial culture on opportunity recognition



5.5. Discussion

The positive relationship between having an entrepreneurial experience and being engaged in corporate entrepreneurship activities is in line with those studies that associate experience with a variety of assets, such as technical skills or network contacts (Venkataraman, 1997). Experience is considered to provide knowledge that can be leveraged to innovate new productive resource combinations and to identify and pursue business opportunities (Ucbasaran et al., 2008). In addition, experience can also provide benchmarks for judging the relevance of information (Cooper et al., 1995). Similarly, hypothesis 2 shows how business opportunities are not obvious to all individuals; thus, research has focussed on why certain individuals discover opportunities that others do not (Shane and Venkataraman, 2000). In this sense, entrepreneurial opportunities are considered to exist primarily because different agents have different beliefs about the relative value of resources when they are converted from inputs into outputs (Shane and Venkataraman, 2000). Ultimately, all this should result in the company gaining competitive advantages (Brush et al., 2001).

Several studies in the corporate entrepreneurship field have examined the role of the environment in the development of intrapreneurial activities (Antoncic and Hisrich,

2001; Ireland et al., 2009). For instance, Antoncic and Hisrich (2001) found that a specific set of environmental characteristics (dynamism, technological opportunities, industry growth, demand for new products and unfavourable change and competitive rivalry) condition corporate entrepreneurship. Similarly, Ireland et al. (2009) believe that certain environmental conditions can precipitate the perceived need for a corporate entrepreneurship strategy. In addition, other studies show that the list of environmental factors that can trigger entrepreneurial activity in established firms is quite extensive (Stopford and Baden-Fuller, 1994). However, other studies emphasise the individual (and organizational) levels of analysis (Hornsby et al., 2002; Dess et al., 2003). In these types of studies, researchers have sought to identify some of the key internal organisational factors that can affect a company's entrepreneurial efforts, such as the company's internal culture (Hisrich and Peters, 1986), incentive and control systems (Sathe, 1989), the organisational structure (Covin and Slevin, 1991) and managerial support (Hornsby et al., 2002).

Overall, our results contribute to this discussion by showing that the effect of culture may be even more relevant than implied in other studies. Living in a culture whose values support entrepreneurial activities could influence corporate entrepreneurship both directly and indirectly. Culture may reinforce certain personal characteristics and penalise others. Hence, some countries (or regions) are more likely to develop corporate entrepreneurship activities than others (Mueller and Thomas, 2001). This finding is in line with those studies which observe that entrepreneurial initiatives cannot be understood without attention to the context in which they are enacted (Terjesen et al., 2013). Hence, the meaningful influence that the institutional environment exerts on corporate entrepreneurship contributes to reinforce its role (Manolova et al., 2008). In this regard, it is worth noting that despite this fact, there are still very few quantitative studies using global databases. Most quantitative studies in the corporate entrepreneurship field use US data, which could hamper the generalisation of the results beyond each particular cultural context. Furthermore, this makes the development and testing of general multilevel theories more difficult (although several authors have highlighted the multilevel nature of the corporate entrepreneurship phenomenon).

Finally, these results might also have some implications for policy practice. On the one hand, the significant role played by the variable *government policy* reinforces and widens the works of authors such as Begley et al. (2005) or Djankov et al. (2002).

According to our results, the policies aimed to simplify new business entry (i.e. reducing the costs or number of procedures to start a new business), which would benefit not only individual entrepreneurs but also the entrepreneurship that occurs within established companies. However, there is no unanimity in the literature as some researchers consider that when public regulation does not support the development of entrepreneurial initiatives, it might be more likely that opportunities were exploited via corporate entrepreneurship than individual entrepreneurship. These researches support their view because established companies tend to provide operational, financial and administrative support (Martiarena, 2013), which may make them more capable of dealing with the legal obstacles and procedures necessary to start up a new business (Parker, 2011). On the other hand, our research could also contribute to the policy practice that seeks to manipulate the informal environment (i.e. culture). In this regard, the literature has already highlighted the importance of factors such as media, which can focus the public's attention and influence its perceptions and therefore can play a critical role in the processes that enable new businesses to emerge (Lounsbury and Glynn, 2001). Similarly, societies should promote entrepreneurial role models (entrepreneurship success stories) that emphasise entrepreneurship as a cultural norm (Autio et al., 2013). Finally, research also highlights the role of education, as some entrepreneurship courses can lower the risk perception associated with an entrepreneurial venture (Gordon et al., 2012). Overall, there is agreement in the literature that modifying informal institutions (such as culture) takes a much longer period of time than modifying formal institutions (such as rules or regulations) (Williamson, 2000).

5.6. Conclusion

The objective of this chapter was to examine the conditioning factors of corporate entrepreneurship, differentiating between two different levels of analysis (individual and environment). Using GEM data for the period 2003–2011, the results highlight that both previous entrepreneurial experience and being able to identify business opportunities (individual level), and involvement in an entrepreneurial culture and policy makers supporting explicitly the creation of new firms (environmental level), have a direct impact on corporate entrepreneurship. In addition, the effect of culture is also indirectly significant as it plays a moderating role.

This chapter has both theoretical and practical implications. From a theoretical perspective, this study contributes to Human Capital Theory (HCT) and Institutional Economics (IE) in the analysis of corporate entrepreneurship. There are very few empirical studies that explicitly use a multilevel approach grounded on these two theoretical frameworks. In addition, the study contributes to the discussion of whether internal or environmental factors are more important for corporate entrepreneurship. From a practical perspective, identifying which factors affect the development of intrapreneurial activities at different levels (individual, environmental) could be relevant to company managers and policy makers in the area of entrepreneurship and innovation.

Finally, we suggest some limitations and future research lines. First, more accurate proxies for both our dependent and independent variables could be used. On the one hand, some authors consider corporate entrepreneurship to be a very wide concept, but most studies (including this one) measure the phenomenon partially (Zahra 1991; Alpkan et al., 2010). On the other hand, the literature has already examined the complications of measuring intangible factors (Molloy et al., 2011). However, using other independent variables could enrich the results as we could determine whether the effect of the different levels of analysis is still the same. Second, sometimes in social sciences the boundaries between different constructs are not completely clear. In this case, the individual and environmental level variables measure different information, but in further studies better proxies could be used to make the differences more evident and unambiguous. In this regard, a factor analysis could be developed before running the regressions. Third, previous research has already focused on the characteristics and consequences that the different types of entrepreneurship may have. However, the results of this type of study are not unanimous and therefore further research might be necessary. Specifically, future studies could examine in greater depth the similarities and differences between the conditioning factors of individual entrepreneurship and corporate entrepreneurship.

Finally, in the next chapter (6) the conditioning factors for the corporate entrepreneurship concept are analysed placing more emphasis on the effect of the economic cycle. Research on entrepreneurship has not featured much in the debate about the causes and effects of the recent global economic crisis; therefore, chapter 6 may have significant academic and practical implications.

CHAPTER 6

CONDITIONING FACTORS FOR CORPORATE ENTREPRENEURSHIP IN THE CONTEXT OF AN ECONOMIC CRISIS: AN INTERNATIONAL STUDY

6. CONDITIONING FACTORS FOR CORPORATE ENTREPRENEURSHIP IN THE CONTEXT OF AN ECONOMIC CRISIS

6.1. Introduction

This chapter focuses on the antecedents of corporate entrepreneurship activity in a specific context: an economic crisis situation. In this regard, the effects of an economic downturn on corporate entrepreneurship are not completely clear. On the one hand, most authors agree that an economic downswing negatively affects business creation and innovation efforts by established companies (Klapper and Love, 2011). From this view, it has also been considered that during economic crisis defensive and necessity entrepreneurship is emphasized, this is, individuals and companies may engage in entrepreneurial activities not because of market opportunities but merely because they need an income to survive (Vivarelli, 2013). On the other hand, other studies suggest that there could be a counter-cyclical effect so that recessions are a fertile environment for firms to innovate (Filippetti and Archibugi, 2011).

In addition, most theoretical models studying the corporate entrepreneurship phenomenon agree in its multilevel nature and in the fact that several factors at different levels of analysis can have an effect on it. For instance, Guth and Ginsberg (1990) differentiate between the role of the environment, the role of strategic leaders and the role of the organizational conduct and form. Similarly, Antoncic and Hisrich (2001) test in two different cultural contexts how a set of environmental and organizational (including person related) factors affect intrapreneurship. More recently, Ireland et al., (2009) model differentiates between the external environmental conditions (e.g. competitive intensity or technological change) and individual entrepreneurial cognitions (e.g. beliefs, attitudes or values). Despite all this, very few empirical studies in this field adopt a specific multilevel approach.

Overall, the objective of this chapter is to examine the effect of the antecedents of corporate entrepreneurship at different levels (individual and environmental), considering two different periods of time (before the crisis and during the crisis). The study uses a generalized linear multilevel logistic regression to Global Entrepreneurship Monitor (GEM) data for the period 2003-11. Specifically, the database includes information for 14 different countries: US, Greece, Netherlands, Belgium, France,

Spain, Hungary, UK, Norway, Argentina, Brazil, Finland, Croatia and Slovenia. Results show the direct impact that a set of individual level (previous entrepreneurial experience and the opportunity recognition capability) and environmental level (living in an entrepreneurial culture and government regulations) factors have on corporate entrepreneurship. In addition, culture also has an indirect (moderating) effect on it, while the majority of studies consider only the direct effects (Antoncic and Hisrich, 2001).

The implications of the chapter are both conceptual and practical and the results contribute to the discussion of the effects of an economic downturn for the corporate entrepreneurship antecedents. In addition, the results contribute to the discussion of whether internal or environmental factors are more relevant to corporate entrepreneurship, specifically by introducing the role of the economic crisis on that debate. From a practical point of view, this research may provide useful insights for managers and practitioners who are interested in fostering entrepreneurship within established companies.

The chapter is structured as follows. After this introduction, in the next section we review the literature on corporate entrepreneurship in the context of an economic crisis; subsequently we present the hypotheses of the research. After that, we detail the methodology of the study. Section 6.4 discusses the empirical results. Finally, the chapter points out the most relevant conclusions, and suggests some future lines of research.

6.2. Conceptual framework

Several terms have been used to talk about the corporate entrepreneurship concept. Terms such as intrapreneurship (Pinchot, 1985), corporate entrepreneurship (Burgelman, 1985), corporate venturing (MacMillan, 1986) and firm-level entrepreneurial orientation (Covin and Slevin, 1991) have been used to describe entrepreneurial activities of organizations (Agca et al., 2012). Accordingly, there are different definitions to describe it. For instance, Sharma and Chrisman (1999) define corporate entrepreneurship as “the process whereby an individual or a group of individuals, in association with an existing organisation, create a new organisation or instigate renewal or innovation within that organisation”. Antoncic and Hisrich (2003)

define it more widely as “entrepreneurship in existing organizations”. Despite the existence of these differences in terminology, the recognition of corporate entrepreneurship activities has broadened the notion of individual entrepreneurship by incorporating the new innovative projects undertaken within established organizations to the usual view of entrepreneurship (as new independent business creation) (Martiarena, 2013). Overall, in the last two decades, researchers have paid increasing attention to corporate entrepreneurship as it has been considered one of the most important drivers of a firm’s performance (Antoncic and Hisrich, 2003). Entrepreneurship inside companies is concerned with the rejuvenation and revitalization of firms through the search for, and creation of business, developing pioneering new products, services or processes to ensure revenue growth or profitability (Zahra, 1991).

Surprisingly, researchers in the area of entrepreneurship and innovation have not participated much in the debate about the causes and effects of the ongoing global crisis (for an exception, see Perez, 2009). Overall, most of the studies agree that the increasing uncertainty in the financial markets, combined with rising unemployment (Tsai and Kuo, 2011), has supposed a sharp drop in business entry and innovation (Klapper and Love, 2011). New businesses and innovations require investments, and corporate investments such as corporate venture capital, R&D investments or investments made by the business development division tend to fell down during an economic crisis. These investments make possible to transform ideas and new forms of knowledge into economic wealth (Saviotti, 2004). However, other studies explain that some countries, sectors or firms remain entrepreneurial even during recessions (Cefis and Orsenigo, 2001). This persistency of corporate entrepreneurship in an economic downturn context may depend on different factors, such as: the industry-specific dynamics (e.g. demand evolution, profit or technological opportunities); firm-specific characteristics (e.g. different strategies, management attitude); the cumulative and path-dependent nature of innovation, technological change and scientific research; particular trends of cash flows and profits; and, finally, the national institutional setting is also considered to have a major impact (North, 2005; Filippetti and Archibugui, 2010).

Hypotheses

Previous studies in the individual and corporate entrepreneurship areas have taken into account the role of human capital (Parker, 2011; Guerrero and Pena-Legazkue, 2013). The Human Capital Theory (HCT) centres upon the study of cognitive factors which measure the knowledge and necessary skills to develop entrepreneurial initatives. This theory maintains that knowledge gives individuals greater cognitive capacity, making them more productive and efficient (Becker, 1964).

In addition, scholars have also pointed out that corporate entrepreneurship is affected not only by human capital factors but for environmental factors (Antoncic and Hisrich, 2001). They argue that entrepreneurial initiatives in established companies are affected by a wide range of environmental features, such as: competition, socio-cultural issues, regulations, the availability of resources or the existence of opportunities (Aldrich and Zimmer, 1986; Coduras et al., 2008). From this view, Institutional Economics (IE) proposes that "institutions are the rules of the game in a society, or more formally, institutions are the constraints that shape human interaction" (North, 1990, p. 3).

Using both HCT and IE this research presents a set of five different hypotheses. To develop these five hypotheses the conditioning factors *entrepreneurial experience* and *opportunity recognition* are used as proxies for human capital attributes respectively. On the other hand, *entrepreneurial culture* and *ease of business* are considered proxies for informal and formal factors, respectively.

Reuber and Fischer (1999) suggest that the behaviour of entrepreneurs is, in part, shaped by their human capital profiles. A broad view of human capital appreciates that an entrepreneur's demographic characteristics and accumulated work experience impact on productivity (Robson et al., 2012). One of the most researched characteristics of individuals is previous experience (Reuber and Fischer, 1999). From this point of view, some authors such as Cooper et al. (1995) consider that experience can be studied as a two dimensional concept. One dimension would involve having experience as an entrepreneur, and the second dimension of relevant experience would involve experience with the products or services to be offered and markets to be served. Despite the opinion of some authors (i.e. Westhead and Wright, 1998), literature mostly agrees in that both types of experience have a positive effect on entrepreneurial and intrapreneurial success rates (Kim et al., 2006).

Experience is believed to provide some of the necessary attributes and skills (Westhead et al., 2005) that can make individuals be more creative and innovative. It can also be helpful to develop confidence in the ability to identify promising opportunities (Shane, 2003). From this view, Guerrero and Pena-Legazkue (2013) explain how previous experience as a corporate entrepreneur is a specific individual human capital component that may have an effect on the development of entrepreneurial activities. Finally, most authors agree that under the conditions of a global crisis, the importance of human capital should be even higher (Tsai and Kuo, 2011). Companies facing the negative impact of a recession need qualified and creative staff with strategic thinking, able to adopt necessary changes, to react to them quickly and to make the appropriate decisions regarding problems that arise (Elexova, 2011). We therefore pose the following hypothesis:

> Hypothesis 1: Previous entrepreneurial experience increases the likelihood of engaging in corporate entrepreneurship activities; this effect is higher during a crisis.

Identifying and selecting the right opportunities for new businesses is considered one of the most important abilities of a successful entrepreneur (Stevenson et al., 1985), thus, the discovery of entrepreneurial opportunities appears as a fundamental aspect of the literature on entrepreneurship in recent years (Shane and Venkataraman, 2000; Gaglio and Katz, 2001; Ardichvili et al., 2003). Literature agrees in that any kind of entrepreneurial initiative (including corporate entrepreneurship) must be preceded by the identification of an opportunity and that without opportunities there would be no entrepreneurship at all (Short et al., 2009). For this reason, some researchers claim that the most important thing in the entrepreneurship field is not identifying people who wish to be entrepreneurs but rather seeking the link between those people and valuable entrepreneurial opportunities (Venkataraman, 1997; Shane and Venkataraman, 2000). Researchers have extensively studied why some individuals are able to identify and exploit opportunities and some are not (Cooper and Dunkelberg, 1987; Gonzalez and Solis, 2011). In this regard, most of this literature proposes that psychological variables, personality traits and demographic factors have an effect on this capability (De Carolis and Saparito, 2006).

Overall, entrepreneurial opportunities can be defined as situations in which new products, services, materials and organisational methods can be launched onto the market to create greater value (Casson, 1982). Opportunities exist primarily because different agents have different beliefs about the relative value of resources when they are converted from input into output (Kirzner, 1979; Shane and Venkataraman, 2000). An entrepreneurial opportunity thus invariably involves the development of a new idea that others have overlooked or chosen not to pursue (Alvarez and Busenitz, 2001). From this perspective, Kirzner (1979) asserts that the mental representations and interpretations of entrepreneurs do indeed differ because they are driven by entrepreneurial alertness, a distinctive set of perceptual and cognitive processing skills that direct the opportunity identification process. Finally, unlike other factors (i.e. access to finance) the opportunity recognition capability does not seem to be affected by economic downturns, as there are several examples of successful new businesses initiated during periods of crisis (Lee et al., 2015). Based on these explanations, the following hypothesis is posed:

> Hypothesis 2: Being able to identify business increases the likelihood of engaging in corporate entrepreneurship activities; this effect is similar before and during a crisis.

Several studies have stressed the influence of cultural factors on entrepreneurship and economic behaviour from different perspectives (Ribeiro and Urbano, 2009; Thornton et al., 2011). Most research that studies the effect of culture on entrepreneurship has followed Hofstede (1980) (e.g. Mueller and Thomas, 2001), North (1990) (e.g. Alvarez and Urbano, 2011) or Scott (1995) (e.g. Gomez-Haro et al., 2011). In addition, literature shows that some factors underlying entrepreneurial behaviour are common across cultures (e.g., economic incentives can motivate action in all cultures). However, since culture reinforces certain personal characteristics and penalizes others, these studies show how entrepreneurship differs from culture to culture as some cultural values favour entrepreneurial behaviour more than others (Mueller and Thomas, 2001).

Numerous studies have linked national culture to the strategic decision-making process that occurs within entrepreneurial organizations (Kreiser et al., 2002). For instance, Mueller and Thomas (2001) show that some cultures are considered to be more closely

aligned with an entrepreneurial orientation of the firm than others. Similarly, Geletkanycz (1997, p. 617) argued that the "differing views and assumptions embedded in national culture are reflected not only in managerial attitudes and beliefs, but also in the behaviours and actions by which organizational members discharge their roles". More recently, De Clercq et al. (2014) explain how some cultural values influence in the access to some critical resources for developing individual and corporate entrepreneurship activities. Overall, an entrepreneurial culture fosters and supports the continuous search for entrepreneurial opportunities that can be exploited with sustainable competitive advantages (McGrath et al., 1992). Therefore, we pose the following hypothesis:

> Hypothesis 3: Involvement in an entrepreneurial culture increases the likelihood of engaging in corporate entrepreneurship activities; this effect is similar before and during a crisis.

Literature on IE (North, 1990, 2005) attempts to explain how institutions and the institutional framework affect economic and social development. In this regard, national constitutions, regulations or contracts are considered formal institutions. When using IE as a theoretical framework for the analysis of entrepreneurship, agencies and measures of support to start-ups, procedures and costs to start a business, etc. are normally categorized as formal factors (Gnyawali and Fogel, 1994; Alvarez and Urbano, 2011).

Researchers focusing on individual entrepreneurship have highlighted how several policies can be used by governments to foster the development of entrepreneurial activities. For instance, Van Stel et al. (2007) identify three different types of policies that can be used: lower entry barriers to new firm formation, a reduction in the “burdens” (such as access to credit or tax regime) on those individuals operating SMEs and use public funds to provide finance, information, training or advice given to those considering starting a firm. However, when studying corporate entrepreneurship the role of these policies is not that clear. In this regard, Parker (2011) explains how some established companies specific assets provides them with an advantage over new independent ventures in commercializing new opportunities. When developing corporate entrepreneurship initiatives companies are considered to provide support in terms of operational and administrative assistance and by assuming financial risks

(Martiarena, 2013). Hence, it is considered that in general established companies are more capable of dealing with the legal obstacles and procedures necessary to start up a new business (Parker, 2011). Therefore, when public regulation does not support the development of entrepreneurial initiatives (in terms of access to credit, number of procedures to start a company or tax regime), it might be more likely that opportunities were exploited via corporate entrepreneurship than individual entrepreneurship. For instance, research indicates that the attractiveness of corporate entrepreneurship is enhanced by the ample offer of resources that established companies can provide to support a new venture's development internally. Similarly, some authors have offered evidence that large and mature firms are more efficient in executing new projects (compared to new independent ventures) because they develop well-specified routines, competencies, and accumulated knowledge (Kacperczyk, 2012). Overall, the following hypothesis is posed:

> Hypothesis 4: The ease of doing business decreases the likelihood of engaging in corporate entrepreneurship activities; this effect is similar before and during a crisis.

Although, research has mostly shown cultural factors to have a direct impact on entrepreneurship, cultural variables in many cases have been theorized and modeled as moderating entrepreneurial outcomes (Hayton et al., 2002; De Clercq et al., 2010; De Clercq et al., 2014). Thornton et al. (2011, p. 109) thus suggest that "greater attention should be given to the interactions among cultural dimensions and the conception of culture that allows for greater complexity in relation to other characteristics of the environment".

Cultural factors have been the subject of considerable interest in the discipline of entrepreneurship, since Granovetter (1985) and Aldrich and Zimmer (1986) discussed the notion of "embeddedness" in economic activity. These authors suggested that entrepreneurship is embedded in a social context, and evoked the idea that it is a societal phenomenon rather than a purely economic activity (Steyaert, 2007; Urbano et al., 2011). From this perspective, Kostova and Roth (2002, p. 217) suggest that the institutional environment reflects the "values, beliefs, norms and assumptions about human behavior held by the individuals in a given country". Similarly, the

entrepreneurship literature emphasises that culture can reflect issues such as people's prior experience in starting a new business, knowledge about how to identify good business opportunities, the perceived ability to assemble necessary resources, or confidence about how to manage and grow a business (Busenitz et al., 2000; Casillas et al., 2015). In addition, the cultural burden faced by aspiring entrepreneurs is considered to be lower, in that information relevant to entrepreneurship is widely distributed (Spencer and Gomez, 2004) and assistance with market research and other business development activities is easily available (Hawkins, 1993). Ultimately, an effective entrepreneurial culture is characterized by multiple expectations and can facilitate firms' efforts to manage resources strategically (Ireland et al., 2003). Overall, we pose the following hypotheses:

> Hypothesis 5a: Involvement in an entrepreneurial culture moderates the relationship between corporate entrepreneurship and opportunity recognition; this effect is similar before and during the crisis.
>
> Hypothesis 5b: Involvement in an entrepreneurial culture moderates the relationship between corporate entrepreneurship and international experience, this effect is similar before and during a crisis.

6.3. Methodology

This research studies the conditioning factors of corporate entrepreneurship in two different periods of time: before the crisis (2003-07) and during the economic crisis (2008-11). Other works in the entrepreneurship area investigate the effects of the crisis using these periods of time (e.g. Klapper and Love, 2011). Most scholars consider that the starting of the financial crisis in 2008 represents the most serious commotion of the international finances since the Great Depression from 1929-1933 (Nastase and Kajanus, 2009). According to the World Economic Outlook data from the International Monetary Fund (April 2009), "a dramatic escalation of the financial crisis in September 2008 has provoked an unprecedented contraction of activity and trade, despite policy efforts." In fact, the advanced economies experienced an unprecedented 7,5 % decline in real GDP during the fourth quarter of 2008.

The study uses a database created by the GEM, which contains information for the 2003-2011 period. The GEM project is an annual assessment of the entrepreneurial

activity, aspirations and attitudes of individuals across a wide range of countries. Since its creation in 1999, more than 1.3 million individuals have been surveyed, becoming one of the largest cross-national collaborative social science research projects in the world.

The GEM has two main sources of primary data: The Adult Population Survey (APS) and the National Expert Survey (NES). On the one hand, the APS captures the measures of entrepreneurial attitudes, activity and aspirations. In advanced countries where the majority of the population lives in households with landline phones, these surveys are completed by phone. Generally, the first adult in the household who will serve as a respondent is asked to participate. The normal minimum sample is 2000 adults per country and year (Reynolds et al., 2005).

On the other hand, the NES is administered to a minimum of 36 experts in each GEM country, allowing the measurement of nine different key entrepreneurial framework conditions (Finance, Government policies, Government programmes, Entrepreneurial education and training, R&D transfer, Commercial and professional infrastructure, Internal market openness, Physical infrastructure and services, Cultural and social norms). GEM national teams are required to interview at least four experts for each entrepreneurial framework condition. For example, the team may choose to interview venture capitalists or business angles to cover "Finance"; they may interview researchers or scientists to cover "R&D transfer". There are no restrictions on the age range or gender for the target population for the GEM national expert surveys: experts are selected by their experience and specialisation in the concrete framework conditions. The central data team review the selection of experts by national teams in advance; the survey may begin only when they are satisfied that there is sufficient representation for each entrepreneurial framework condition. Experts should be residents in the country and are asked to cover all geographic regions (including urban as well as rural areas) in their assessments.

According to Alvarez et al. (2014), in 2011 a total of 106 articles had been published in Journal Citations Reports (JCR) indexed publications using a GEM database. In addition, 11 of these papers combine both APS and NES sources of information. In our study we use a database with information on 14 different countries: US, Greece, Netherlands, Belgium, France, Spain, Hungary, UK, Norway, Argentina, Brazil, Finland, Croatia and Slovenia. These countries were chosen because all of them

participated in all the GEM surveys (both APS and NES) in all the years from 2003 to 2011. Overall, the database has a total of 143.653 different observations. Finally, the research complements the GEM data with data from the International Monetary Fund (IMF).

The binary variable "corporate entrepreneurship" is used as the dependent variable, and is a measure of individuals who, alone or with others, are currently trying to start a new business or a new venture for their employer as part of their normal work. Other studies in the entrepreneurship field have used similar dependent variables from a GEM database (Arenius and Minniti, 2005; Arenius and Kovalainen, 2006; Minniti and Nardone, 2007).

The study uses two vectors of independent variables: human capital attributes, and institutional factors. Each vector is measured by two different variables. Most of these variables have been used in other studies in the entrepreneurship field published in JCR journals. The research considers the variables *opportunity recognition* (Arenius and DeClercq, 2005) and *entrepreneurial experience* (Guerrero and Pena-Legazkue, 2013) as human capital features; on the other hand, the variables *entrepreneurial culture* (Alvarez and Urbano, 2011) and *government policy* are used as institutional factors.

Other factors may also have an influence on corporate entrepreneurship. For instance, several researchers have focused on the relationship between individuals' age and their propensity to develop entrepreneurial initiatives. In these studies it has been argued that age influences individuals' perspectives and strategic choices (Camelo-Ordaz et al., 2012). Therefore, the control variables *age* and *age squared* are used. In addition, literature has also highlighted the differences between men and women in their attitudes and behaviours towards entrepreneurship (Arenius and Minniti, 2005). Hence, the control variable *gender* is also employed.

Recent research has also shown the importance of the economic development, in explaining entrepreneurial behaviour (Wennekers et al., 2005). Thus we have included a control variable to ensure that the results were not unjustifiably influenced by this factor. Specifically, the research uses the variable *GDP capita* to control for the gross domestic product at purchasing power parity per capita. In addition, as a proxy of the size and change of domestic markets, we also control for the population size of each country (Autio et al., 2013). Both variables (*GDP capita* and *Population*) are obtained

through the International Monetary Fund world economic outlook database. Table 6.1 shows the definition of the variables used in this research.

Table 6.1. Description of the variables

	Variable	Description	Source
Dependent variable	Corporate entrepreneurship	You are alone or with others, currently trying to start a new business or a new venture with your employer - an effort that is part of your normal work (Yes/No)	GEM APS 2003-2011
Independent variables	Entrepreneurial experience	You have, in the past 12 months, shut down, discontinued or quite a business you owned and managed, any form of self-employment, or selling goods or services to anyone? (Yes/No)	GEM APS 2003-2011
	Opportunity recognition	In the next 6 months there will be good opportunities for starting a business in the area where you live (Yes/No)	GEM APS 2003-2011
	Entrepreneurial culture	In my country, the national culture encourages entrepreneurial risk-taking (1= Completely false; 5=Completely true)	GEM NES 2003-2011
	Government policy	In my country, the support for new and growing firms is a high priority for policy at the national government level (1=Completely false; 5=Completely true)	GEM NES 2003-2011
Control variables	Gender	Respondents' gender	GEM APS 2003-2011
	Age	Respondents' age	GEM APS 2003-2011
	GDP capita	Gross domestic product at purchasing power parity per capita (US dollars)	IMF 2003-2011
	Population	Number of people living in each country (thousands)	IMF 2003-2011

Statistical analysis

Our data were grouped by country, thus resulting in a hierarchical and clustered dataset. Since we combined individual level observations with country level ones, the data were analysed using hierarchical linear modeling methods. More specifically, we follow an approach similar to the one of De Clercq et al. (2013) who apply a multilevel random effects logistic regression to a GEM dataset that combines both the APS (individual level) and the NES (country level).

Multilevel analysis methods have several advantages compared to single level designs.

Multilevel models control for the assumption of the independence of observations in grouped data. In the case of our study, this means that it can be acknowledged that country characteristics may shape individual corporate entrepreneurial behavior, and that this context may not be independent for individuals because of such influences as country role models or knowledge spillovers (Bosma and Sternberg, 2014).

6.4. Results and discussion

Table 6.2 provides means, standard deviations, and pairwise correlation coefficients for the variables we studied; Table 6.3 provides the results of the regression.

The correlations in Table 6.2 show that some variables may be highly correlated. Thus we also conducted a multicollinearity diagnostic test (examining the variance inflation factors [VIFs] of all variables in the analysis), and we found that multicollinearity is not likely to be a problem for this dataset.

Table 6.3 shows two different models. The first shows data for the years 2003–2007 (before the economic crisis) and the second shows information for the years 2008–2011 (during the economic crisis).

The results show that having entrepreneurial experience is a significant variable with the expected sign in all the models studied (before and during the crisis), therefore we cannot reject hypothesis 1. It is therefore confirmed that human capital attributes in general, and experience as an entrepreneur in particular, are a critical factor for success in firms that engage in corporate entrepreneurship behaviors (Unger et al., 2011). Previous experience could provide better skills to exploit opportunities and a superior firm performance (Ucbasaran et al., 2008).

Hypothesis 2 cannot be rejected either as it is also significant and with the expected sign. This finding is in line with previous literature which considers that explaining the discovery and development of opportunities is a fundamental part of entrepreneurship research (Gaglio and Katz, 2001). One of the most important points in research into opportunity recognition has been why certain individuals discover opportunities that others do not (Kirzner, 1997). Entrepreneurial firms need the capacity to identify business opportunities and ideas for new products or services; later, they need to be able to transform these ideas and opportunities into profitable products and services

(Pinchot, 1985). The results also show that this capability is equally important before and during a crisis.

The variable *entrepreneurial culture* has a positive and significant effect both before and during the crisis. Some authors have specifically studied the influence that culture has had on entrepreneurs (Tiessen, 1997). Cultural values and beliefs are considered to have an influence on the decision to develop an entrepreneurial initiative (Thornton et al., 2011), similarly, national culture may also play a significant role in a firm's overall entrepreneurial orientation (Kreiser et al., 2002). In addition, and as expected, the influence of culture on corporate entrepreneurship before a crisis is similar for the period during the crisis. Overall, we cannot reject hypothesis 3.

Regarding hypothesis 4, ease of business appears to have a negative sign, therefore, we cannot reject hypothesis 4 either. Inefficient government regulation in the economy may discourage individual entrepreneurs, what makes that some opportunities may be exploited via corporate entrepreneurship instead (Camelo-Ordaz et al., 2012). Research has explained that established companies may provide more operational, administrative and financial support than individual entrepreneurs (Martiarena, 2013). Similarly, Djankov et al. (2002), suggested that the time and cost necessary to create a business affects the rate of business creation among individual entrepreneurs.

Finally, when looking at the interaction between individual features (*entrepreneurial experience* and *opportunity recognition*) and culture, the results show a different behavior between the two different periods of time analyzed. That is, the moderating effect of culture (hypothesis 5) is only significant before the economic downturn, during the crisis this effect is not significant. This finding is in line with studies that show that the social recognition of entrepreneurship has an effect, which in turn has an impact on economic behaviour (De Clercq et al., 2014). However, despite the fact that this result confirms that culture may play a moderating role, we cannot accept hypothesis 5 and therefore we reject it.

Ultimately, the effects of an economic downturn for innovation and corporate entrepreneurship are not completely clear in the business literature. On the one hand, most authors agree that recessions have a negative impact on business entry. For instance, Klapper and Love (2011) showed that while business entry increased gradually from 2004 to 2007, the trend reversed in 2008. In addition, they show that this

Table 6.2. Correlation matrix

	Mean	Standard deviation	1	2	3	4	5	6	7	8	9
1. Corporate entrepreneurship	0.019	0.136	1								
2. Entrep. Experience	0.020	0.141	0.065***	1							
3. Opportunity Recognition	0.314	0.464	0.074***	0.035***	1						
4. Entrepreneurial culture	2.373	0.522	0.047***	0.013***	0.057***	1					
5. Ease of business	2.816	0.526	-0.010***	-0.044***	0.050***	0.076***	1				
6. Age	46.90	51.49	-0.014***	-0.001	-0.026***	0.102***	0.018***	1			
7. Gender	0.462	0.498	0.049***	0.036***	0.078***	-0.001	-0.030***	-0.023***	1		
8. GDP capita	31999.17	6069.337	0.064***	0.034***	0.055***	0.628***	0.257***	0.167***	-0.020***	1	
9. Population	68169.7	84880.75	0.074***	0.045***	0.028***	0.842***	0.098***	0.134***	0.002	0.758***	1

Note: *** significant at $p \leq 0.001$; ** significant at $p \leq 0.01$; *significant at $p \leq 0.05$.

drop affected all type of countries (although it was more pronounced for high and upper-middle income countries). This may be explained because a favourable economic climate means that the prospects for business and profit opportunities are better, reduces the risk of eventual failure and makes access to credit easier (Román et al., 2013). Similarly, recessions represent a major drop in demand that could bring about a reduction in innovation activity (Filippetti and Archibugui, 2010), higher market instability and business uncertainty (Lin and Carley, 2001). On the other hand, other authors suggest that during economic recessions the skills associated with entrepreneurial companies, such as the ability to manage uncertainty, the ability to innovate to meet emerging opportunities and threats, the ability to anticipate the direction and nature of market change or the ability to tolerate risk could lead the managers of these type of companies to reinterpret the resulting opportunities for further business model change, growth and innovation (Kraus et al., 2012). The results of this research contribute to this discussion by showing that in terms of the factors conditioning corporate entrepreneurship activity there are few differences between a period of an economic crisis and a period without a crisis.

Finally, the results contribute to the discussion of the role of internal and environmental factors in corporate entrepreneurship. Other studies, such as Covin and Slevin (1991) or Hornsby et al. (2002), have shown the more significant influence that internal factors have on an organisation's entrepreneurial activities compared to external factors. In fact, the role of the environment for the development of corporate entrepreneurship has not always been clear. However, some authors, such as Lumpkin and Dess (1996), Antoncic and Hisrich (2001) and Gomez-Haro et al. (2011), have argued that the characteristics of the environment might have an effect on the relationship between entrepreneurial orientation and firm performance. The results of this chapter contribute to this discussion by showing that both the external environment and internal factors influence corporate entrepreneurship. Following this reasoning, this research highlights particularly the role of culture as it has both a direct and an indirect effect.

Table 6.3. Multilevel logit. Dependent variable: Corporate entrepreneurship

	Before the crisis (2003 - 2007)				During the crisis (2008 - 2011)			
	Coef. (Standard errors)	**Marginal effects**	**Coef. (Standard errors)**	**Marginal effects**	**Coef. (Standard errors)**	**Marginal effects**	**Coef. (Standard errors)**	**Marginal effects**
Independent variables								
Entrep. Experience	1.061*** (0.08)	0.029***	1.756*** (0.27)	0.049***	1.257*** (0.11)	0.034***	1.794*** (0.39)	0.048***
Opportunity Recognition	0.181* (0.14)	0.005*	0.698*** (0.04)	0.019***	0.780** (0.25)	0.021**	0.812*** (0.06)	0.022***
Entrep. Culture	0.378** (0.12)	0.010**	0.482*** (0.11)	0.013**	0.331* (0.16)	0.009*	0.354* (0.16)	0.010*
Ease of Business	-0.491*** (0.08)	-0.013***	-0.480*** (0.08)	-0.013***	-0.573*** (0.14)	-0.015***	-0.575*** (0.14)	-0.015***
Culture X Opportunity	0.165*** (0.04)	0.005**			0.013 (0.10)	0.001		
Culture X Entrep. Experience			-0.202* (0.08)	-0.006*			-0.210 (0.15)	-0.006
Controls: Individual level								
Gender	0.515*** (0.04)	0.014***	0.519*** (0.04)	0.014***	0.015*** (0.00)	0.010***	0.382*** (0.06)	0.010***
Age	0.041*** (0.01)	0.001***	0.04*** (0.01)	0.001***	-0.38*** (0.06)	-0.000***	-0.015*** (0.00)	-0.000***
Age_squared	-0.001*** (0.00)	-0.000***	- 0.001*** (0.00)	-0.000***	0.00*** (0.00)	0.000***	0.000*** (0.00)	0.000***
Controls: Environmental level								
GDP capita	0.000*** (0,00)	0.000***	0.000*** (0,00)	0.000***	0.000*** (0.00)	0.000***	0.000*** (0.00)	0.000***
Population	-0.000 (0,00)	-0.000	-0.000 (0,00)	-0.000	-0.000 (0.00)	-0.000	-0.000 (0.00)	-0.000
Number of observations	94927		94927		48726		48726	
Number of groups	6		6		5		5	
Degrees of freedom	12		12		12		12	
Prob > Chi2	***		***		***		***	
Log likelihood	-11099.13		-11103.79		-5788.92		-5788.02	
AIC	22222.27		22231.58		11601.98		11600.04	

Notes: Stata command xtmelogit was used.
*** significant at $p \leq 0.001$; ** significant at $p \leq 0.01$; *significant at $p \leq 0.05$.
For continuous variables, marginal effects are expressed in relative terms with respect to predicted probabilities for sample means. In the context of dummy variables, it reflects the impact for a discrete change of the dummy variable from 0 to 1.

6.5. Conclusion

The objective of this chapter was to examine the influence of internal and external (environmental) factors on corporate entrepreneurship, considering two different periods of time (before the crisis and during the crisis). Using data from the GEM, results show the direct effect that both individual level and environmental level factors have on corporate entrepreneurship. In addition, the environmental conditioning factor *culture* also has an indirect (moderating) effect in the period before the crisis (2003-07).

The chapter has both theoretical and practical implications. From a theoretical perspective, the study applies HCT and IE in a context where they have been used very rarely (there are few empirical articles using this double theoretical approach in the corporate entrepreneurship field). In addition, this study contributes to the discussion of the effects of an economic downturn for corporate entrepreneurship. Furthermore, the results also contribute to the discussion of the role played by a company's internal and environmental factors when promoting corporate entrepreneurship. From a practical perspective, identifying which factors affect the development of intrapreneurial activities in a specific period of time may be helpful to company managers, particularly for those managers who are interested in implementing new innovative projects in their companies. Similarly, the results could also be useful for policy makers in the area of entrepreneurship and innovation. Understanding which factors influence corporate entrepreneurship in different periods of time and in different economic contexts could be useful to public institutions that are meant to foster entrepreneurship.

Finally, we suggest some limitations and future research lines. More accurate proxies for both our dependent and our independent variables could be used. On the one hand, some authors consider corporate entrepreneurship to be a very wide concept (Antoncic, 2007), but most studies (including this one) measure only a part of the whole phenomenon (Zahra, 1991; Alpkan et al., 2010; Parker, 2011; among others). On the other hand, using other independent variables could enrich the results as we could see if the effect of both internal and external factors is still the same. In addition, in the future it should be possible to study the conditioning factors for corporate entrepreneurship after the crisis. Also, the differences identified between the two periods of time studied would be more evident if a significance test for these differences were performed. Ultimately, other theoretical approaches could be used (such as Expectancy Theory,

Motivation Theory or Resource Based Theory). Ultimately, the role of gender for corporate entrepreneurship has rarely been researched (in contrast with individual entrepreneurship literature) and could provide interesting insights that broaden the knowledge of this field. In fact, next chapter (7) focuses precisely in this issue and shows the differences between men and women when promoting corporate entrepreneurship activities.

CHAPTER 7

CONDITIONING FACTORS FOR CORPORATE ENTREPRENEURSHIP: A GENDER PERSPECTIVE

7. CONDITIONING FACTORS FOR CORPORATE ENTREPRENEURSHIP: A GENDER PERSPECTIVE

7.1. Introduction

This chapter continues the analysis of the antecedents of corporate entrepreneurship activity in specific contexts. In particular, the focus is now placed on the role of gender as to our knowledge there are very few studies focusing on this issue. Entrepreneurial activities are influenced by a number of important factors, such as risk-taking behaviour and strategic opportunities, self-efficacy, social capital and entrepreneurial culture, factors which must be taken into consideration with respect to their effect according to gender (Zahra, 1991). Similarly, some authors suggest that aspects such as the form or the size of governance structure can also affect entrepreneurial activity by modifying the way in which an organization makes decisions. Such research has considered that the gender composition of the governance structure is an interesting aspect of study because when there are more women on the board of directors, the preferences for assuming risks and for strategic opportunism tend to be lower (Forlani, 2013).

In addition, other aspects of the antecedents of corporate entrepreneurship are considered to require further understanding. Most studies differentiate between conditioning factors at different levels of analysis: internal factors (individual and company-related) and external factors. For instance, when focusing on internal factors, attention has been paid to the characteristics of strategic leaders (Guth and Ginsberg, 1990), the organization's structure, processes and values (Zahra, 1991), formal controls (Antoncic and Hisrich, 2001) and management support or time availability (Kuratko et al., 2005). On the other hand, when studying the environmental (external) antecedents of corporate entrepreneurship, the previous literature has typically studied issues related to the competitive environment or industry characteristics: environmental hostility and dynamism (Kuratko et al., 2009), competitive intensity, technological change (Ireland et al., 2009), industry growth and or demand for new products (Antoncic and Hisrich, 2001). Therefore, some environmental features, such as culture-related aspects and the role of certain regulations, have rarely been studied using a quantitative approach. In addition, the literature on independent entrepreneurship has extensively shown the significant effect that these types of factors have on business creation (Bruton et al., 2010). However, in the corporate entrepreneurship literature this issue has not been

studied in depth (for an exception, see Gomez-Haro et al., 2011).

Overall, the objective of this chapter is to examine the effect of internal and environmental determinants on corporate entrepreneurship, placing an emphasis on the role of gender. The research applies a generalized linear multilevel logistic regression technique using Global Entrepreneurship Monitor (GEM) data for the period 2003–2011. The GEM data are complemented with data from the International Monetary Fund (IMF). The results show the direct effect of the conditioning factors *entrepreneurial experience, social capital, entrepreneurial culture* and *ease of business* on corporate entrepreneurship. In addition, it is also shown that there are differences depending on gender. Furthermore, the role of environmental factors is reinforced as culture plays both a direct and an indirect (moderating) role in corporate entrepreneurship.

The chapter is structured as follows. In the second section, we review the literature on corporate entrepreneurship and present the hypotheses of the research.In section 7.3, we detail the methodology of the study. Sections 7.4 and 7.5 present and discuss the empirical results. Finally, we position our findings in relation to the existing literature and suggest future research directions.

7.2. Conceptual framework

Corporate entrepreneurship: A gender perspective

Researchers have used different terms to define entrepreneurial efforts in organizations and differences in the terminology used for defining entrepreneurial activities remain. One of the most commonly accepted definitions of corporate entrepreneurship is "entrepreneurship within the boundaries of an existing organization" (Agca et al., 2012; Antoncic and Hisrich, 2001). Firms that develop corporate entrepreneurship activities are viewed as dynamic, flexible entities, able to take advantage of new opportunities when they arise (Morris et al., 2011). These types of companies explore new business domains as well as new ways of conducting business within existing domains. Therefore, in these companies there tends to be an acceptance of risk and an understanding that the outcomes of innovation are uncertain (Bloodgood et al., 2015). From this perspective, Menzel et al. (2007) posit that entrepreneurs acting within an existing organization are particularly responsible for introducing new products, processes and services to enable the company to grow and earn profits. Thus, corporate entrepreneurship has become an increasingly important tool to enhance a firm's

performance and to foster innovation and the exploitation of opportunity within a firm. This has led to the concept of corporate entrepreneurship capturing the interest of executives in many corporate boardrooms (Morris et al., 2011).

When studying corporate entrepreneurship from a gender perspective, certain factors such as the propensity to take risks are considered to differ between women and men. For instance, Pallier (2003) finds that the position of disadvantage in which women find themselves can be attributed to the consistent differential treatment boys and girls receive in traditional society, particularly in relation to risks involved in childhood activities: while the male has the opportunity to understand and develop leadership skills prior to entering the work environment, the female must develop this experience on the job. To improve this situation, research suggests that role models can provide female managers with the self-efficacy to acquire and refine role experiences, such as strategy, stewardship and organizational leadership (Fitzsimmons et al., 2014).

Hypotheses

Previous literature has assumed that individuals with broader pools of human capital resources will report superior levels of productivity (Davidsson and Honig, 2003). In relation to this, studies have detected that an entrepreneur's human capital profile can shape opportunity exploitation and superior firm performance (Robson et al., 2012; Ucbasaran et al., 2008). From this perspective, previous experience is one of the most researched characteristics of individuals (Reuber and Fischer, 1999).

Managers' (and entrepreneurs') experience means that they have a higher market knowledge, which leads to a higher propensity (or learning capability) to gather further foreign knowledge (Kalinic and Forza, 2012). In addition, this knowledge is considered to develop learning skills and to make it easier for firms to adapt in a new environment (Autio et al., 2013). For instance, international entrepreneurship experience embraces abilities to search for information, identify and evaluate opportunities, screen country markets, evaluate strategic partners and manage customs operations and foreign exchange (Prashantham and Young, 2011). Fletcher and Harris (2012) consider this knowledge not to be country-specific because it is concerned with principles for operating in international markets in general (Prashantham and Young, 2011). Overall,

experience is considered to provide some of the necessary attributes and skills that can make individuals more creative and innovative (Westhead et al., 2005).

A woman's previous entrepreneurial and managerial experience can improve her perceptions regarding self-recognition of the skills needed to be successful in future entrepreneurial experiences (Forlani, 2013). A number of authors also suggest that a woman's previous entrepreneurial and managerial experience can increase the richness of information and points of view to which she has access and may thus lead her to be more proactive in developing corporate entrepreneurial orientations, especially when management teams have prior heterogeneous experience (Knockaert et al., 2011). However, some authors, such as Klenke (2003), suggest that male and female senior managers behave differently and this can have varying influences on corporate strategy. From this perspective, males and females perceive risks differently: male executives have shown themselves to be more proactive, and they tend to implement more entrepreneurial strategic activities, which are also relatively more aggressive (Peng and Wei, 2007). These arguments lead to the following hypothesis:

> Hypothesis 1: Previous entrepreneurial experience increases the likelihood of developing corporate entrepreneurship activities; however, the effect is lower for women.

Some authors, such as De Carolis and Saparito (2006), characterise social capital as a resource that can promote a constant flow of information from diverse sources. In addition, social capital has been linked to the observation of the behaviours of others, often referred to as role models (Kim et al., 2006). The specific corporate entrepreneurship literature also studies the role of social capital and networks; in this regard, authors agree that corporate entrepreneurs' interactions with members of networks affect their actions and outcomes (Hornsby et al., 2013b). For instance, it has been considered that a firm's network position will influence its information access and its corporate entrepreneurship practices (Noyes et al., 2014).

In the case of women, the previous literature reveals the importance of social capital as a relevant factor in the final decision to create a business and while it is very difficult to determine the graduation of this effect as related to gender, some authors say that networks or knowing other business persons have a positive impact on starting a new

business – more so in the case of women than in the case of men (BarNir et al., 2011). On the other hand, we may remark upon the importance of role models due to their ability to enhance self–efficacy; exposure to these role models may have a more positive impact on women than on men with respect to how they perceive their own entrepreneurial skills. This aspect reaffirms how necessary it is to have more female role models as they engender positive self-perception with respect to entrepreneurial activities (Minniti and Nardone, 2007).

Also, with respect to female representation in corporate decision making, some research has examined how gender diversity among corporate board members and the existence of social networks influence corporate entrepreneurship activities. Furthermore, these studies reveal that women directors are more likely to join subsequent boards and participate in corporate entrepreneurship activities at faster rates than their male counterparts. Finally, these studies also suggest that the aforementioned gender diversity and social networks increase the potential for women to find a wider variety of female role models in their future entrepreneurial activities, something which is still lacking when compared to their male counterparts (Terjesen et al., 2009). Overall, the following hypothesis is posed:

> Hypothesis 2: Social capital increases the likelihood of developing corporate entrepreneurship activities; however, the effect is lower for women.

The literature highlights how countries and societies have collective perceptions and images that lead them to admire more or less entrepreneurial activities (Busenitz et al., 2000). It is considered that culture affects collective and societal mechanisms through joint expectations and preferences. These mechanisms influence how individuals perceive the economic and social feasibility and desirability of entrepreneurial action (Autio et al., 2013). Shane (1992) demonstrates (following a Hofstede approach) that the national cultural values of individualism and power distance explain the national differences in the rates of inventiveness. Similarly, Wilson et al. (2004) identify significant differences between American ethnic groups in their interest in entrepreneurship. In addition, Thornton et al. (2011, p. 106) state that implicit norms, social mores “and cultural factors ... influence the individual career choice to be an entrepreneur and create a new business”. Some authors have also placed emphasis on

the fact that the firms' entrepreneurial culture engenders the development or improvement of products and new methods for doing business (Knight and Cavusgil, 2004). Finally, the effect of cultural values in different countries on corporate entrepreneurship is not clear. Some studies in developed countries agree that a higher cultural emphasis on individualist values is associated with higher entrepreneurial activity (Morris and Schindehutte, 2005) and that this influence may occur through social legitimation (Fayolle et al., 2014). However, other studies show that a considerable share of individuals with positive attitudes towards entrepreneurship prioritise alternative non-individualistic values (Douglas and Shepherd, 2002).

Some studies, such as those conducted by Arenius and Minniti (2005), Kolvereid and Isaksen (2006) and Langowitz and Minniti (2007), reflect the importance of perceptions in entrepreneurship and they suggest that men's and women's perceptions are equally relevant to the decision to create a business. However, given that the culture of a society, expressed through its values and social conventions, may encourage or discourage certain behaviours, including entrepreneurship, these studies also suggest that these perceptions can differ depending on the gender of the entrepreneur. Finally, research reveals the effect of an interaction between culture and gender on the formation of entrepreneurial intentions; until now, society's expectations regarding the role assigned according to gender may suggest that the traditional role assigned to women has induced the idea that entrepreneurial activity is less desirable for women than for men (Langowitz and Minniti, 2007; Marlow and Patton, 2005), especially with respect to stereotypically male occupations (Tien et al., 2009). Therefore, we propose the following hypothesis:

> Hypothesis 3: Involvement in an entrepreneurial culture increases the likelihood of developing corporate entrepreneurship activities; however, the effect is lower for women.

The literature agrees that some regulations, procedural requirements, licensing and inspections can discourage individual business start-up (Begley et al., 2005). For instance, one factor that has been studied extensively is access to financing as it is one of the aspects that most concern male and female entrepreneurs. While the criteria used by financial institutions in deciding to issue credit may be the same for both women and

men, there are differences in the negotiation process, which may lead to lower rates of access to financing for women than for men (Bardasi et al., 2011; Gatewood et al., 2009; Marlow and Patton, 2005). Another important factor that has been studied is the normative support (economic or non-economic) given to entrepreneurship; great importance is accorded its positive effects on entrepreneurs (Carter, 2000). Along the same lines, some studies suggest the positive impact of specific measures aimed at aiding women in the creation of their own businesses; these studies establish a relationship between such measures and a country's promotion, in general, of the entrepreneurial spirit, as well as the existing level of equality (Baughn et al., 2006). These positive effects may, in part, explain the differences between women and men with respect to the development of corporate and individual entrepreneurship activities (Cumming et al., 2014).

Overall, some of the formal factors most studied include access to finance (De Clercq et al., 2013), corporate taxes (Djankov et al., 2010), corruption (Wennekers et al., 2005) and regulation of entry (Djankov et al., 2002). However, when studying the effect of these regulations and requirements on corporate entrepreneurship, the effect is considered to be different (Martiarena, 2013). For instance, it has been explained that the specific assets of some established companies provide them with an advantage over new independent ventures in exploiting new opportunities (Parker, 2011). Similarly, it has been considered that mature firms are able to absorb the entrepreneurial drive of some of its employees because they are able to provide them with the necessary resources to start up new businesses (Kacperczyk, 2012). Hence, when regulations are not supportive of entrepreneurial activities, it might be possible that opportunities are exploited via corporate entrepreneurship instead of via entrepreneurship. Hence, we formulate the following hypothesis:

> Hypothesis 4: Ease of business decreases the likelihood of developing corporate entrepreneurship activities; however, the effect is lower for women.

A significant part of the literature is increasingly highlighting socially related variables as a key aspect of the development of entrepreneurial initiatives. Hence, researchers accept that social behaviour occurs in a particular geographical context linked to the values and beliefs of its population, which affect individuals' processes of perception,

interpretation and behaviour (Garcia-Cabrera and Garcia-Soto, 2008). Scholars argue that in order to understand entrepreneurial variations, the social environment in which the firm is created needs to be considered, because, in addition to economic activity, entrepreneurship is a social phenomenon (Thornton et al., 2011). From this point of view, Hayton et al. (2002, p. 33) state that "Cultural values indicate the degree to which a society considers entrepreneurial behaviours, such as risk taking and independent thinking, to be desirable". Similarly, Gomez-Haro et al. (2011) explain that one of the reasons why some countries are less entrepreneurial is that innovative activities are socially less prestigious and less appreciated than in other more entrepreneurial countries.

Finally, culturally and socially related variables in many cases are theorised and modelled as moderating entrepreneurial outcomes (i.e. Hayton et al., 2002). Researchers suggest that greater attention should be given to the effect of interactions among cultural variables on corporate entrepreneurship and entrepreneurial orientation (Fayolle et al., 2010). In fact, in the last years some researchers have studied the moderating role of cultural factors on entrepreneurial initiatives (De Clercq et al., 2010; Gielnik et al., 2012; De Clercq et al., 2013). For instance, Guerrero and Pena-Legazkue (2013) study how previous experience as a corporate entrepreneur may be affected by the environmental dynamism when developing corporate entrepreneurial initiatives.

In the case of female entrepreneurship, immersion in an entrepreneurial culture can reduce the need for previous entrepreneurial experience because the positive effects of this environment already provide the necessary information to identify the entrepreneurial opportunities and skills needed to create a new venture and may help to boost self-confidence (Forlani, 2013). Many of these factors are linked to the difficulties that women encounter when creating their own businesses, in addition to difficulties such as access to outside funds or involving family or social capital, among others (Johnson and McMahon, 2005). When a person is involved in an entrepreneurial culture, it is more likely that governments or institutions will envisage mechanisms to increase and improve exposure to more female role models and generate more networking opportunities for women business owners, enabling women to accumulate more personal and economic assets and have easy access to larger loans. Finally, the following hypotheses are proposed:

Hypothesis 5a: Involvement in an entrepreneurial culture moderates the relationship between previous entrepreneurial experience and corporate entrepreneurship, such that the relation is stronger for higher values of entrepreneurial culture.

Hypothesis 5b: Involvement in an entrepreneurial culture moderates the relationship between social capital and corporate entrepreneurship, such that the relation is stronger for higher values of entrepreneurial culture.

7.3. Methodology

The study uses a GEM database, which contains information for the period 2003–2011. The GEM research programme is an annual assessment of the national level of entrepreneurial activity. It monitors entrepreneurial framework conditions in different countries through harmonised surveys in the field of entrepreneurship. The GEM has two main sources of primary data: The Adult Population Survey (APS) and the National Expert Survey (NES). On the one hand, the APS captures the measures of entrepreneurial attitudes, activity and aspirations. In advanced countries where the majority of the population lives in households with landline phones, these surveys are completed by phone. Generally, the first adult in the household who will serve as a respondent is asked to participate. In countries where a small proportion of households have landline phones (such as Brazil, China or India) a geographically stratified sampling procedure is used to locate households and respondents for face-to-face interviews. The normal minimum sample is 2000 adults per country and year (Reynolds et al., 2005).

On the other hand, the NES is administered to a minimum of 36 experts in each GEM country, allowing the measurement of nine different key entrepreneurial framework conditions (Finance, Government policies, Government programmes, Entrepreneurial education and training, R&D transfer, Commercial and professional infrastructure, Internal market openness, Physical infrastructure and services, Cultural and social norms). GEM national teams are required to interview at least four experts for each entrepreneurial framework condition. For example, the team may choose to interview venture capitalists or business angles to cover “Finance”; they may interview researchers or scientists to cover “R&D transfer”. There are no restrictions on the age

range or gender for the target population for the GEM national expert surveys: experts are selected by their experience and specialisation in the concrete framework conditions. The central data team review the selection of experts by national teams in advance; the survey may begin only when they are satisfied that there is sufficient representation for each entrepreneurial framework condition. Experts should be residents in the country and are asked to cover all geographic regions (including urban as well as rural areas) in their assessments.

The number of academic papers that use a GEM database has been growing in the last years. According to Alvarez et al. (2014), in 2012, a total of 106 articles using a GEM database had been published in publications indexed by Journal Citation Reports (JCR). In addition, more than 10% of them (11 papers) combine both information sources. In our study a database with information on 14 different countries is used (Argentina, Belgium, Brazil, Croatia, Finland, France, Greece, Hungary, Netherlands, Norway, Spain, Slovenia, United Kingdom and USA). These countries were chosen because all of them participated in all the GEM surveys (both APS and NES) in all years from 2003 to 2011. Overall, the database has a total of 155,486 observations. In addition, our research complements the GEM data with data from the International Monetary Fund (IMF).

The binary variable *corporate entrepreneurship* is used as the dependent variable, and is a measure of individuals who, alone or with others, are currently trying to start a new business or a new venture for their employer as part of their normal work. Other studies in the entrepreneurship field have used similar binary dependent variables from a GEM database (Arenius and Kovalainen, 2006).

The study uses four different variables to measure the conditioning factors of corporate entrepreneurship. On the one hand, the variables *entrepreneurial experience* (Koellinger, 2008) and *social capital* (Arenius and De Clercq, 2005) from the GEM APS database (individual level) are used. Both experience as well as social capital, have been highlighted as human capital attributes by previous literature (Davidsson and Honig, 2003). On the other hand, the variables *entrepreneurial culture* (Baughn et al., 2006) and *ease of business* belong to the GEM NES database (environmental level), these variables have already been used in the literature as proxies for Institutional Economics factors (Baughn et al., 2006; De Clercq et al., 2013).

Other factors may also have an influence on corporate entrepreneurship. At an individual level, we use the control variables *age, age_squared* and *gender*. Since corporate entrepreneurial activity may be influenced by demographic characteristics, these variables have been extensively used in the corporate entrepreneurship literature (Hornsby et al., 2009). In this regard, empirical evidence indicates the existence of an inverted U-shaped relationship between age and entrepreneurial activity (Urbano and Alvarez, 2014). Thus, we use the variables *age* and *aged_squared* to control for this relationship. In addition, literature agrees in that qualified employees are a key and rich source of the knowledge flows required to promote corporate entrepreneurship (Chandler et al., 2005). Therefore, the variable *education* is included to test for the significance of this effect.

At the country level, research has shown the importance of economic development in explaining entrepreneurial behaviour (Wennekers et al., 2005). Specifically, the research uses the variable *GDPcapita* to control for the gross domestic product at purchasing power parity per capita. In addition, as a proxy of the size and change of domestic markets, we also control for the *population* size of each country (Autio et al., 2013). Both control variables (*GDPcapita* and *population*) are obtained through the IMF World Economic Outlook Database. Table 7.1 shows the definition of the variables used in this research.

Table 7.1. Description of the variables

	Variable	Description	Source
Dependent variable	Corporate entrepreneurship	You are, alone or with others, currently trying to start a new business or a new venture with your employer in an effort that is part of your normal work? (Yes/No)	GEM APS 2003-2011
Independent variables	Entrepreneurial experience	You have, in the past 12 months, shut down, discontinued or quite a business you owned and managed, any form of self-employment, or selling goods or services to anyone (Yes/No)	GEM APS 2003-2011
	Social capital	You know someone personally who started a business in the past two years? (Yes/No)	GEM APS 2003-2011
	Entrepreneurial culture	In my country, the national culture encourages entrepreneurial risk taking (1= Completely false; 5=Completely true)	GEM NES 2003-2011
	Ease of business	In my country, the amount of taxes is NOT a burden for new and growing firms (1= Completely false; 5=Completely true)	GEM NES 2003-2011
Control variables	Education	Educational level in two categories (0 = No graduate experience, 1 = At least some graduate experience)	GEM APS 2003-2011
	Age	Respondent's age at the time he/she was surveyed	GEM APS 2003-2011
	Population	Number of people living in each country (thousands)	IMF 2003-2011
	GDPcapita	Gross domestic product at purchasing power parity per capita (US dollars)	IMF 2003-2011

Data analysis

Our data were grouped by country, thus resulting in a hierarchical and clustered dataset. Since we combined individual level observations with country level ones, the data were analysed using hierarchical linear modeling methods. More specifically, we follow an approach similar to the one of De Clercq et al. (2013) who apply a multilevel random effects logistic regression to a GEM dataset that combines both the APS (individual level) and the NES (country level).

Multilevel analysis methods have several advantages compared to single level designs. Multilevel models control for the assumption of the independence of observations in grouped data. In the case of our study, this allows higher level contexts to be explicitly taken into account when studying corporate entrepreneurship (Stuetzer et al., 2014). This means that it can be acknowledged that country characteristics may shape

individual corporate entrepreneurial behavior, and that this context may not be independent for individuals because of such influences as country role models or knowledge spillovers (Bosma and Sternberg, 2014). In addition, multilevel models can provide a systematic analysis of the effects of variables that operate at multiple levels, as well as of their cross-level interactions (Peterson et al., 2012). Multilevel random coefficients models also allow parameter variation across groups (i.e., countries), which is not the case in the fixed or random effects models in conventional panel data analyses (De Clercq et al., 2013).

7.4. Results

Table 7.2 provides means, standard deviations and pairwise correlation coefficients for the variables studied. In addition, we ran a multicollinearity diagnostic test that showed variance inflation factor (VIF) scores all below 2.0, indicating that multicollinearity is not a problem in the analysis. Table 7.3 shows the results of the multilevel logistic regression and the marginal effects for four different models. Models 1 and 2 include information only for the women in the sample, whereas models 3 and 4 include information only for the men.

The dependent variable entrepreneurial experience remains significant and with the expected sign in all the models presented. Hence, having started a business in the past increases the likelihood that employees in an established company will become engaged in corporate entrepreneurship initiatives. In addition, this effect is more pronounced among men. Overall, hypothesis 1 is not rejected. Social capital also behaves as expected. Hence, knowing other entrepreneurs personally has a positive influence on corporate entrepreneurship for both men and women. Thus, hypothesis 2 cannot be rejected.

Hypothesis 3 deals with the effect of being involved in an entrepreneurial culture for corporate entrepreneurship. The results show again that this variable has a positive and significant impact on corporate entrepreneurship. Therefore, the more the national culture emphasizes entrepreneurial risk-taking behaviours, the more likely it is that individuals will start corporate entrepreneurial activities (irrespective of their gender). Overall, hypothesis 3 is not rejected. Ease of business exhibits significant behaviour with the expected sign. Therefore, when public regulation does not support the

development of entrepreneurial initiatives, it seems more likely that opportunities are exploited via corporate entrepreneurship than individual entrepreneurship. Thus, hypothesis 4 is not rejected. The last two hypotheses address the indirect (moderating) effect of culture. In this case, the moderating effect of culture for entrepreneurial experience (5a) cannot be rejected; on the other hand, culture has a non-significant effect on social capital and hence hypothesis 5b is rejected.

Table 7.2. Correlation matrix

	Mean	Standard deviation	1	2	3	4	5	6	7	8	9
1. Corporate entrepreneurship	0.026	0.135	1								
2. Experience	0.018	0.141	0.07***	1							
3. Social capital	0.349	0.328	0.09***	0.07***	1						
4. Entrepreneurial culture	2.583	0.522	0.05***	0.01***	0.00**	1					
5. Ease of Business	2.894	0.485	-0.00	-0.05***	-0.01*	0.24***	1				
6. Education	0.215	0.154	0.03***	0.01***	0.08***	0.14***	0.11***	1			
7. Age	43.65	15.01	-0.01***	-0.00	-0.05***	0.10***	0.00	0.00*	1		
8. Population	63440.77	84880.75	0.07***	0.04***	-0.01*	0.84***	0.00	0.09***	0.13***	1	
9. GDPcapita	30440.43	6069.34	0.06***	0.03***	-0.02***	0.63***	-0.17***	0.05***	0.16***	0.76***	1

Note: *** significant at $p \leq 0.001$; **significant at $p \leq 0.01$, *significant at $p \leq 0.05$

7.5. Discussion

The significant effect of the variable *entrepreneurial experience* is in line with the literature that shows how some human capital attributes (such as experience) may be a factor for success in entrepreneurial firms (Unger et al., 2011). From this perspective, experience has been considered to provide some of the necessary attributes and skills that make individuals more creative and innovative (Westhead et al., 2005). Moreover, it also agrees with the findings of researchers who have argued that men and women perceive risks differently and therefore also have dissimilar behaviours in this regard. Similarly, the behaviour of the variable *social capital* (positive and significant) agrees with the literature that shows how social capital is positively related to participation in the development of new entrepreneurial projects (Arenius and Kovalainen, 2006). In addition, it has also been linked to the observation of others, often referred to as role models (Kim et al., 2006). Following this reasoning, studies have highlighted the need for more female role models as they engender positive self-perception with respect to entrepreneurial activities (Minniti and Nardone, 2007).

Hypotheses 3 and 4 focus on the environmental factors that may influence entrepreneurial activity. In relation to this, some cultural values are considered to influence the decision to create new businesses (Shinnar et al., 2012). For instance, Gomez-Haro et al. (2011) state that "…societal norms and values can influence the degree of entrepreneurship in people and organisations. Societies that attach positive value to creativity and change create a normative environment that encourages organisations to develop strategic orientation models with entrepreneurial stances". Moreover, the perception of these cultural values may differ depending on the individual's gender (Langowitz and Minniti, 2007). In addition, in the case of the variable *ease of business*, the results show that companies are considered to provide more support in terms of operational and administrative assistance and by assuming financial risks (Martiarena, 2013). Similarly, some established companies have been deemed more capable of dealing with the obstacles necessary to start up a new business (Parker, 2011). In addition, some studies have explained how these types of measures and support have a differing effect depending on the gender of individuals (Baughn et al., 2006).

Cultural values have already been conceptualized as a moderator of other factors (De Clercq et al., 2014). For instance, Short et al. (2010) argue that some environmental

conditions can moderate key aspects of the entrepreneurial process. Similarly, Guerrero and Pena-Legazkue (2013) note that the effect of having previous experience as a corporate entrepreneur may be influenced by some external features (e.g. environmental dynamism). Ultimately, it has also been suggested that immersion in an entrepreneurial culture can reduce the need for previous entrepreneurial experience (Forlani, 2013).

Overall, the results contribute to the discussion on the role of internal factors (*Entrepreneurial experience* and *social capital*) and environmental factors (*entrepreneurial culture* and *ease of business*). Numerous researchers have acknowledged the importance of internal organisation dimensions to promoting and supporting entrepreneurship within companies (Kuratko et al., 2001; Hornsby et al., 2009). From this view, the work of Kuratko et al. (2014) highlight five specific company dimensions that can lead to an entrepreneurial behaviour: top management support, work discretion, rewards and reinforcement, time availability and organisational boundaries. In addition, the research highlights the importance of environmental factors. Involvement in an entrepreneurial culture appears to be a relevant factor as it conditions corporate entrepreneurship both directly and indirectly (moderating effect). However, and unexpectedly, this moderating effect is significant only for entrepreneurial experience and not for social capital. The literature agrees that the differences in the sociocultural context may influence, among others, the status and social recognition of corporate entrepreneurs, promoting or inhibiting their entrepreneurial career choice (Gnyawali and Fogel, 1994). Prestige influences the cognitive framework that affects the way in which members of an organisation perceive issues as well as how they view their firm's competitive landscape (Johnson, 2002). Therefore, it is in line with the cultural-cognitive view of institutions which focuses on the shared conceptions that constitute the nature of social reality and the frames through which individuals interpret information (Stenholm et al., 2013). Thus, the institutional environment exerts a powerful influence not only on the decision to develop corporate entrepreneurship activities, but also on the ensuing trajectories of entrepreneurial initiatives (Manolova et al., 2008). Ultimately, this cultural-cognitive approach reflects the cognitive structures and social knowledge shared by people in a given country or region (Urbano and Alvarez, 2014). Cognitive structures affect individual behaviour as they to a great extent shape the cognitive programmes that people use when selecting and interpreting information (Markus and Zajonic, 1985).

Table 7.3. Multilevel logistic regression. Dependent variable: Corporate entrepreneurship

	FEMALE				MALE			
	Model 1		Model 2		Model 3		Model 4	
	Coef. (Std. Error)	Marginal effect	Coef. (Std. Error)	Marginal effect	Coef. (Std. Error)	Marginal effect	Coef. (Std. Error)	Marginal effect
Conditioning factors								
Experience	1.992*** (0.44)	0.035***	0.883*** (0.12)	0.016***	2.030*** (0.27)	0.06***	1.126*** (0.08)	0.036***
Social Capital	1.06*** (0.05)	0.018***	1.078*** (0.19)	0.019***	0.894*** (0.04)	0.029***	0.877*** (0.15)	0.028***
Entrep. Culture	0.919*** (0.14)	0.016***	0.909*** (0.14)	0.016***	0.783*** (0.12)	0.025***	0.760*** (0.12)	0.024***
Ease of Business	-0.234* (0.09)	-0.004*	-0.236* (0.09)	-0.004*	-0.225** (0.07)	-0.007**	-0.230** (0.07)	-0.007**
Entrep. Culture*Experience	-0.341* (0.13)	-0.006*			-0.276** (0.08)	-0.009**		
Entrep. Culture*Social capital			-0.006 (0.06)	-0.000			0.004 (0.05)	0.000
Controls								
Education	0.055 (0.06)	0.000 (0.00)	0.057 (0.06)	0.001	0.145** (0.05)	0.004**	0.147** (0.05)	0.005**
Age	-0.021*** (0.00)	-0.000***	-0.020*** (0.00)	-0.000***	-0.017*** (0.00)	-0.000***	-0.017*** (0.00)	-0.000***
Age2	0.000*** (0.00)	0.000***	0.000*** (0.00)	0.000***	0.000*** (0.00)	0.000***	0.000*** (0.00)	0.000***
Population	-0.000** (0.00)	-0.000**	-0.000** (0.00)	-0.000**	-0.000* (0.00)	-0.000*	-0.000* (0.00)	-0.000*
GDP capita	0.000*** (0.00)	0.000***	0.000*** (0.00)	0.000***	0.000*** (0.00)	0.000***	0.000*** (0.00)	0.000***
Number of observations	78379		78379		77107		77107	
Degrees of freedom	12		12		12		12	
Prob > Chi2	***		***		***		***	
Log likelihood	-6521.61		-6524.85		-10116.82		-10122.48	
AIC	13067.22		13073.71		20257.66		20268.96	

Notes: *** significant at $p \leq 0.001$; ** significant at $p \leq 0.01$; *significant at $p \leq 0.05$.
The STATA command *xtmelogit* was used to run the multilevel logistic regression.
For continuous variables, marginal effects are expressed in relative terms with respect to predicted probabilities for sample means. In the context of dummy variables, it reflects the impact for a discrete change of the dummy variable from 0 to 1.

7.6. Conclusion

The chapter has both theoretical and practical implications. From a theoretical perspective, the study makes a dual contribution. On the one hand, it provides insights into the role of gender in corporate entrepreneurship. Although literature on individual entrepreneurship has extensively studied the role of women in entrepreneurial activity (Langowitz and Minniti, 2007), in the specific literature on corporate entrepreneurship there are few studies focusing on this issue. These studies explain how childhood and school experiences, gender roles and the organizational experiences within which females are socialized affect entrepreneurial activities (Fitzsimmons et al., 2014). For instance, a number of studies have examined the causes of the persistent disparity in the accumulation of human and economic capital, a significant factor contributing to the low number of female top managers at the helm of large companies (Grenfell, 2008). On the other hand, the results might contribute to the discussion on the role of internal or environmental factors in corporate entrepreneurship. Several theoretical models have outlined the importance of external conditioning factors in promoting corporate entrepreneurship activity. For instance, Guth and Ginsberg (1990) presented a model in which some environmental features (the competitive, technological, social and political environment) have a direct impact on corporate entrepreneurship. Later, Ireland et al. (2003) stressed the importance of having an entrepreneurial mindset and an entrepreneurial culture for managing resources strategically and for developing innovative projects in established companies. Ireland et al. (2009) present an integrative model of corporate entrepreneurship strategy, which includes two different types of antecedents: market-related aspects (competition intensity, rate of technological change, etc.) and individual entrepreneurial beliefs, attitudes and values. The results of our study contribute to this type of model by testing and showing empirically the significant and relevant effect that cultural values have when developing entrepreneurial activities in established companies.

From a practical perspective, identifying which factors affect the development of entrepreneurial activities is relevant to company managers, especially those who are interested in implementing new innovative projects in their companies. Similarly, the results could also be useful for policy makers in the area of entrepreneurship. Understanding which factors influence entrepreneurship within companies could be relevant for public institutions that are meant to foster entrepreneurship. More

specifically, the results of the study contribute by showing that the effect of those policies that aim to reduce the amount of taxes for new companies may be different depending on the type of entrepreneurial activity developed. Previous literature has highlighted how the level of taxes can directly influence the start-up propensity of the inhabitants of a region (Bergmann, 2011). The results of this study contribute to this discussion by showing that when public regulation does not support the development of entrepreneurial initiatives, it seems more feasible that opportunities are exploited via corporate entrepreneurship than individual entrepreneurship. In addition, the relevance of culture-related variables in the study may also have implications for policy makers. In this regard, previous literature has already outlined the importance of factors such as the media, considered to have the ability to influence the salience of topics and their images among the public (Deephouse, 2000).

Finally, this chapter has some limitations and suggests some future lines of research. First, further studies could use other (and more) proxies to see if the role of internal and environmental factors is still the same. Similarly, the dependent variable applied uses a wide definition of the corporate entrepreneurship phenomenon. Further studies could focus on more specific components of corporate entrepreneurship, particularly as studies analysing and comparing the different types of corporate entrepreneurship are scarce in the literature. Second, a factor analysis could be developed before running the regressions. In this way, the different factors used would be more evident and less ambiguous. Third, the results include information for 14 different countries; however, previous research has highlighted that there might be huge gender differences depending on the country of origin (Arenius and Kovalainen, 2006). Fourth, our study does not take into account the effect of time, although during our period of analysis (2003–2011) some countries were affected by the economic crisis, which could influence the development of corporate entrepreneurship initiatives. Fifth, the study assumes that studying the antecedents of corporate entrepreneurship is relevant mainly because of the positive influence that entrepreneurial activities have on firm performance. However, most of the research on the financial consequences of corporate entrepreneurship uses data from US or UK companies. Hence, further studies could focus on the effect of corporate entrepreneurship for companies based in other countries. Sixth, the chapter identifies some small differences between men and women, however, the study does not check for the significante of these divergences.

CHAPTER 8

CORPORATE ENTREPRENEURSHIP IN THE SPANISH CONTEXT: A REGIONAL ANALYSIS

8. CORPORATE ENTREPRENEURSHIP IN THE SPANISH CONTEXT: A REGIONAL ANALYSIS

8.1. Introduction

In this chapter we focus in the corporate entrepreneurship phenomenon in the Spanish context and its different regions. In this regard, there has been little progress in understanding the role of corporate entrepreneurship in local and regional development (Mason and Harrison, 2002), as to our knowledge there are very few quantitative studies in this specific area. In fact, the literature in this field is considered eclectic (Verheul et al., 2002) and lacks a comprehensive framework (Gnyawali and Fogel, 1994). Research into regional variations in the formation of new firms is built upon a variety of disciplines, such as economics, sociology and psychology (Lasch et al., 2013). However, it is now widely recognised that regional variation in entrepreneurship is significant and persistent, and often even exceeds national differences (Bosma and Schutjens, 2011). In this regard, previous literature has found regional variation in the entrepreneurship field to be associated with factors such as population, industrial structure, human capital, university research and development or the availability of financing (Armington and Acs, 2002; Lee et al., 2004). Finally, literature in the fields of creativity and innovation has also highlighted its importance for regional development (Florida, 2002).

In addition and as highlighted in previous chapters, literature focusing on the antecedents of corporate entrepreneurship differentiates between internal and environmental conditioning factors (Antoncic and Hisrich, 2001; Hornsby et al., 2002). From this point of view, there is no agreement about the role played by environmental factors, and analysis is incomplete as most studies examine these factors partially. When studying the role of external conditioning factors for entrepreneurial acivities in established companies, quantitative literature focuses mostly on industry-related factors. For instance, Antoncic and Hisrich (2001) focus on issues such as the degree of sector dynamism, the availability of technological opportunities or industry growth. Similarly, other studies have examined factors such as the degree of threat that stems from competition (Zahra and Covin, 1995), or the degree of change and unpredictability in the market (Ireland et al., 2009). Thus, other informal (e.g. culture related aspects) and

formal (e.g. education or legal matters) institutional features have not been analysed in depth in quantitative studies. This is in contrast to the literature on individual entrepreneurship where the role of the institutional environment has been extensively researched. For instance, Davidsson and Wiklund (1997) found a significant but marginal contribution of cultural differences explaining regional variation in the formation of new firms in Sweden. This result is in line with the literature which shows that cultural differences are a powerful determinant of cross regional variation for entrepreneurship (Fayolle et al., 2010).

Taking this into account, the objective of the present chapter is to examine the influence of internal and external conditioning factors on corporate entrepreneurship in Spain, considering the differences between several Spanish regions. The research uses a double theoretical framework: Human Capital Theory (HCT) for internal factors and Institutional Economics (IE) for the environmental ones. Specifically, following previous studies, the variables *opportunity recognition* and *social capital* are considered human capital factors (Arenius and De Clercq, 2005; Arenius and Kovalainen, 2006). On the other hand, the variables *fear of failure* and *education* are considered institutional factors (Arenius and Minniti, 2005; Aidis et al., 2008). Previous literature on the antecedents of corporate entrepreneurship has highlighted how individually related and environmental factors can impact entrepreneurship in established companies (Guth and Ginsberg, 1990; Antoncic and Hisrich, 2001; Ireland et al., 2003; Ireland et al., 2009). For instance, Ireland et al. (2003) present a theoretical model where involvement in an entrepreneurial culture or managing the individual's resources appropriately affects the development of strategic entrepreneurship initiatives. Similarly, Antoncic and Hisrich's (2001) model shows how a set of individual factors (communication, organisational support or person related values, among others) and environmental (industry growth or competitive rivalry, among others) factors influence corporate entrepreneurship. These approaches are in line both with HCT and IE. In addition, despite the fact that both theories have been widely used in the strategic management and entrepreneurship literature, very few quantitative studies in the corporate entrepreneurship field have been explicitly grounded in this framework (Castrogiovanni et al., 2011).

This study applies a logistic regression analysis to individual level data from the 2011 Spanish Global Entrepreneurship Monitor (GEM). The results are presented

differentiating between three regions in Spain depending on the level of economic development (high income region, middle income and low income). The study makes conceptual and practical contributions. On the one hand, it benefits from the fact that HCT and IE have been used very rarely in this particular context; hence, one of the implications of the research is that it contributes to the development of the literature in this field. Specifically, results contribute to the discussion of the indirect (moderating) effect played by environmental factors (as this has rarely been measured in the corporate entrepreneurship literature). In addition, results contribute to the literature by showing that the antecedents of corporate entrepreneurship differ by region, as the variable "fear of failure" appears to be significant only in less developed regions. On the other hand, a better understanding of the factors influencing entrepreneurship within companies in different regional contexts provides useful insights for those companies and institutions that are interested in fostering entrepreneurial activities.

This chapter is structured as follows: the next section presents a literature review of the corporate entrepreneurship phenomenon in Spain, and then the hypotheses of the research. Section 8.3 explains the methodology of the study. Section 8.4 presents the results and discussion of the research. Finally, the last section concludes and suggests some future lines of research.

8.2. Conceptual framework

Corporate entrepreneurship is used to explain entrepreneurship activities in existing organisations. Researchers and academicians have used different terms for this concept and accordingly there are various definitions to describe the corporate entrepreneurship phenomenon (Agca et al., 2012). Some of the terms employed are 'corporate entrepreneurship' (Burgelman, 1985), 'intrapreneurship' (Pinchot, 1985), 'internal entrepreneurship' (Schollhammer, 1982) and 'corporate venturing' (MacMillan, 1986). Overall, it can be seen: as a process in which individuals inside organisations act entrepreneurially in pursuing new opportunities (Antoncic and Antoncic, 2011); as doing new things and departing from the customary to pursue opportunities (Vesper, 1990); or as emergent behavioural intentions or behaviours deviating from the customary way of doing business (Antoncic and Hisrich, 2001). Researchers have paid increasing attention to corporate entrepreneurship because it has a positive effect on

company survival, growth, profitability and renewal (Zahra, 1995). Corporate entrepreneurship is thus believed to maintain and increase a company's sustainable competitive capabilities, which are fostered by different areas of organisational performance (Agca et al., 2012). Overall, organisational and economic development is substantially dependent on entrepreneurship in existing organisations (Antoncic, 2007).

Some recent articles have considered the corporate entrepreneurship phenomenon in the Spanish context (e.g., López and Martín, 2008; Moreno and Casillas, 2008; Romero-Martinez et al., 2010; Toledano et al., 2010; Castrogiovanni et al., 2011; Gomez-Haro et al., 2011; Montoro and Ribeiro, 2011). These researchers have focused on either the national level or the level of a specific region in Spain; in addition, data was typically obtained via a range of questionnaires that included, on average, approximately 100 observations each. Finally, some of the dependent variables used in these papers have been used in previous studies (e.g., Dess et al., 1997; Sharma and Chrisman, 1999; Zahra et al., 2009). Overall, these researchers agree that the development of corporate entrepreneurship strategies and activities has a positive effect on company performance and, subsequently, a positive effect on broader economic development, as well.

Internal factors promoting corporate entrepreneurship

The literature considers that identifying and selecting the right opportunities for new businesses are among the most important abilities of a successful entrepreneur (Ardichvili et al., 2003). Shane and Venkataraman (2000) suggest that entrepreneurship research addresses three key questions of opportunity identification: why, when and how opportunities come into existence; why, when and how some people and not others discover and exploit opportunities; and why, when and how different modes of action are used to exploit opportunities. Overall, the literature has extensively studied the discovery and development of opportunities and considered this a core construct of entrepreneurship research (Zahra et al., 2009). Despite this, the process of opportunity recognition has sometimes been viewed as a black box (Wang et al., 2013; Williams and Vorley, 2014). Scholars have, therefore, drawn upon different social science disciplines, including economics, psychology and sociology, to create theoretical frameworks to explain the nature and process of opportunity recognition (Dimov, 2007). Entrepreneurial opportunities are believed to bring new goods into existence, services,

raw materials and organisational methods that allow output to be sold at more than its cost of production (Kirzner, 1973). To take advantage of these opportunities, firms must develop the ability to carry out a range of different tasks associated with corporate entrepreneurship (Ribeiro-Soriano and Urbano, 2009). Finally, some authors such as Mitchell et al. (2000) explain that entrepreneurs in different regions differ in some important respects, including the search for opportunities. For instance, it is believed that a higher regional purchasing power makes entrepreneurial activity more lucrative (both for companies and individual entrepreneurs). This should make the perception of business opportunities more likely in these regions (Bosma and Schutjens, 2011). In addition, some studies have highlighted that in economically deprived regions, opportunities tend to be more based on reasons of necessity (Williams and Williams, 2012). Similarly, other studies explain that business opportunities are sometimes exploited more efficiently in more developed countries (Fritsch and Wyrwich, 2013). Based on these suggestions, the following hypothesis is posited:

> Hypothesis 1: There is a positive relation between being able to identify business opportunities and the likelihood to develop corporate entrepreneurship activities; this relation is more pronounced in high income regions.

Despite the fact that entrepreneurial activities are normally regarded as individual behaviours, there is ample evidence that entrepreneurship is, in fact, socially embedded in network structures (Aldrich and Zimmer, 1986). Understanding entrepreneurship as a social phenomenon thus allows us to draw on the well-developed, more general, literature on social capital and social networks (Thornton et al., 2011). From this perspective, entrepreneurship literature has used social capital extensively to illustrate entrepreneurial access to resources that are not possessed internally (Casson and Della Giusta, 2007). Entrepreneurs, that is, complement the resources they possess with the ones they obtain through their contacts (e.g. information, financial capital, labour) to produce and deliver their goods and services (Aldrich and Zimmer, 1986). Networks are considered assets that reside in an individual's relationships and consist of the goodwill flowing from friends, colleagues and other general contacts (Burt, 1992; De Carolis and Saparito, 2006). For instance, Davidsson and Honig (2003) find the likelihood of engaging in entrepreneurial initiatives to be higher for individuals with entrepreneurial parents, friends and neighbours, or individuals with family and friends who encourage

entrepreneurship. Networks of relationships have also been used, according to the literature, as valuable resources (Nahapiet and Ghoshal, 1998) or abilities (Blyler and Coff, 2003). Following this reasoning, Burt (1992, 57) characterises social capital as a resource that brings a higher rate of return on investments. He suggests that social capital creates an advantage in "...the way in which social structure renders competition imperfect by creating entrepreneurial opportunities for certain players and not for others". Finally, from a regional point of view, some authors explain that corporate entrepreneurs in rural areas face some additional disadvantages related to: low density of population and, therefore, a low density of most markets, and greater distance to those markets as well as to information, labour and most other resources (Malecki, 2003). However, corporate entrepreneurs in their home areas (which may be rural) are also considered to benefit from their established professional network and knowledge of the area (Dahl and Sorenson, 2012). Similarly, it has been found that network structures can affect entrepreneurial dynamics in both rural and urban areas (Freire-Gibb and Nielsen, 2014). Ultimately, the following hypothesis is posited:

> Hypothesis 2: There is a positive relation between social capital and the likelihood to develop corporate entrepreneurship activities; this relation is similar across regions.

Environmental factors promoting corporate entrepreneurship

When explaining differences in entrepreneurial behaviour among different regions, research also takes into account the institutional component. From an IE view, this environmental or institutional factor is believed to influence strongly economic behaviour (North, 1990, 2005). The administrative procedures or financial regulations, as well as an individual's preferences, values or perceptions, are increasingly considered to have an impact on entrepreneurial initiatives (Bruton et al., 2010). The institutional environment is defined as the stable rules, social standards and cognitive structures in a society that guide, favour or restrict business activity (Scott, 1992). These factors are normally categorised as formal factors (rules, law, regulations) and informal factors (culture, values, norms). In recent years, several examples of empirical papers relating to IE and entrepreneurship have appeared (Bosma and Schutjens, 2011). However, very

few papers on the corporate entrepreneurship issue use this theoretical approach (Gomez-Haro et al., 2011).

The relationship between entrepreneurship and fear of failure has received some attention from scholars who have considered the relationship between entrepreneurial decisions and risk aversion (Kihlstrom and Laffont, 1979). According to the literature, the perceived possibility of failure determines an individual's decision to start a business, and the fear of failure has a negative effect on corporate entrepreneurship. Since most individuals are risk averse, and the perceived fear of failure (rather than the objective likelihood of failure) is an important component of the risk attached to starting a new business, a reduced perception of the likelihood of failure should increase the probability that a company will start a new business (Arenius and Minniti, 2005). In addition, research into the regional determinants of entrepreneurial initiatives suggests that regional characteristics can influence factors such as fear of failure, thus preventing entrepreneurial activity (Stuetzer et al., 2014). Risk aversion should be more relevant in less developed regions as the consequences of entrepreneurial failure are considered to be worse for the entrepreneur in less developed economies (Pereira, 2004). For this reason, the social stigma of failure is considered to be particularly relevant in these types of regions (Vaillant and Lafuente, 2007). Overall, the willingness of individual intrapreneurs to take risks, and the risk permissiveness of top managers, allowing and encouraging these individuals to be more innovative, require a tolerant understanding from managers towards intrapreneurs whose projects fail, especially in turbulent markets (Alpkan et al., 2010). Finally, this risk aversion behaviour could be changed by exogenous interventions such as government programmes, but could be modified more efficiently through cultural factors that mould attitudes, perceptions and risk profiles (Minniti and Nardone, 2007). Thus, we posit the following hypothesis:

> Hypothesis 3: There is a negative relation between fear of failure and the likelihood to develop corporate entrepreneurship activities; this relation is more pronounced in low income regions.

Education provides individuals with increased cognitive abilities, leading to more productive and efficient potential activity (Mincer, 1974). Several authors have found that individuals' educational level can have a positive effect on the way that they

perceive entrepreneurial opportunities (e.g., Davidsson and Honig, 2003; Arenius and De Clercq, 2005). In fact, empirical research has demonstrated a range of results regarding the relationship between education, entrepreneurship and success, with education frequently producing nonlinear effects in support of the probability of becoming an entrepreneur, or in support of achieving success (Davidsson, 1995; Gimeno et al., 1997). Education is believed to have a direct effect on innovative performance, as more innovative organisations are normally managed by well-educated teams that are diverse with respect to their functional areas of expertise (Bantel and Jackson, 1989). The effect of education (or human capital) on entrepreneurship has also been studied, not only in corporate entrepreneurship literature (Alpkan et al., 2010), but also in the literature devoted to regional development studies. Some previous studies show differences by regions, across education objectives, outcomes, resources and social constructions of the entrepreneurial activity (Dodd and Hynes, 2012). However, other researches have shown that the impact of education and human capital factors on entrepreneurship (and corporate entrepreneurship) does not vary significantly depending on the region of origin of individuals (Beckers and Blumberg, 2013). Taylor and Plummer (2003) highlighted the role of entrepreneurship and education in promoting regional economic growth. Similarly, in a subsequent study, they showed that human capital and enterprise culture are significant drivers for regional growth (Plummer and Taylor, 2004). Lastly, the following hypothesis is posited:

> Hypothesis 4: There is a positive relation between having a higher education and the likelihood to develop corporate entrepreneurship activities; this relation is similar across regions.

Fear of failure when starting a business relates to the legal and financial consequences of failure, but also to the informal social repercussions—the stigma associated with failure is an important determinant of entrepreneurial activity (Andersson et al., 2013). From this view, it has been argued that cultural values (such as fear of failure) may behave as moderators, that is, they can influence the ease with which entrepreneurs can exploit resources to support entrepreneurial activities (Hayton et al., 2002). In fact, some authors have noted that cultural values affect the identification of business opportunities (Stuetzer et al., 2014). A tendency to accept failure by employees may signal that they are willing to search for new possibilities and learn through

experimentation, whereas an anti-failure attitude can obstruct entrepreneurial endeavours (Van Der Zwan et al., 2013). In this sense, the attitudes and behaviours of the managers tasked with creating and maintaining an internal environment that is supportive of corporate entrepreneurship play a key role (Alpkan et al., 2010); corporate entrepreneurs will, therefore, expect that some failures, resulting from actions taken in good faith, will not be harshly punished but will instead be tolerated (Lumpkin and Dess, 1996). Entrepreneurial firms can learn from their strategic failures, which could attenuate the uncertainty of their operational mode by allowing them to draw upon knowledge gained through past experiences as a basis for future decision-making. On the other hand, conservative firms are less innovative and take fewer risks than entrepreneurial firms. The failure-related lessons of conservative firms may, therefore, be inferred from their having fewer learning opportunities (Covin et al., 2006). We thus posit the following two hypotheses:

> Hypothesis 5a: Fear of failure moderates the relationship between opportunity recognition and corporate entrepreneurship, such that the relation is weaker for higher values of fear of failure.

Some authors such as De Clercq et al. (2014) have extended prior research by investigating the moderating effect of cultural values which might unlock resources provided by proximate institutions. Similarly, Hayton et al. (2002) suggest that culture may function as ‘‘a catalyst rather than a causal agent of entrepreneurial outcomes’’ (p. 45). Following this reasoning, some studies have focused on how cultural values influence individuals’ human and social capital (Schwartz, 1999). Culture and fear of failure are considered to operate in the background, providing general principles for how people interact with one another, including their work-related relationships (North 1990). For instance, De Clercq et al. (2013) study how a set of environmental institutions (including cultural values) moderate individuals’ resources which might be relevant to entrepreneurial initiatives (including social capital). The study shows, for instance, how more hierarchical cultures tend to restrain free exchanges of resources (including those that might be relevant for exploiting new business opportunities) and, therefore, may offer fewer chances for people to leverage their personal resource base with external resources that they might be lacking. Overall, fear of failure can lead employees to adopt risk-averse attitudes, which may reduce the likelihood that they

pursue potentially innovative approaches and undertakings (Gupta et al., 2004). Finally, social capital is considered to affect the propensity to start a new business in several ways (Westlund and Bolton, 2003) and both as an individual or collective resource, it enables or hinders entrepreneurial activities and thus exerts direct and indirect effects on entrepreneurship (Westlund et al., 2014).

> Hypothesis 5b: Fear of failure moderates the relationship between social capital and corporate entrepreneurship, such that the relation is weaker for higher values of fear of failure.

8.3. Methodology

The study uses a database created by the Global Entrepreneurship Monitor (GEM), which contains information for Spain in the year 2011. The GEM research programme is an annual assessment of the national level of entrepreneurial activity, aspirations and attitudes of individuals across a wide range of countries. It explores the role of entrepreneurship in national economic growth, unveiling detailed national features and characteristics associated with entrepreneurial activity. In advanced countries (including Spain), the GEM Adult Population Surveys are completed by phone and generally, the first adult in the household who will serve as a respondent is asked to participate. The normal minimum sample is 2000 adults per country and year (Reynolds et al., 2005) and in the case of this study, the 2011 Spanish GEM database contains 5319 different valid observations. Overall, the GEM has become the largest survey based study of entrepreneurship in the world and since its creation in 1999, the study has included more than 1.3 million observations across 85 countries In addition, the number of academic papers that use a GEM database has been growing in the last years. According to Alvarez et al. (2014), in 2012, a total of 106 articles using a GEM database had been published in publications indexed by Journal Citation Reports (JCR).

The Spanish case is particularly suitable for this study as it is widely accepted that its specific environmental situation affects specific features of its entrepreneurial initiatives (Gomez-Haro et al., 2011). According to the European Commission, Spain is considered to be one of the least entrepreneurial countries in Europe. Overall, the Spanish population demonstrates scarce perception of opportunities, the competitive spirit and only moderate support to entrepreneurs (Hernández-Mogollon et al., 2013).

Despite this fact, some of the richest Spanish regions rank above the European average in terms of entrepreneurship and economic development (Vaillant et al., 2013). As stated in the hypotheses section, the Spanish context should thus demonstrate significant and valuable differences in the conditioning factors for corporate entrepreneurship among regions.

In 2011, the Spanish team for the GEM project introduced a set of specific questions on the corporate entrepreneurship issue. Precisely, the dependent variable of the study comes from one of these specific questions, it is a binary variable that is meant to measure corporate entrepreneurship and considers individuals to be corporate entrepreneurs if, "in the last three years, they have been involved in the development of new activities for their main employer". This wide definition used in the research considers an individual to be a corporate entrepreneur, or to have exhibited intrapreneurship, if they had either a leading or a supporting role in such development activities. Other studies in the entrepreneurship field have used similar dependent variables derived from a GEM database (Arenius and Minniti, 2005; Arenius and Kovalainen, 2006; Minniti and Nardone, 2007).

The study uses four independent variables, each of which have been used in previous studies in the entrepreneurship field. Following HCT, the variables *opportunity recognition* (Arenius and De Clercq, 2005; Arenius and Minniti, 2005; Arenius and Kovalainen, 2006) and *social capital* (Arenius and Kovalainen, 2006) are considered individual human capital factors. Similarly, the variables *fear of failure* (Arenius and Minniti, 2005; Koellinger and Minniti, 2006; Koellinger, 2008) and *education* (Arenius and Minniti, 2005; Arenius and Kovalainen, 2006; Aidis et al., 2008) have been used in other studies as social-cultural traits influencing entrepreneurial activity (Vaillant and Lafuente, 2007), thus they are here considered institutional factors.

In addition, the study controlled for *company size* and *gender*. On the one hand, there is an extensive body of literature in management and organisational studies on the effects of size on entrepreneurial activity (e.g., Scott, 1992). Most of the research on corporate entrepreneurship conducted at the organisational level has focused on large corporations (e.g., Zahra, 1991; Birkinshaw, 1997; Ahuja and Lampert, 2001). Other authors, however (e.g., Carrier (1994)) believed that corporate venturing can also be important for small- and medium-sized companies. On the other hand, previous research has indicated that women's participation rates in entrepreneurship are significantly lower

than men's rates, for instance, some studies suggest that men are on average more than twice as active in entrepreneurship as women (Arenius and Minniti, 2005; Langowitz and Minniti, 2007). For more information on the variables used in the study, see Table 8.1.

Finally, since the study uses a binary dependent variable (see Table 8.1) we apply a logistic regression technique. Limited dependent variable methods (such as the logit) have been increasingly used in business and management research in the last two decades (Shook et al., 2003).

Table 8.1. Description of the variables

Variable		Description
Dependent variable	Corporate entrepreneurship	In the last three years, have you been involved in the development of new activities for your main employer?
Independent variables	Opportunity	In the next six months, will there be good opportunities for starting a business in the area where you live? (Yes/No)
	Social capital	You know someone personally who started a business in the past two years? (Yes/No)
	Fear of failure	Would fear of failure would prevent you from starting a business? (Yes/No)
	Education	Educational level in two categories (0 = Less than a university degree, 1 = University degree or more)
Control variables	Company size	How many employees are there in the organization you are working for?
	Gender	What is your gender? (0 = Women, 1 = Men)

8.4. Results and discussion

Table 8.2 provides means, standard deviations, and pairwise correlation coefficients for the variables we studied, and Table 8.3 includes socio-economic information about the different regions (high income, middle income, low income) included in the research. Table 8.3 shows not only that high income regions have an above the average GDP per capita, but also a higher business density. All low income regions have a below average GDP per capita and business density. Table 8.3 also shows that despite the differences

among regions in terms of corporate entrepreneurship and entrepreneurial activity (high income regions are more entrepreneurial), these differences are not completely clear. In this regard, it is worth mentioning that in low income regions the creation of new business due to necessity is more important than in high income regions, where opportunity based entrepreneurship is more relevant (Hernández-Mogollon et al., 2013).

Table 8.2: Correlation matrix

	Mean	Standard deviation	1	2	3	4	5	6	7
1. Corporate entrepreneurship	0,169	0,375	1						
2. Opportunity	0,156	0,363	0,070***	1					
3. Social capital	0,299	0,448	0,139***	0,083***	1				
4. Fear of failure	0,529	0,499	-0,045***	-0,105***	-0,026**	1			
5. Education	0,396	0,489	0,183***	0,048***	0,081***	-0,035***	1		
6. Gender	0,529	0,499	0,045***	0,069***	0,051***	-0,050***	-0,079***	1	
7. Firm size	1918,81	8758,76	0,024*	0,000	0,00	-0,029*	0,049***	0,072***	1

Note: *** significant at $p \leq 0.01$; ** significant at $p \leq 0.05$; *significant at $p \leq 0.10$.

Table 8.3: Description of the sample

	Regions	Corporate entrepreneurship	Total Entrepreneurial Activity	GDP x capita	Business density
	Total Spain	17,0	3,4	23054	192,6
High income	**Baleares**	12,8	2,2	24378	206,9
High income	**Catalunya**	21,3	5,1	27236	210,1
High income	**C. Valenciana**	15,9	4,4	20287	199,0
High income	**C. Madrid**	17,2	3,4	29845	188,2
High income	**C. Navarra**	17,9	4,2	29640	165,7
High income	**País Vasco**	16,7	1,7	31058	192,6
Middle Income	**Aragón**	21,9	2,9	25763	178,1
Middle Income	**Asturias**	22,8	1,6	21451	186,4
Middle Income	**Cantabria**	9,4	1,1	22680	175,4
Middle Income	**Castilla León**	22,5	4,5	22484	178,2
Middle Income	**Galícia**	12,4	2,5	20806	193,6
Middle Income	**La Rioja**	12,4	n.a.	25762	183,0
Low Income	**Andalucía**	14,4	7,7	17337	190,8
Low Income	**Canarias**	21,4	3,2	19867	192,4
Low Income	**Castilla La Mancha**	9,3	n.a.	18155	183,3
Low Income	**Extremadura**	13,8	5,2	15771	186,1
Low Income	**C. Murcia**	19,2	4,6	18933	177,0

Note:

Corporate entrepreneurship: "In the last three years, have you been involved in the development of new activities for your main employer?" Data from the GEM database.

Total entrepreneurial activity: "% of individuals involved in a nascent firm or young firm or both". Data from the GEM database.

GDP per capita: Data (euros) from "Instituto Nacional de Estadística" (year 2010).

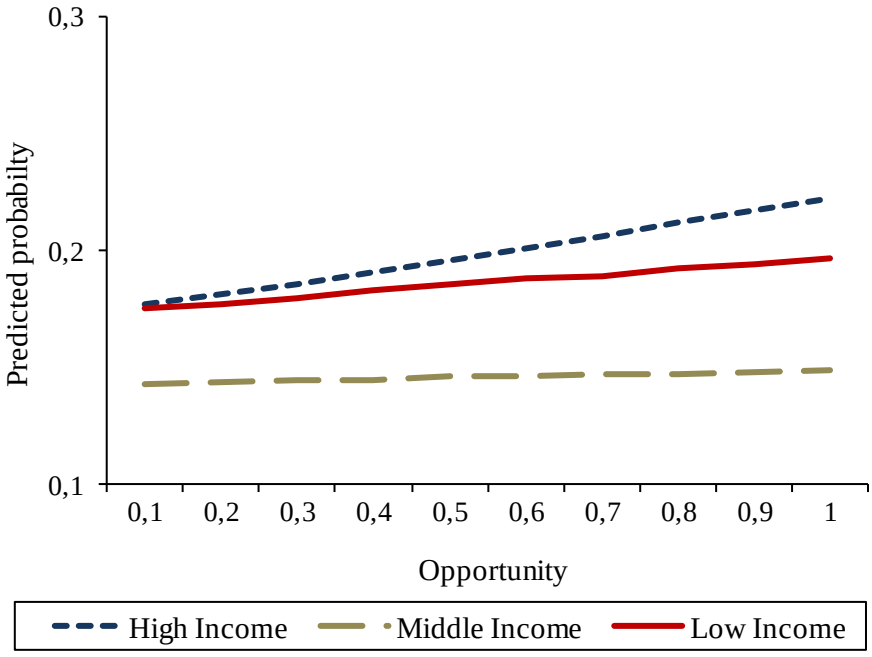
Business density: Number of companies/employed persons (thousand). Data from "Instituto Nacional de Estadística" (year 2010).

Table 8.4 provides the results of the logistic regression for eight different models. Since some of the variables in the analysis could be correlated (see Table 8.2), a multi-collinearity diagnostic test was conducted, and the results showed that multi-collinearity is not likely to be a problem for this dataset (Hoetker, 2007). All the models include the direct effect of the different conditioning factors (opportunity recognition, social capital, fear of failure and education). Subsequently, moderating effects are introduced. We have also graphically examined (although not reported) the sign (positive or negative) and statistical significance of the value of the marginal effect at each observation to

determine whether the hypothesised relationships between the explanatory and dependent variables are accepted or rejected (Wiersema and Bowen, 2009).

Opportunity recognition variable behaves as expected; in the "whole of Spain" and "high income regions" models, all values of the marginal effect are positive and significant. As highlighted elsewhere (e.g., Shane and Venkataraman, 2000; Gaglio and Katz, 2001), the ability to identify business opportunities appears to be a fundamental skill in the development of entrepreneurial activities—to operationalise ideas into intrapreneurial actions, intrapreneurs must possess the capacity to identify opportunities in their environment (Shane and Venkataraman, 2000). The generation of ideas, therefore, depends not only on the education and entrepreneurial spirit of the employees, but also on their ability to detect opportunities. On the other hand, in middle and lower income regions, being able to identify business opportunities in the short term is not a significant variable. This implies that in these regions, even if individuals discover business opportunities, this does not translate into more intrapreneurial behaviour. Such a finding could be explained by the prevalence of necessity-based rather than opportunity based entrepreneurship in these regions (Hernández-Mogollon et al., 2013). Figure 8.1 shows the differing effect of the opportunity recognition capability on corporate entrepreneurship. Overall, we cannot reject Hypothesis 1.

Figure. 8.1. Direct effect of opportunity on corporate entrepreneurship

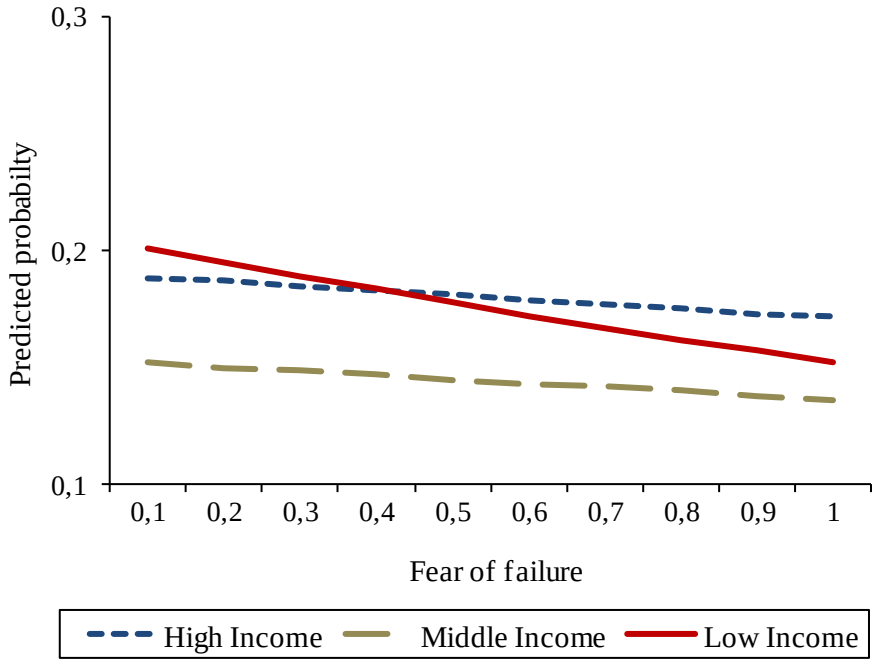


Knowing other entrepreneurs has a positive direct effect on corporate entrepreneurship in all the models presented (except one). This result emphasises that being in contact with other entrepreneurs can help to obtain information, resources and social support to identify and exploit business opportunities (Aldrich and Zimmer, 1986). This finding is in line with the literature on social capital which shows a positive relationship between the presence of business owners in society, specifically, entrepreneurs among relatives, and the emergence of entrepreneurial activity (Van Auken et al., 2006). Similarly, at the regional level, in societies characterised by traditional entrepreneurial structures, such as many small retail businesses and habitual entrepreneurship, personal attitudes towards firms, innovation and entrepreneurship are more positive than in regions dominated by a managerial culture (Bosma and Schutjens, 2011). Overall, previous literature shows that findings on the effect of social capital for corporate entrepreneurship in different contexts are diverse. Some authors agree in that entrepreneurial activities in less developed areas implies access to less information and to fewer individuals who can act as role models (Malecki, 2003). However, other studies consider that entrepreneurs in rural and less developed areas benefit from an established network of contacts (Dahl and Sorenson, 2012). Ultimately, we cannot reject Hypothesis 2.

Our results show fear of failure to be a significant variable only when we use data for the whole country and for the low-income regions. This would suggest that fear of failure is one of the main liabilities facing low-income regions when trying to develop corporate entrepreneurship activities. The negative sign of the *fear of failure* variable suggests that, compared with other regions, less-developed regions face an additional barrier when seeking to develop intrapreneurial activities. Previous literature has already highlighted that in these types of regions the social and economic consequences of entrepreneurial failure are considered to be worse than in other regions (Pereira, 2004). Figure 8.2 shows the more significant effect of fear of failure in less developed regions. Overall, this result may imply that, in order to allow and encourage innovativeness among companies, organisations should try to establish an internal climate, where managerial support and tolerance for risk are particularly high. Accordingly, managers should exhibit increased tolerance towards those intrapreneurs whose projects fail (Alpkan et al., 2010). Research also highlights that some entrepreneurship courses can lower the risk perception associated with an entrepreneurial venture (Gordon et al., 2012). However, there is agreement in the

literature that modifying informal institutions (such as fear of failure) takes a much longer period of time than modifying formal institutions (such as rules or regulations) (Williamson, 2000). Ultimately, we cannot reject Hypothesis 3.

Figure. 8.2. Direct effect of fear of failure on corporate entrepreneurship



The formal institution of education was found to be significant and to fit with the expected sign in all models. Achievement of a higher education was found to increase the probability of developing intrapreneurial activities. Prior research has argued in favour of the importance of knowledge in enhancing the performance of employees (e.g., Boselie et al., 2001). Education is believed to have the effect of increasing an individual's cognitive abilities, leading to more productive and efficient potential activity (Mincer, 1974). Overall, most studies agree that there is a positive correlation between the level of education and the development of entrepreneurial initiatives because such activities require a high level of knowledge and skills. A region with a high proportion of qualified inhabitants is likely to have high start-up activities (Bergmann, 2011). Overall, this result is in line with the literature showing that human capital is a significant driver of economic growth (Plummer and Taylor, 2004) and that this positive effect is consistent in all regions (Beckers and Blumberg, 2013). Thus, we cannot reject Hypothesis 4.

When studying the moderating role of fear of failure, we developed a graphical analysis (not reported) showing the true interaction effect and z_statistic value of each observation for each of the eight models (Hoetker, 2007; Wiersema and Bowen, 2009). Unexpectedly, the moderating role of the fear of failure for opportunity recognition appears to be a non-significant variable across each regression. Hypothesis 5a is, therefore, rejected. This would imply that fear of failure does not moderate the relationship between being able to identify business opportunities and corporate entrepreneurship. Hence, results show that if people who are risk averse are able to identify business opportunities in the short term, this does not translate into a corporate entrepreneurial behaviour. Therefore, the fact that entrepreneurial activities are associated with the high failure rates of new ventures and high income volatilities, contributes to the idea that this a risk-taking activity (Van der Zwan et al., 2013). As a consequence, in the case of individuals who are risk averse, it is not relevant whether they identify business opportunities, as they will not try to exploit those opportunities anyway. Although differences in risk tolerance have been offered as a potential explanation for the puzzling choices entrepreneurs make (Puri and Robinson, 2013), few studies have analysed the moderating role that informal institutions—i.e., culture—may play in corporate entrepreneurship (e.g., Ireland et al., 2003). In this regard, most studies have highlighted that these types of conditioning factors influence corporate entrepreneurship (Antoncic and Hisrich, 2001; Zahra et al., 2009). However, their effect tends to be considered less important than the effect of company-related factors such as organisational support or a company's resources and capabilities. The true interaction effect of hypothesis 5b appears to be significant (although only for the whole country and for the less developed regions) and with the expected sign. This finding could imply that knowing other entrepreneurs limits the negative effect of fear of failure, as social capital would serve to facilitate the bridge between entrepreneurial intention and entrepreneurial behaviour (Shapero and Sokol, 1982). The literature also demonstrates that meeting other entrepreneurs can have a positive effect on business creation because these entrepreneurs may behave as role models. This behaviour occurs particularly among relatives (Van Auken et al., 2006). Overall, we cannot reject hypothesis 5b. Finally, Figure 8.3 shows the differing effect of fear of failure (low income regions) on corporate entrepreneurship, depending on the social capital of individuals. Specifically, the graph shows how the impact of social capital on corporate entrepreneurship is reduced in low income regions when individuals are risk averse. In these types of

regions, the consequences of entrepreneurial failure might be perceived as being worse than in other regions. Therefore, social capital and exposure to entrepreneurial role models may reduce the uncertainty of engaging in entrepreneurial initiatives. However, fear of failure limits this impact. Such reasoning is in line with previous literature that has shown how the country's general norms can hamper the effect of having a relevant bundle of resources (De Clercq et al., 2013).

Table 8.4: Logistic regression. Dependent variable: Corporate entrepreneurship

	Spain (whole country)				**High income regions**			
	Coef. (Std. error)	**Marginal effect at variable means**	**Coef. (Std. error)**	**Marginal effect at variable means**	**Coef. (Std. error)**	**Marginal effect at variable means**	**Coef. (Std. error)**	**Marginal effect at variable means**
Conditioning factors								
Opportunity	0,254** (0,125)	0,034**	0,290*** (0,096)	0,039***	0,337** (0,160)	0,047**	0,303** (0,123)	0,042**
Social capital	0,657*** (0,077)	0,088***	0,584*** (0,107)	0,078***	0,700*** (0,101)	0,098***	0,651*** (0,139)	0,091***
Fear of failure	-0,206** (0,084)	-0,028**	-0.250*** (0,097)	-0,033***	-0,137 (0,111)	-0,019	-0,195 (0,127)	-0,027
Education	0,892*** (0,076)	0,119***	0,894*** (0,076)	0,120***	0,848*** (0,100)	0,119***	0,850*** (0,100)	0,119***
Moderator								
Fear*Opportunity	0,085 (0,193)	0,011			-0,080 (0,248)	-0,011		
Fear*Social capital			0,147* (0,103)	0,020*			0,106 (0,201)	0,015
Control variable								
Gender	0,275*** (0,077)	0,037***	0,276*** (0,077)	0,037***	0,311*** (0,101)	0,043***	0,312*** (0,100)	0,044
Firm size	0,000 (0,000)	0,000	0,000 (0,000)	0,000	0,000 (0,000)	0,000	0,000 (0,000)	0,000
Log likelihood	-2296,72		-2296,35		-1322,21		1322,13	
AIC	4609,441		4608,704		2660,43		2660,26	
BIC	4662,073		4661,336		2708,38		2708,21	
Number of observations	5319		5319		2964		2964	

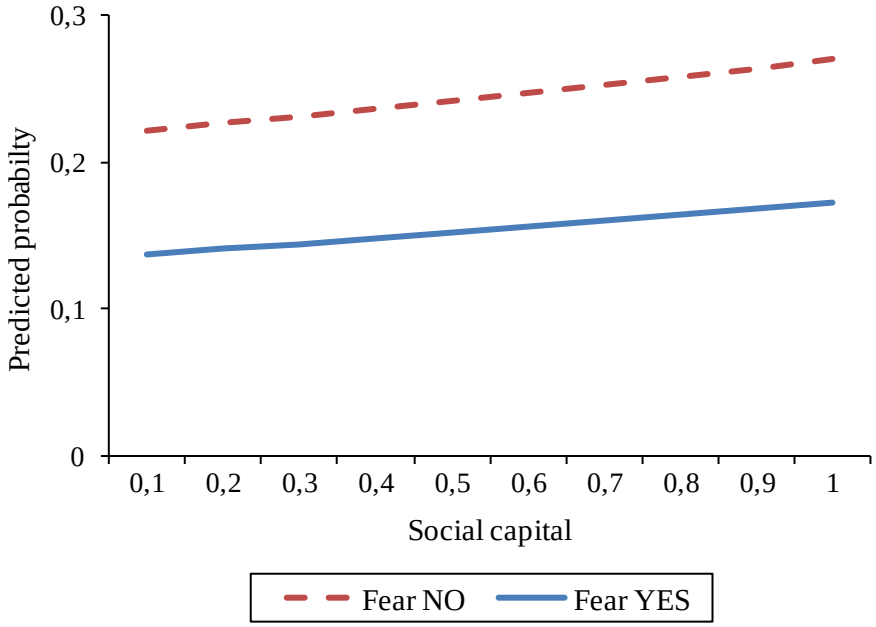
Note: *** significant at $p \leq 0.01$; ** significant at $p \leq 0.05$; *significant at $p \leq 0.10$.

Table 8.4 (cont.): Logistic regression. Dependent variable: Corporate entrepreneurship

	Middle income regions				Low income regions			
	Coef. (Std. error)	**Marginal effect at variable means**	**Coef. (Std. error)**	**Marginal effect at variable means**	**Coef. (Std. error)**	**Marginal effect at variable means**	**Coef. (Std. error)**	**Marginal effect at variable means**
Conditioning factors								
Opportunity	0,043 (0,303)	0,005	0,208 (0,222)	0,024	0,193 (0,271)	0,027	0,307 (0,218)	0,043
Social capital	0,851*** (0,161)	0,098***	0,973*** (0,242)	0,113***	0,320* (0,176)	0,045*	-0,001 (0,246)	-0,000
Fear of failure	-0,153 (0,176)	-0,018	-0,004 (0,216)	0,000	-0,396** (0,190)	-0,055**	-0,605*** (0,221)	-0,084***
Education	0,995*** (0,161)	0,115***	0,985*** (0,161)	0,114***	0,895*** (0,172)	0,125***	0,899*** (0,173)	0,125***
Moderator								
Fear*Opportunity	0,371 (0,440)	0,043			0,262 (0,447)	0,037		
Fear*Social capital			-0,222 (0,325)	-0,026			0,666* (0,351)	0,093*
Control variable								
Gender	0,335** (0,163)	0,039**	0,345** (0,163)	0,040**	0,097 (0,173)	0,013	0,097 (0,173)	0,014
Firm size	0,000 (0,000)	0,000	0,000 (0,000)	0,000	0,000 (0,000)	0,000	0,000 (0,000)	0,000
Log likelihood	-522,46		-522,58		-444,13		-442,50	
AIC	1060,93		1061,17		904,26		900,99	
BIC	1102,66		1102,89		943,48		940,20	
Number of observations	1361		1361		994		994	

Note: *** significant at $p \leq 0.01$; ** significant at $p \leq 0.05$; *significant at $p \leq 0.10$.

Figure. 8.3. Moderating effect of fear of failure on corporate entrepreneurship (low income regions)



8.5. Conclusion

The objective of this chapter was to study the conditioning factors for corporate entrepreneurship in the Spanish context. Using a logistic regression technique and GEM data for the year 2011, results show how four different conditioning factors (*opportunity recognition*, *social capital*, *fear of failure* and *education*) have a direct impact on corporate entrepreneurship. The differences between regions are highlighted as a fear of failure plays a more significant role in less-developed regions. The importance of the informal institutional factor, fear of failure, is also reinforced, as it has both a direct and an indirect (moderating) effect on corporate entrepreneurship.

Results contributions are both theoretical and practical. On the one hand, the study advances the application of HCT and IE in the analysis of corporate entrepreneurship activities. The literature also shows that the role played by internal and environmental factors when promoting corporate entrepreneurship is not completely clear. The study contributes to this discussion by showing that both internal and environmental factors are significant. There are only a few quantitative studies that relate informal regional institutional factors (such as culture or fear of failure) to corporate entrepreneurial behaviour (Bergmann, 2011). In this regard, Davidsson and Wiklund (1997) find

cultural differences among Swedish regions and show that these differences are related to differences in regional start-up rates. On the other hand, the results could also be of use for company managers and policy makers. Identifying how different factors affect the development of entrepreneurial activities inside companies in different regions can be useful for those managers interested in implementing innovative projects within their companies. Similarly, results could also be useful for policy makers in the area of entrepreneurship and innovation. In this regard, data shows that the policies to foster corporate entrepreneurship should be different by region. In less developed regions, fear of failure plays a more significant role (both directly and indirectly), and so this issue should be addressed in order to foster corporate entrepreneurship in low income regions. Some authors have highlighted the importance of taking entrepreneurship courses to reduce the perceived risks associated with entrepreneurial activity (Coduras et al., 2008; Graevenitz et al., 2010).

Finally, the study has limitations and suggests some future lines of research. First, other approximations of the dependent variable could be used (i.e., those with a narrower definition). Second, more accurate proxies for the independent variables could be used. Specifically, the education level of corporate entrepreneurs could be better measured by differentiating between additional categories (instead of using a binary variable). In addition, the rest of the proxies could be improved so that they agree more closely with the RBT and IE frameworks, this could make that the differences between resources and capabilities; and, formal and informal institutions were more evident. Third, since the study uses data from 2011, the results could have been influenced by the economic crisis that affected Spain during that year. The use of time-series data, in lieu of cross-sectional data, could therefore also enrich the results. Fourth, results could take into account the effect of the economic sector, in fact, there is little empirical research available concerning regional variations in specific sectors (Fayolle et al., 2010). Fifth, further studies could look further into the idea that the moderating effect of fear of failure is only significant in low income regions. Sixth and finally, the study assumes that studying the antecedents of corporate entrepreneurship is relevant mainly because of the positive influence that entrepreneurial activities have on firm performance. However, most of the research on the financial consequences of corporate entrepreneurship uses data coming from US or UK companies. In fact, next chapter (9) focuses precisely on this issue, using a EU-EFIGE/Bruegel-UniCredit dataset for the

year 2008 we study the consequences (on firm growth) of engaging in corporate entrepreneurship activities.

CHAPTER 9
ANTECEDENTS AND CONSEQUENCES OF CORPORATE ENTREPRENEURSHIP: EVIDENCE FOR EUROPEAN COUNTRIES

9. ANTECEDENTS AND CONSEQUENCES OF CORPORATE ENTREPRENEURSHIP: EVIDENCE FOR EUROPEAN COUNTRIES

9.1. Introduction

After having analysed the antecedents of corporate entrepreneurial activity along the research, this chapter focuses on its consequences on firm growth. From this view, although it is extensively agreed that there is a positive relationship between engagement in corporate entrepreneurial activities and firm performance, this has seldom been tested using multi-country data. Most studies use data for US companies (Covin et al., 2014; Keil et al., 2008; McMillan and Day, 1988; Simon et al., 2002; Zahra, 1991; Zahra, 1993; Zahra and Garvis, 2000; among others) and there are very few examples of studies focusing on European companies (Cucculelli and Bettinelli, 2015; Walter et al., 2006) or using global datasets (Zahra and Hayton, 2008). As most theoretical and practical contributions in corporate entrepreneurship stem mainly from the positive effect on firms' growth and profits, it is relevant to test these results using information for other countries. In addition, some authors consider that cross-cultural research has the potential to expand the concepts and theories that have been developed in a single cultural setting (Antoncic and Hisrich, 2001). Hills and LaForge (1992) stress the importance of conducting entrepreneurship research in an international context as some authors observe that entrepreneurial initiatives cannot be understood without attention to the context in which they are enacted. Similarly, the prevalence of American-based (and Anglo-Saxon) research has already been highlighted by some authors as a potential gap for future research (Antoncic, 2007).

In addition, some aspects of the literature studying the role of the antecedents of corporate entrepreneurship could also be more complete. From this perspective, most quantitative studies identify how factors at different levels of analysis (individual, company and environmental) may affect corporate entrepreneurship activities (Antoncic and Hisrich, 2001; Guth and Ginsberg, 1990). However, the role of environmental factors in conditioning corporate entrepreneurship is not clear in the literature (Antoncic and Hisrich, 2001; Ireland et al., 2009). Most studies focus on industry-related factors, such as competitive rivalry (Ireland et al., 2003), perceived technological uncertainty (Heavey and Simsek, 2013), environmental dynamism and industry growth (Zahra,

1993). Hence, other factors that might be relevant, such as the role of culture-related aspects or regulations, tend not to be taken into account in quantitative studies. Nevertheless, some theoretical models describing the antecedents of corporate entrepreneurship highlight the relevance of these types of factors (Ireland et al., 2003; Zahra et al., 2009). Similarly, literature on individual entrepreneurship has extensively demonstrated the vital role that these factors may play (Bruton et al., 2010).

Thus, this chapter studies simultaneously the factors conditioning corporate entrepreneurship, differentiating between the company and the environmental levels, as well as its subsequent effect on firm growth. The research applies a two-stage probit least squares (2SPLS) estimation using data from the EU-EFIGE/Bruegel-UniCredit dataset for the year 2008. This includes a total of 14,759 different observations for seven European countries (Austria, France, Germany, Hungary, Italy, Spain and the UK). The results show how a set of four different conditioning factors (foreign executives, fixed-term contracts, labour regulations and training) influence corporate entrepreneurship. In addition, it is confirmed that developing entrepreneurial activities within established companies has a positive effect on firm growth.

The chapter is structured as follows. In section 9.3, we review the literature on corporate entrepreneurship and present the hypotheses of the research. In section 9.3, we detail the methodology of the study. Section 9.4 presents the findings of the study and subsequently these are discussed. Finally, the last section includes the conclusion of the study and suggests some limitations and future research lines.

9.2. Corporate entrepreneurship: Antecedents and consequences

Literature on the antecedents of corporate entrepreneurship differentiates between conditioning factors at different levels of analysis. For instance, Ireland et al. (2009) present a model that differentiates between the organization, the top-level managers and the organizational members. Similarly, Antoncic and Hisrich (2001) consider the environmental and the organizational levels of analysis. Finally, Ireland et al. (2003) present a model in which some company and environmental factors influence the strategic management of certain resources relevant to entrepreneurship and innovation. Following this reasoning, this study offers a set of three different hypotheses. The first set of hypotheses concern the factors conditioning *international experience*, *foreign*

executives and *fixed-term contracts*, which are considered factors internal to the company. The second set of hypotheses focuses on *labour regulations*, *external financing* and *training*, which are considered environmental factors. Finally, a hypothesis for the effect of corporate entrepreneurship on firm growth is proposed.

Research has highlighted how human capital attributes may be viewed as a valuable company resource (Ucbasaran et al., 2008). Individuals with more or higher levels of human capital are considered to be better at identifying business opportunities and exploiting them (Davidsson and Honig, 2003). For instance, prior international business experience on the part of the manager has gained increased significance and is widely recognized as a vital asset for firms (Wang, 2008). International experience has been argued to embrace abilities to search for information, identify and evaluate opportunities, screen country markets, evaluate strategic partners and manage customs operations and foreign exchange (Fletcher and Harris, 2012; Prashantham and Young, 2011). Similarly, having managers with a wide variety of experiences and backgrounds is posited to have a positive effect on a firm's capacity to adapt to new changes and to innovate. Managers with experience in other companies, sectors or countries may have a wider vision of strategic decision making, use a broader variety of information sources and have more widely differentiated capabilities (Lee and Park, 2006). In addition, according to Escriba-Esteve et al. (2008), "managers with these characteristics tend to make more changes in structure, procedures, and people than do chief executives promoted from within the firm". From this perspective, Westhead et al. (2001) explain that entrepreneurial firms with diverse management knowhow and international business experience may be able to undertake more promising competitive strategies and exploit opportunities than their larger counterparts. Similarly, firms with higher market knowledge are considered to have a higher propensity (or learning capability) to gather further foreign knowledge (Andersen and Bettis, 2015; Oviatt and McDougall, 2005). Overall, the literature agrees that conducting business in international markets allows mangers to develop knowledge and specific business skills associated with the context in which they are developed (Glavas and Mathews, 2014; Johanson and Vahlne, 2003). Moreover, it has also been suggested that managers who have developed their careers in one organization can be assumed to have a relatively limited perspective when faced with an unprecedented problem (Herrmann and Datta, 2006).

Finally, the role of employees' entrepreneurial contributions at different hierarchical

levels of the organization has been studied in the corporate entrepreneurship literature (Hornsby et al., 2009). To foster entrepreneurship within established firms, managerial support for those employees whose entrepreneurial projects fail has been considered a fundamental factor (Alpkan et al., 2010). In addition, it has also been argued that employees need to perceive that they have fair working conditions. The key components of this fairness perception are remuneration and other employee benefits received by other similar individuals (Croucher and Rizov, 2004; Kreutzer et al., 2015). Ultimately, it is widely agreed that the development of corporate entrepreneurship projects requires long-term commitment and investment by companies (Kuratko and Audretsch, 2013). From this perspective, it is very unlikely that new innovative projects in established firms may be developed by temporary employees. Hence, a higher number of fixed-term employees should make the development of corporate entrepreneurship initiatives more likely. Based on the above, the following hypotheses are posed:

> Hypothesis 1a: Having employees with international experience makes the development of corporate manufacturing entrepreneurship via R&D more likely.
>
> Hypothesis 1b: Having foreign executives in the firm makes the development of corporate manufacturing entrepreneurship via R&D more likely.
>
> Hypothesis 1c: Having employees with fixed-term contracts makes the development of corporate manufacturing entrepreneurship via R&D more likely.

The literature agrees that some regulations, procedural requirements, licensing arrangements and inspections can discourage business start-up (Begley et al., 2005). Some of the formal factors most studied include access to finance (De Clercq et al., 2013), corporate taxes (Djankov et al., 2010) and regulation of entry (Djankov et al., 2002). For instance, a country's financial system is widely agreed to be an important determinant of its level of new business activity (Taylor and Murphy, 2004), as access to finance is considered a key feature for the development of entrepreneurial initiatives (Bowen and De Clercq, 2008). Over the last few decades, research has focused intensely on the role played by financial markets in real economic activity. Scholars have provided robust empirical evidence that broader and deeper financial markets are

strongly associated, causally, with better prospects for future economic growth (Cetorelli and Strahan, 2006). In the entrepreneurship literature specifically, authors agree that gaining sufficient access to external sources of finance is a critical success factor for new companies (Ahlstrom and Bruton, 2006; Le and Nguyen, 2009). From this viewpoint and using US microdata, Evans and Leighton (1989) and Evans and Jovanovic (1989) argued that if all else is equal, people with greater family assets are more likely to switch to self-employment from employment. As highlighted above, the effect of corporate taxes has also been studied extensively as taxation is considered to affect entrepreneurial behaviour (Bergmann, 2011). In addition, the World Bank has been promoting the reduction of entry barriers for new businesses because this may have a positive effect on entrepreneurial activities (Djankov et al., 2002). In relation to this, having a simplified labour market could make obtaining the necessary human capital resources to develop new innovative projects easier (Begley et al., 2005).

Another means public authorities have used to overcome all these difficulties and challenges when starting up new business is through training and education (Kuratko et al., 2015; Von Graevenitz et al., 2010). In this respect, the evidence suggests that people who start businesses have a higher level of education than people who do not (Bowen and Hisrich, 1986). Several previous studies have found a positive impact from entrepreneurship educational courses or programmes at universities on the perceived attractiveness and feasibility of new venture initiation or even on actual start-up activity (Peterman and Kennedy, 2003; Tkachev and Kolvereid, 1999). A firm's intellectual capital is considered to be a key and rich source of the knowledge flows required to promote corporate entrepreneurship (Chandler et al., 2005; Kiss and Barr, 2014). If the company has qualified human resources, the implementation and development of intrapreneurial projects will become easier; moreover, the possibilities of success will increase. In addition, as corporate entrepreneurs acquire specific human capital resources and skills from training programmes, experiences and learning processes (Guerrero and Pena-Legazkue, 2013), it is considered necessary that the company offers specific training and recycling to their workers to implement and develop innovative projects (Hayton and Kelley, 2006). Therefore, we propose the following hypotheses:

> Hypothesis 2a: Higher labor market restriction makes the development of corporate manufacturing entrepreneurship via R&D less likely.
>
> Hypothesis 2b: External financing makes the development of corporate

manufacturing entrepreneurship via R&D more likely.

Hypothesis 2c: Training outside the firm makes the development of corporate manufacturing entrepreneurship via R&D more likely.

The previous hypotheses focus on the effect of certain factors on corporate entrepreneurship. In addition, corporate entrepreneurship activity has also been considered to have an effect on firm performance. Furthermore, the existence and intensity of this effect on performance may be different depending on various company or environment characteristics (which may influence simultaneously the development of corporate entrepreneurial activities and the effect on firm performance). Overall, there is widespread agreement amongst researchers that corporate entrepreneurship may be one of the most effective methods of achieving high levels of organizational performance (Kuratko, 2009; Kuratko and Audretsch, 2013; Morris et al., 2011). Indeed, numerous real-world examples are available demonstrating how a firm's commitment to recurring corporate entrepreneurship can lead to enhanced organizational performance (Bloodgood et al., 2015). Similarly, previous studies have also shown that firms that are entrepreneurially orientated develop competitive advantages that lead to better performance (Walter et al., 2006), that international venturing (a form of corporate entrepreneurship) has a positive impact on financial performance (Zahra and Hayton, 2008) and that under some conditions, corporate venture capital is beneficial both to new companies and to investors (Park and Steensma, 2012).

Overall, corporate entrepreneurship has increasingly been recognized as a legitimate path to high levels of organizational performance (Hornsby et al., 2009). For instance, more than two decades ago, Zahra (1991) showed how growth-orientated strategies are associated with increased corporate entrepreneurship. Using a questionnaire addressed to top executives in US and Slovenian firms, Antoncic and Hisrich (2001) found that corporate entrepreneurship has a positive and significant effect on growth and profitability. Finally, Ireland et al. (2006) argue that firms increasingly rely on corporate entrepreneurship to develop and nurture today's and tomorrow's competitive advantages simultaneously, in particular those that are grounded in innovation.

Ultimately, improved organizational results, usually in terms of growth and profitability, are thought to be a result of entrepreneurship in established organizations (Covin and

Slevin, 1991) and corporate entrepreneurship appears to be a part of successful organizations (Pinchot, 1985). Indeed, most authors take the view that the growing academic interest in this field stems mainly from this positive relationship (Narayanan et al., 2009). For instance, Nason et al. (2015) found that corporate entrepreneurship is an organizational strategy used to expand firm size through job generation. Specifically, these authors suggest that those firms of small size tend to exploit the entrepreneurial activity of their employees to overcome liabilities and smallness. Thus, the following hypothesis is proposed:

> Hypothesis 3: Corporate entrepreneurship influenced by antecedents at an organizational and environmental levels of analysis, allows an increasing in firm growth.

9.3. Methodology

In this chapter, we use cross-sectional data for the analysis. Given the treatment of our problem, potential endogeneity between the dependent variables (firm growth and corporate entrepreneurship) could exist. It is likely that corporate entrepreneurship is driven by increasing firm performance and this type of entrepreneurs contributes to higher firm growth as a result of new product and service creation. Corporate entrepreneurship only accounts for a small percentage in most countries and this may attenuate its feedback into firm performance. To overcome this situation, we focus on implementing corporate entrepreneurship by taking into account human capital as well as institutional factors.

Considering that corporate entrepreneurship is measured as a dummy variable, we use two-stage probit least squares (2SPLS) estimation (Maddala, 1983; Keshk et al., 2004), based on a dummy variable version of two-stage least squares (2SLS), as the estimation strategy. The set of equations are stated as follows:

$$P(CE_i = 1) = f(R_i, I_i, CV_i) \quad (1)$$

$$FG_i = f(CE_i, x_i) \quad (2)$$

where CE_i corresponds to corporate entrepreneurship, R_i refers to companies' resources and capabilities, I_i represents institutions and CV_i the control variables for equation (1). Regarding equation (2), FG_i is firm growth, CE_i is corporate entrepreneurship and x_i denotes the control variables for this equation. All these variables are for each organization *i*.

The estimation follows a two-stage process with an additional step of standard error correction to avoid heteroscedastic results. Equation (1) is estimated with probit and equation (2) via ordinary least squares (OLS) and the predicted values ($\widehat{CE_i}$ and $\widehat{FG_i}$) from each model are obtained for use in the second stage. In the second stage, the original endogenous variable in equation (1) is replaced by $\widehat{CE_i}$. The final step in this procedure is the correction of standard errors. Using the *cdsimeq* command developed by Keshk (2003) in Stata, all these estimations were executed automatically.

We use the EU-EFIGE/Bruegel-UniCredit (Altomonte and Aquilante, 2012) dataset. This survey covers a representative and cross-country comparable sample of manufacturing companies across seven European countries (Austria, France, Germany, Hungary, Italy, Spain and the UK) for the year 2008. However, it is worth noting that several recall questions in the survey concern the previous three years. Authors such as Altomonte et al. (2013) have used this dataset to analyse innovation and internationalization levels in the seven European countries. According to these authors, several policy implications can be obtained from the analysis of these data as the sample contains information on the determinants of firm performance and the possible consequences for regional and national growth.

In relation to corporate entrepreneurship and firm growth, the dataset allows us to understand entrepreneurship behaviour within the company and its possible relationship with the firm's achievements (e.g. annual turnover in 2008, number of employees, etc.). In particular, for the dependent variable (CE_i) of equation (1), we have used information on those manufacturing firms with 1% or more of entrepreneurs/executives (middle management included), related or not to the family owning the company, and the proportion of employees involved in R&D activities. We have defined a dummy variable equal to one if the previous measures are 1% or higher and zero otherwise. Following Judge et al. (2015) this variable has been labeled *Corporate manufacturing entrepreneurship via R&D*. Similarly, the explanatory variable *foreign executives* has

been constructed using the same approach. The rest of the binary variables used in our analysis (i.e. *international experience*, *labour regulations* and *training*) follow the structure contained by default within the dataset. Finally, the remaining explanatory variables in equation (1) (*fixed-term contract* and *external financing*), as well as *firm growth* (number of employees) in equation (2) have been transformed to natural logarithms, given their continuous characteristics.

For equation (1), the control variables used are *gender of CEO*, *workforce variation* and *R&D investment*. From this perspective, some previous studies have indicated that women's participation rates in entrepreneurship are lower than the rates for men (Arenius and Minniti, 2005). Similarly, changes in the workforce and the number of employees have also been highlighted as potential factors influencing entrepreneurial activities (Barbosa and Eiriz, 2011). Finally, the literature has extensively described how R&D investments may affect both individual entrepreneurship and corporate entrepreneurship (Judge et al., 2015).

Although some authors have used firm size as a control variable explaining firm performance (Baum and Wally, 2003; Burghardt and Helm, 2015; Coad and Rao, 2008; Delmar et al., 2003; among others), we avoid this measure as some collinearity problems with the firm growth proxy occur. Instead, in equation (2), various control variables have been included in this research based on their possible influence on firm performance (Visintin and Pittino, 2014; Vohora et al., 2004). Specifically, the variables analysed were the age of the organization (those with 6–20 years of operation, and those that with less than 6 years) and industry type (i.e. traditional, exhibiting economies of scale and specialized).

The EFIGE dataset includes 14,759 European firms, distributed as follows: 3,021 in Italy, 2,973 in France, 2,935 in Germany, 2,832 in Spain, 2,067 firms in the UK, 488 firms in Hungary and 443 in Austria. According to Altomonte et al. (2013), several features are identified. First, the sample selected in each county has been designed to be representative of the manufacturing structure (stratification by industry, region and firm size). Second, the EFIGE dataset is fully comparable across countries, as it is obtained from responses to the same questionnaire, administered over the same time span. Finally, the data contain a wide range of questions that allow us to examine more than just balance sheet information to address important issues related to the link between corporate entrepreneurship and firm performance. It is worth mentioning that the survey

provides both qualitative and quantitative data on firm characteristics and activities, the variables being divided into six sections (proprietary structure of the firm; structure of the workforce; investment, technological innovation and R&D; internationalization; finance; market and pricing). The questionnaire was administered across countries over the same time span (January to May 2010). In general, the questions refer to 2008, although some relate to information in 2009 and years previous to 2008. This is done to obtain a picture of the effects of the crisis as well as the dynamic evolution of firms' activities. A summary of the variables used is presented in Table 9.1.

Table 9.1. Description of the variables

Equation 1	**Variable**	**Description**
Dependent variables	Corporate entrepreneurship	Binary variable takes the value 1 if the firm has more than 1% of employees involved in R&D activities and more than 1% of Entrepreneurs/executives (included middle management) familiar or not of own firm; and 0 otherwise
Independent variables	International experience	Binary variable takes the value 1 if the firm has had any executive worked abraod at leats 1 year; and 0 otherwise
	Foreign executives	Binary variable takes the value 1 if the firm has more than 1% of Foreign Executives (included middle management); and 0 otherwise
	Fixed-term contract	Percentage of employees that have worlked with fixed-term contract in 2008
	Labor regulations	Binary variable takes the value 1 if the firm has considered labor market regulations as a main preventing an appropriate firm performance; and 0 otherwise
	External financing	Level of external financing dependency perceived in the industry of firm
	Training	Binary variable takes the value 1 if the employees have participated to formal training programs outside the firm; and 0 otherwise
Control variables	Gender of CEO	Binary variable takes the value 1 if male; and 0 otherwise
	Workforce variation	Binary variable takes the value 1 if the firm has perceived workforce reduction or increase; and 0 otherwise
	R&D investment	Average percentage of the total turnover that the firm has invested in R&D in the last three years (2007-2009)

Table 9.1. Description of the variables (cont.)

Equation 2	Variable	Description
Dependent variable	Ln Firm growth	Total number of employees of your firm in the home country in 2008
Independent variables	Corporate entrepreneurship	Dummy variable takes the value 1 if the firm has more than 1% of employees involved in R&D activities and more than 1% of Entrepreneurs/executives (included middle management) familiar or not of own firm; and 0 otherwise
Control variables	6 to 20 years	Dummy varible takes the value 1 if the firm has operated between 6 and 20 years since the establishment; 0 otherwise
	Less than 6 years	Dummy varible takes the value 1 if the firm has operated less than 6 years since the establishment; 0 otherwise
	Traditional industries	Dummy varible takes the value 1 if the firm corresponds to the traditional industries according to Paviit classification on the basis of original NACE code of firm (3-digits); 0 otherwise
	Economies of scale industries	Dummy varible takes the value 1 if the firm corresponds to the economies of scale industries according to Paviit classification on the basis of original NACE code of firm (3-digits); 0 otherwise
	Specialized industries	Dummy varible takes the value 1 if the firm corresponds to the specialized industries according to Paviit classification on the basis of original NACE code of firm (3-digits); 0 otherwise

9.4. Results

Table 9.2 provides means, standard deviations and pairwise correlation coefficients for the variables we studied. The table shows that in our sample, on average, 72.7% of companies devote more than 1% of their employees and executives to R&D activities. In terms of firm growth, on average, firms across the sample have 65.09 workers.

Table 9.2. Correlation matrix

Variables	Mean	Std. Dev.	1	2	3	4	5	6	7
1. Corporate entrepreneurship	0.727	0.445	1						
2. International experience	0.219	0.413	0.153*	1					
3. Foreign executives	0.039	0.194	0.097*	0.209*	1				
4. Fixed term contract	2.982	2.239	0.012	0.019	0.010	1			
5. Labor regulations	0.190	0.392	-0.087*	-0.039*	-0.025*	-0.068*	1		
6. External financing	1.161	2.327	0.037*	0.039*	0.029*	0.056*	-0.064*	1	
7. Training	0.367	0.482	0.062*	0.031*	-0.007	-0.011	-0.033*	0.033*	1
8. Gender of CEO	0.922	0.267	0.070*	0.042*	0.012	0.015	-0.027*	-0.001	0.019
9. Workforce variation	0.584	0.493	0.071*	0.059*	0.024*	0.036*	0.019	0.016	0.014
10. R&D investment	1.429	1.148	-0.002	0.033*	0.042*	0.025	0.005	0.027	0.014
11. Ln Firm growth	3.561	0.965	0.251*	0.324*	0.259*	-0.091*	-0.055*	0.032*	-0.006
12. 6 to 20 years	0.352	0.478	-0.006	-0.033*	-0.031*	0.036*	-0.022	-0.007	0.018
13. Less than 6 years	0.071	0.256	0.015	0.010	-0.004	0.016	-0.022	0.009	-0.006
14. Traditional industries	0.477	0.499	-0.137*	-0.122*	-0.068*	0.039*	0.048*	-0.028*	-0.047*
15. Economies of scale industries	0.252	0.434	0.072*	0.056*	0.029*	-0.020	-0.021	-0.001	-0.009
16. Specialized industries	0.181	0.385	0.061*	0.054*	0.034*	-0.017	-0.035*	0.044*	0.035*

	8	9	10	11	12	13	14	15	16
8. Gender of CEO	1								
9. Workforce variation	0.012	1							
10. R&D investment	-0.0132	-0.053*	1						
11. Ln Firm growth	0.078*	0.143*	-0.104*	1					
12. 6 to 20 years	-0.003	0.018	0.047*	-0.129*	1				
13. Less than 6 years	-0.010	0.032*	0.017	-0.044*	-0.203*	1			
14. Traditional industries	-0.043*	-0.014	-0.069*	-0.130*	0.005	0.006	1		
15. Economies of scale industries	0.019	0.012	0.001	0.091*	-0.015	-0.008	-0.555*	1	
16. Specialized industries	0.033*	0.016	0.025	0.035*	0.005	-0.006	-0.448*	-0.273*	1

* $p < 0.10$. Note: Std. Dev.: Standard deviation.

In addition, the correlation analysis shows several significant correlations which met our expectations. In order to test for the problem of multicollinearity, we calculated the VIF value for equation (1), which is 1.02, while for equation (2) it is 1.95. Thus, multicollinearity is not a problem in the analysis. Furthermore, to address the possibility of heteroscedasticity and autocorrelation among observations pertaining to the same company, corrected standard errors were estimated (Keshk, 2003). The 2SPLS regression analysis is presented in Table 3, in which we report the estimated coefficients, the marginal effects (probit models) and corrected standard errors in parentheses for all models. All the models are highly significant ($p \leq 0.000$). Model 1 presents the regression results for company and environmental factors affecting corporate entrepreneurship in a linear probability model, run through OLS (Eq. 1). Model 2 assesses the same variables using probit estimation. Model 3 shows the results of analysis only for firm growth analysis (Eq. 2). Model 4 shows the results for the

simultaneous model, but in this case we only take into account in equation (1) those variables explaining corporate entrepreneurship at company level. Model 5 assesses jointly corporate entrepreneurship and firm growth, although only environmental factors are taken into account in equation (1). Model 6 displays the results for both equations using the entire set of variables analysed in this chapter.

Table 9.3. Estimation results of simultaneous equation model

	Model 1	Model 2		Model 3	Model 4		Model 5		Model 6	
	Corporate entrepreneurship	Corporate entrepreneurship			Corporate entrepreneurship		Corporate entrepreneurship		Corporate entrepreneurship	
		Estimation	dy/dx		Estimation	dy/dx	Estimation	dy/dx	Estimation	dy/dx
International experience	0.107***	0.425***	0.108***		0.062	0.017			0.087	0.023
	(0.013)	(0.057)	(0.013)		(0.092)	(0.025)			(0.108)	(0.028)
Foreign executives	0.133***	0.831***	0.157***		0.366**	0.086**			0.386**	0.089**
	(0.015)	(0.155)	(0.017)		(0.184)	(0.036)			(0.193)	(0.037)
Fixed-term contract	0.006***	0.028*	0.008*		0.053***	0.014***			0.043***	0.012***
	(0.002)	(0.016)	(0.004)		(0.012)	(0.003)			(0.013)	(0.004)
Labor regulations	-0.079***	-0.271***	0.078***				-0.229***	-0.069***	-0.186***	-0.053***
	(0.018)	(0.057)	(0.018)				(0.044)	(0.014)	(0.062)	(0.018)
External financing of industry sector	0.005**	0.024+	0.007+				0.022**	0.006**	0.019	0.005
	(0.002)	(0.015)	(0.004)				(0.009)	(0.002)	(0.013)	(0.003)
Training	0.038***	0.136***	0.036***				0.227***	0.064***	0.174***	0.046***
	(0.013)	(0.051)	(0.013)				(0.038)	(0.010)	(0.052)	(0.014)
Gender of CEO	0.138***	0.431***	0.135***		0.201**	0.059**	0.321***	0.102***	0.249**	0.073**
	(0.030)	(0.088)	(0.031)		(0.086)	(0.027)	(0.069)	(0.024)	(0.100)	(0.032)
Workforce variation	0.057***	0.208***	0.058***		0.087*	0.024*	0.111***	0.032***	0.122**	0.033**
	(0.014)	(0.050)	(0.014)		(0.049)	(0.014)	(0.041)	(0.012)	(0.055)	(0.015)
R&D investment	-0.005	-0.021	-0.006		0.049**	0.014**	0.034**	0.009**	0.031	0.008
	(0.006)	(0.022)	(0.006)		(0.025)	(0.007)	(0.016)	(0.005)	(0.026)	(0.007)
Firm growth					0.505***		0.429***		0.457***	
					(0.107)		(0.082)		(0.123)	
Constant	0.571***	0.086			-1.623***		-1.312***		-1.513***	
	(0.034)	(0.104)			(0.385)		(0.297)		(0.442)	
(Pseudo) R2	0.057	0.061			0.051		0.032		0.065	
Probability		0.810			0.807		0.790		0.811	
Log likelihood		-1.696.465			-2.211.556		-31.880.034		-689.518	
LR X2					236.61		212.52		235.87	

Table 9.3. Estimation results of simultaneous equation model (cont.)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
			Ln Firm growth	Ln Firm growth	Ln Firm growth	Ln Firm growth
Corporate entrepreneurship			0.515***	1.212***	0.589***	1.082***
			(0.015)	(0.107)	(0.064)	(0.093)
6 to 20 years			-0.287***	-0.316***	-0.377***	-0.331***
			(0.016)	(0.059)	(0.032)	(0.063)
Less than 6 years			-0.286***	-0.344***	-0.438***	-0.428***
			(0.029)	(0.112)	(0.062)	(0.117)
Traditional industries			-0.195***	0.235**	0.025	0.210*
			(0.030)	(0.109)	(0.056)	(0.111)
Economies of scale industries			0.020	0.130	0.048	0.118
			(0.033)	(0.108)	(0.053)	(0.111)
Specialized industries			-0.055+	0.035	-0.035	0.101
			(0.034)	(0.111)	(0.054)	(0.114)
Constant			3.405***	2.858***	3.459***	3.043***
			(0.031)	(0.147)	(0.077)	(0.139)
N	3531	3531	14759	4550	6301	3531
R2			0.095	0.212	0.059	0.210

+ p = 0.1, * p < 0.10, ** p < 0.05; *** p < 0.01.

Note: Model 1 is estimated through linear probability model (OLS) with robust standard errors, Models 2 and 3 are estimated through probit and OLS with robust standard errors, respectively; while models 4-6 are estimated using 2SPLS, which have corrected standard errors (in parentheses).

The independent variable *international experience* appears to be significant and with the expected sign in models 1 and 2, but then loses its significance level in models 4 and 6. That is, according to the results, having executive experience abroad has a significant impact on corporate entrepreneurship. However, when assessing simultaneously its impact on corporate entrepreneurship affecting firm growth, it becomes a non-significant variable. Overall, hypothesis 1a is rejected.

Subsequently, hypothesis 1b measures the effect of having *foreign executives* on corporate entrepreneurship. In this case, the variable exhibits significant behaviour with the expected sign in all the models presented. In addition, it is one of the variables with higher impact. Overall, hypothesis 1b cannot be rejected. Therefore, having executives from different nationalities increases the likelihood of developing corporate entrepreneurship activities, in turn influencing firm growth. Similarly, hypothesis 1c cannot be rejected as it also has a significant and positive sign in all the models presented. Therefore, the higher the percentage of employees with *fixed-term contracts*, the more likely it is that corporate entrepreneurship activities will be developed.

Labour regulations have a significant effect with the expected sign in models 1 and 2; hence, the stronger labour market regulations, the less likely it is that firms will engage in corporate entrepreneurship activities (and vice versa). In addition, having appropriate labour market regulations also has an indirect effect on firm growth as this variable also remains significant in models 5 and 6. Overall, hypothesis 2a cannot be rejected. As shown in models 1 and 2, the variable *external financing* has a significant effect on corporate entrepreneurship; however, when displaying the results for the simultaneous model with the entire set of variables (model 6), it becomes a non-significant variable. Therefore, hypothesis 2b is rejected. Hypothesis 2c addresses the role of *training* in corporate entrepreneurship. In this case, the fact that the employee receives formal training outside the firm has a positive impact on corporate entrepreneurship (models 1 and 2). Similarly, *training* also affects firm growth indirectly through its significant effect in models 5 and 6. Consequently, hypothesis 2c cannot be rejected.

Finally, the results for hypothesis 3 show that corporate entrepreneurship has a positive effect on firm growth. That is, developing entrepreneurial initiatives in established companies increases the number of employees of these companies. This result is in line with the literature, which has shown how engagement in corporate entrepreneurial

activities has a positive effect on firm growth and profitability (Antoncic and Hisrich, 2001). Overall, hypothesis 3 cannot be rejected.

Robustness check

We perform several robustness checks to establish whether our previously reported results still hold in the face of a different set of variables as well as different econometric techniques. In particular, as noted earlier, we conduct the same model employing three identification strategies. All these methodologies allow us to determine that the magnitudes and relationships remain stable across models with little differences in either estimations or standard errors. The same occurs when the simultaneous models are assessed including a different set of variables. Comparing these models to those with all variables, the results hold.

In terms of the different methods used, models 1, 2 and 6 in Table 3 correspond to the results derived from running the simple linear probability model through OLS regressions, the discrete choice model (probit) and the simultaneous equation model also using probit (Eq. 1) and OLS (Eq. 2). Even though OLS regressions are inappropriate in our setting, the estimated coefficients associated with *international experience*, *foreign executives*, *fixed-term contracts*, *labour regulations*, *external financing* and *training* are still economically and statistically significant. The same is true for the binomial regression models 4 and 5. In addition, for models 3–6 in equation (2), the variable *corporate manufacturing entrepreneurship via R&D* is tighter and the estimated coefficients seem very stable across these regressions. It is reassuring that these coefficient estimates are in the middle range of the corresponding estimated coefficients presented in models 1–3.

Regarding the different set of variables, an important observation from Table 3 is that both the company and environmental variables analysed seem to have high predictive power regarding corporate entrepreneurship and subsequently firm growth, although the simultaneous treatment (model 6) does not present statistically significant evidence for variables such as *international experience* and *external financing*, probably due to the lack of the entire sample in the model leading to the loss of some degree of significance.

The findings from the checks described above show that our results are stable across various changes applied to the original specification. Therefore, we are confident that

the company and environmental variables we studied had a robust positive effect on corporate entrepreneurship and this variable on firm growth.

9.5. Discussion

The role of experience in entrepreneurial initiatives has generated some debate among scholars as there is no unanimous agreement on its effect (Westhead and Wright, 1998). Some authors have studied experience as a two-dimensional concept (Cooper et al., 1995); from this perspective, there are two different types of experience: experience as an entrepreneur and experience related to work and management. In the case of the variable *international experience*, we are measuring only the latter type of experience; however, some authors have posited that the impact of self-employment tends to be greater than the impact of managerial experience (Muñoz-Bullón and Cueto, 2010). This could explain its unexpected non-significant behaviour when assessing its effect on corporate entrepreneurship, at the same time influencing firm growth. The significant result of the variable *foreign executives* is in line with the literature that describes how foreign managers tend to have different backgrounds, potentially enhancing the company's ability to adapt to changes or to identify new business opportunities (Knight and Liesch, 2002). In addition, aside from the direct effect on corporate entrepreneurship, the results show that the presence of foreign executives has an indirect effect on firm growth. This is also in line with current literature, as having managers with different profiles and origins has been viewed as contributing to the acquisition of new knowledge for the company (Andersen and Bettis, 2015; Zahra and Hayton, 2008).

Finally, the results for the variable *fixed-term* contract potentially show that to develop entrepreneurial activities in companies, employees need to have full support from their managers and need to be confident that the potential negative consequences of failure will be reduced. Fear of failure has been considered an important component of the risk attached to starting new businesses (particularly among less-developed regions and countries) (Arenius and Minniti, 2005). Overall, having a fixed-term contract could provide employees with more confidence and with a reduced perception of the negative consequences of failure.

From the perspective of external environmental factors, the previous literature has already highlighted how regulations and certain procedural requirements can have a

negative effect on entrepreneurial activity (Djankov et al., 2002; Johnson et al., 2015). In the case of the labour market, it is generally agreed that the fewer the restrictions, the more likely it is that companies will be able to attract the appropriate human capital resources for their new projects. Therefore, the significant effect of the variable *labour regulations* might have direct implications for policy makers supposed to foster entrepreneurship and innovation. According to our results, having more simplified labour market regulations could have a direct impact on the development of corporate entrepreneurship activities. Similarly, the simultaneous model presented shows that it could have an indirect impact on the growth of firms.

In the case of *external financing*, the literature has extensively highlighted how a lack of capital might be one of the main impediments entrepreneurs have to face and suggests that this might be a reason for nascent entrepreneurs abandoning the start-up process (Blanchflower and Oswald, 1998). Similarly, research evidence shows that policies which increase access to bank credit, credit with low interest rates and credit guarantee schemes lead to the creation of investment in companies and contribute significantly to the promotion of new businesses (Van Gelderen et al., 2006). However, most of these studies focus on individual entrepreneurship and not on the entrepreneurship that occurs within established companies. Therefore, the results of our study could provide evidence that the role of external financing is different in the case of corporate entrepreneurship as companies might be able to counter these types of investment with their own resources.

Finally, regarding the role of *training,* the finding is in line with the literature positing that knowledge gives individuals greater cognitive capacity, making them more productive and efficient (Becker, 1964). Formal education is considered to be one component of human capital that may assist in the accumulation of explicit knowledge and may provide skills useful to entrepreneurs (Davidsson and Honig, 2003); hence, individuals with a greater quality of human capital and education will be better able to identify entrepreneurial opportunities (Gonzalez and Solis, 2011).

The results for hypothesis 3 agree with the literature that shows that engaging in corporate entrepreneurship has a positive effect on firm performance (Zahra, 1991) by increasing the company's proactiveness and risk taking and by promoting product, process and service innovations (e.g. Lumpkin and Dess, 1996; Walter et al., 2006). Furthermore, this positive effect on firm performance has been tested using different

measures, such as return on investment (Zahra, 1991), return on sales (Zahra, 1993), return on equity (Zahra and Hayton, 2008), market share gain (Bojica and Fuentes, 2012) and cash flow (Miller et al., 1988). Our results contribute to this literature by showing that corporate entrepreneurship is also positively related to firm growth in terms of the number of employees.

In particular, the results shed light on some of the consequences of corporate entrepreneurship in a European context. Most research is US-based; for instance, in one of the most recent papers to study the effect of corporate entrepreneurship on firm performance, Park and Steensma (2012) use the VentureXpert database for US companies to explore the conditions under which corporate venture capital is beneficial to new ventures. There are very few studies focusing on European countries and, in addition, these typically focus on a single country. For instance, Bojica and Fuentes (2012) use a database for Spanish SMEs to study how knowledge acquisition from alliances affects the corporate entrepreneurship–performance relationship. Similarly, Antoncic and Hisrich (2001) use a small sample of US and Slovenian companies to show the positive effect that intrapreneurial activities have on firm performance and growth. Ultimately, following the work of Zahra and Hayton (2008), our results may contribute to providing an enhanced understanding of the effect of entrepreneurial activities on firm performance by using a European multi-country database. Finally, the results also contribute to the existing literature by providing a complete model of the simultaneous effect that obtains between a set of variables affecting corporate entrepreneurship, in turn exerting a positive effect on firm growth.

The results also contribute to the literature that examines the antecedents of corporate entrepreneurship (Zahra, 1991). Our results show that both internal and environmental factors play a relevant role in corporate entrepreneurship. Previous research has studied the importance of company-related factors in entrepreneurial initiatives concerning established companies (Covin and Slevin, 1991; Hornsby et al., 2002); however, the role of environmental factors is not that clear or complete. Despite this, other studies, such as those of Antoncic and Hisrich (2001), Gomez-Haro et al. (2011) and Zahra (1991), inter alia, show the influence that external factors may have on an organization's entrepreneurial activities. Our results may contribute to this literature by showing the significant effect of some regulations (formal factors) on corporate entrepreneurship (*labour regulations, external financing, training*).

9.6. Conclusion

Using data from the EU-EFIGE/Bruegel-UniCredit dataset for seven different European countries, this chapter studies simultaneously the conditioning factors for corporate entrepreneurship, differentiating between two levels of analysis (company and environmental) and the subsequent effect on firm growth. The results show the significant effect of four different antecedents (*foreign executives, fixed-term contracts, labour regulations* and *training*). Similarly, evidence of the positive effect of corporate entrepreneurship on firm growth is provided. Unexpectedly, the variables *international experience* and *external financing* appear to be non-significant.

The article has both theoretical and practical implications. From a theoretical perspective, on the one hand, the study confirms the positive relationship between corporate entrepreneurship and firm growth. In addition, this is done using European data, whereas most research hitherto has focused on US data. Taking into account that the relevance of corporate entrepreneurship stems mainly from the positive relationship with firm performance (Keil et al., 2008), it seems necessary to have a complete understanding of this issue. Moreover, the research provides a complete model of the corporate entrepreneurship phenomenon as it studies simultaneously both its antecedents and its consequences for firm growth. On the other hand, the study contributes to the discussion on the role of internal and environmental factors in corporate entrepreneurship. In particular, we provide evidence of the importance that an appropriate regulatory framework might have for corporate entrepreneurship. From a practical perspective, identifying which factors affect the development of corporate entrepreneurship activities is relevant to company managers, especially those managers who are interested in implementing new innovative projects in their companies. Similarly, the results could contribute to providing relevant information for policy makers in the areas of entrepreneurship and innovation.

Finally, this research has some limitations and suggests some future research lines. First, more accurate proxies for both our dependent and our independent variables could be used. Some authors have viewed corporate entrepreneurship as a very wide phenomenon (Antoncic 2007) and consequently we use an ample definition. However, future studies could use a narrower approach to the corporate entrepreneurship concept. Similarly, emphasis could be placed on the different dimensions of corporate entrepreneurship (e.g. new business venturing, innovativeness, self-renewal,

proactiveness and risk taking). In addition, following previous research, we differentiate our independent variables in terms of internal and environmental conditioning factors. Future studies could use other proxies so that the differences between both types of variables are clearer and less ambiguous. Second, the non-significant relationships (in the simultaneous equations models) of the variables international experience and external financing require a further understanding of the reasons that may lead to such findings.

Third, we use data for the year 2008 only and we do not take into account the effect of time. Some European countries have been affected by the economic crisis, which may influence the development of entrepreneurial projects in companies. Fourth, some authors have highlighted that the relationship between the institutional environment and entrepreneurial activity may be affected by endogeneity (Bruton et al., 2010). For instance, entrepreneurial societies may influence the social prestige of this activity and this in turn may lead to societies being more entrepreneurial. Fifth, the significant role of some of the control variables (gender, age and type of industry, for instance) suggests that these issues could be developed further in future studies. Sixth, the theoretical model studied could be further developed by the introduction of some mediating variables and analyse what are the effects that the variables could cause on these relationships.

CHAPTER 10
CONCLUSIONS

10.1. Main Conclusions

Corporate entrepreneurship is a critical process for established organizations, particularly for identifying, evaluating and capturing opportunities, assessing future strategic steps and establishing sustainable competitive advantage (Bloodgood et al., 2015). Therefore, the global economy has led to the realization that corporate entrepreneurship may be the most effective method of achieving high levels of organizational performance (Morris et al., 2011) and researchers continue to examine corporate entrepreneurship as an important potential growth strategy (Kuratko and Audretsch, 2013). Overall, corporate entrepreneurship refers to the pursuit, by established organizations, of entrepreneurial actions and initiatives that transform the organization through strategic renewal processes or extend the organization's scope of operations into new domains, including new product–market segments or technological arenas (Guth and Ginsberg, 1990).

This has led a significant number of researchers to study the antecedents of corporate entrepreneurship (Guth and Ginsberg, 1990; Antoncic and Hisrich, 2001). However, the previous literature has not studied in depth some issues related to the role of these conditioning factors. Similarly, the literature on the consequences of developing corporate entrepreneurship activities appears to be incomplete. Therefore, the main objective of this research has been to examine the antecedents and consequences of corporate entrepreneurship. In particular, some of the foci of this thesis have been as follows: the study of internal (individual and company-related) and environmental factors related to corporate entrepreneurship (including culture-related factors and legal factors); the use of specific theoretical frameworks; the application of certain research techniques (such as a multilevel approach); focusing on corporate entrepreneurship in specific contexts, such as an economic downturn, the role of gender and the Spanish case; the use of international multi-country databases and studying the consequences of corporate entrepreneurship. Overall, drawing on Human Capital Theory (HCT), Resource-Based Theory (RBT) and Institutional Economics (IE), the results of this study show the significant effect of both internal and environmental antecedents of corporate entrepreneurship, as well as the positive effect such entrepreneurship has on firm growth.

The hypotheses have been tested both in a global setting and in a regional context (Spain). In this respect, the study has primarily used Global Entrepreneurship Monitor

(GEM) data (both the adult population surveys and the national expert surveys), together with other sources of information, such as the International Monetary Fund (IMF), the Doing Business project (from the World Bank) and the EU-EFIGE/Bruegel-UniCredit dataset. In addition, several research techniques have been used throughout the thesis: systematic literature review, logistic regression, generalized linear multilevel logistic regression and a two-stage probit. Finally, Table 10.1 summarizes the main findings of the study.

Table 10.1. Summary of the main results of the research

	Chapter	Theoretical framework	Independent variables	Methodology	Main results
Phase 1: Literature review	2	-	-	Literature review of 186 articles published in the top management journals in the business and entrepreneurship fields	The results show the current state of the art in the corporate entrepreneurship literature. In addition, it highlights three main lines of future investigation: CE dimensions, CE antecedents and CE consequences
Phase 2: Conditioning factors	3	RBT	Knowledge Entrepreneurial Experience Entrepreneurial intention Entrepreneurial competences Social Capital Opportunity recognition	Logistic regression. 2008 GEM data for 39 countries (36325 observations)	The results show that all the (internal) variables studied have a positive and significant impact on corporate entrepreneurship
	4	IE	Entrepreneurial culture Media impact Procedures Credit	Logistic regression. 2004-2008 GEM data for 62 countries (718758 observations)	The results highlight the impact of the (environmental) factors on corporate entrepreneurship. Besides, informal factors (entrepreneurial culture and media impact) also have an indirect effect as they behave as moderators
	5	HCT, IE	Entrepreneurial Experience Opportunity recognition Entrepreneurial culture Government policy	Multilevel logistic regression. 2003-2011 GEM data for 67 countries (486219 observations)	The results contribute to the discussion on the role of internal and environmental conditioning factors. Both type of factors are relevant, besides the role of culture is reinforced as it has also an indirect (moderating) effect
Phase 3: Specificities	6	HCT, IE	Entrepreneurial Experience Opportunity recognition Entrepreneurial culture Government policy	Multilevel logistic regression. 2003-2011 GEM data for 14 countries (143653 observations)	The results show the effect of internal and environmental conditioning factors. In addition, there are few differences between the periods before and during the crisis
	7	HCT, IE	Entrepreneurial Experience Social Capital Entrepreneurial Culture Ease of Business	Multilevel logistic regression. 2003-2011 GEM data for 14 countries (155486 observations)	The results show the effect of internal and environmental conditioning factors. In addition, there are some small gender differences
	8	HCT, IE	Opportunity recognition Social Capital Fear of failure Education	Logistic regression. 2011 GEM data for one country (Spain) (5319 observations)	The resuls show the effect of internal and environmental conditioning factors. In addition, there are significant differences by region. Furthermore, the role of fear of failure is reinforced as it also plays an indirect (moderating) effect
Phase 4: Consequences	9	RBT, IE	International Experience Foreign Executives Fixed term contract Labor regulations External financing Training Firm growth	Two stage probit least squares estimation. 2008 EU-EFIGE/Bruegel-UniCredit data for 7 European countries (14759 observations)	The results show how a set of 6 different conditioning factors influence corporate entrepreneurship. In addition, it is confirmed that corporate entrepreneurship has a positive effect on firm growth

Chapter 2 has a double objective: on the one hand, it aims to explore the content and evolution of the corporate entrepreneurship literature; on the other hand, it develops and suggests an agenda for future research. To achieve this objective, a review has been undertaken of 186 papers published in the top journals of the management and entrepreneurship fields. The results show the current state of the art in the corporate entrepreneurship field; through a citation and co-citation analysis, this chapter provides a map that explains the intellectual structure of the corporate entrepreneurship phenomenon. In addition, the study identifies three potential areas in which further research could be developed: corporate entrepreneurship dimensions, antecedents and consequences. Some of these ideas for further research are developed in the remaining sections of the thesis.

In Chapter 3, the study focuses on the internal factors (company-related factors) that may be antecedents of corporate entrepreneurship. Specifically, the main purpose of the chapter is to identify the resources and capabilities that affect the probability of engaging in corporate entrepreneurship activities. RBT is used explicitly as conceptual framework. Through a logistic regression analysis and using GEM data for the year 2008 in 39 different countries, the study demonstrates how some companies' resources and capabilities affect the probability of becoming a corporate entrepreneur. Specifically, the significant influence of the following factors is tested: previous knowledge, previous entrepreneurial experience, having the intention to start up an independent business, own assessment of one's entrepreneurial competences, being in touch with other entrepreneurs and the ability to identify business opportunities in the short term.

Having studied the role of internal conditioning factors, in Chapter 4 the focus is on the environmental factors that may be antecedents of corporate entrepreneurial activity. In this case, IE is used as a conceptual framework. The study uses a logistic regression technique and GEM data for the years 2004–2008, combined with information from the Doing Business project and from the IMF. The results highlight the impact of environmental factors on corporate entrepreneurship. Variables such as living in an entrepreneurial culture and media exposure (informal factors), the number of procedures necessary to create a new business and access to finance (formal factors), appear to be relevant for corporate entrepreneurship. In addition, informal factors also have an

indirect (moderating) effect as they behave as moderators between formal factors and corporate entrepreneurship.

Once internal and environmental antecedents have been studied separately, in Chapter 5 the objective is to study these conditioning factors together, differentiating between the individual and environmental levels of analysis. Therefore, here two theoretical frameworks are used: HCT (for internal factors) and IE (for environmental factors). In addition, in this case, a generalized linear multilevel logistic regression is applied to a multi-country GEM database for the years 2003–2011. These data are complemented with data from the IMF. The results show that having previous entrepreneurial experience, being able to identify business opportunities (individual factors), being involved in an entrepreneurial culture and living in a country where policy makers support the creation of new firms (environmental factors) have a direct impact on corporate entrepreneurship. Moreover, the moderating role of environmental factors (culture in this case) is confirmed also in this section.

Having studied the factors conditioning corporate entrepreneurship at different levels of analysis (in Chapters 3, 4 and 5), Chapter 6 focuses on the analysis of corporate entrepreneurship in a specific context. In particular, the aim is to examine the effect of the antecedents of corporate entrepreneurship at different levels (individual and environmental), considering two different periods of time (before the crisis and during the crisis). The research applies a generalized linear multilevel logistic regression to GEM data for the period 2003–2011. The results show how two individual-level factors (previous entrepreneurial experience and the ability to recognize business opportunities) and two national-level factors (living in an entrepreneurial culture and government policies) affect corporate entrepreneurship. Furthermore, these factors have a similar impact before and during the crisis.

Chapter 7 continues with the analysis of corporate entrepreneurship specificities; in this case, the objective is to examine the effect of internal and environmental determinants on corporate entrepreneurship, placing an emphasis on the role of gender. The research applies a generalized linear multilevel logistic regression technique and GEM data for the period 2003–2011 (as in Chapters 5 and 6). The results show the direct effect of four different conditioning factors on corporate entrepreneurship (entrepreneurial experience, social capital, entrepreneurial culture and ease of business). In addition, it is also shown that there are some small differences depending on the individuals' gender.

Furthermore, the moderating role of environmental factors is confirmed again in this chapter.

In Chapter 8, the main objective is to examine the influence of both internal and external (environmental) conditioning factors on corporate entrepreneurship in the Spanish context. In this case, GEM data for the year 2011 in Spain (and its different regions) are used. The results show both the direct and indirect effects a set of conditioning factors (opportunity recognition, social capital, fear of failure and education) can have for corporate entrepreneurship. In addition, the role of the fear of failure is reinforced as it has both a direct and indirect (moderating) effect. This effect is particularly relevant in lower-income regions.

Finally, Chapter 9 has a dual objective. First, the research aims to study the conditioning factors for corporate entrepreneurship differentiating between the company and the environmental levels. Subsequently, the aim is to study the effect of corporate entrepreneurship on firm growth. The research applies a two-stage probit least squares estimation with data from the EU-EFIGE/Bruegel-UniCredit dataset for the year 2008. The results show how a set of six different conditioning factors influence corporate entrepreneurship (international experience, having foreign executives in the company, having fixed-term contracts, labour market regulations, having access to external financing and participation in formal training programmes). In addition, it is confirmed that developing entrepreneurial activities within established companies has a positive effect on firm growth.

10.2. Implications

As highlighted in the first chapter, this thesis might have both theoretical (academic) and practical contributions. From an academic point of view, this research may contribute to the generation of knowledge in an area in which there is still room for deeper understanding (the conditioning factors and consequences of corporate entrepreneurship), as some aspects remain understudied.

Some relevant theoretical contributions stem from the application of three different theoretical frameworks in the analysis of corporate entrepreneurship. To the best of my knowledge, there are very few quantitative studies in this field that make explicit use of HCT, RBT and IE and therefore this research might contribute to the advancement of

these theories. In addition, in some stages during the research (Chapters 5, 6, 7, 8 and 9) these frameworks are combined together, which is also not common in the literature. Overall, this might have different implications. For instance, empirically measuring human capital, resource-based and institutional factors has generated some discussion among scholars (Dutta et al., 2005). This thesis might contribute to this discussion by providing examples of the operationalization of the variables.

Some of the research techniques used in this study also contribute to the existing literature. For instance, the systematic literature review applied in Chapter 2 develops a citation and co-citation analysis. This type of analysis may contribute to the development of a research field by summarizing the major contributions in the literature (Bland et al., 1995); however, there are very few articles in the corporate entrepreneurship area developing this kind of study. Related to this, despite the fact that several theoretical models (Guth and Ginsberg, 1990; Ireland et al., 2003, 2009) have conceptualized corporate entrepreneurship as a phenomenon affected by antecedents at different levels of analysis, there are a very few quantitative studies using statistical multilevel approaches. This research contributes by applying a multilevel regression in Chapters 5, 6 and 7. Similarly, Chapter 9 uses a simultaneous equation model that makes it possible to measure together both the antecedents and the consequences of corporate entrepreneurship activity; however, this technique has rarely been used by previous literature in the field.

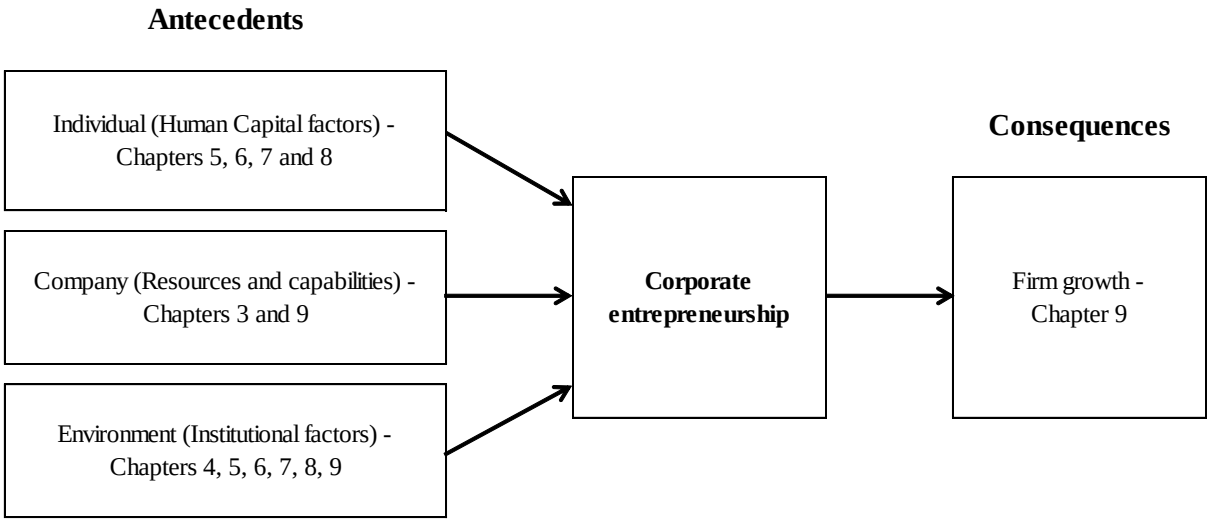
The results might also have implications for discussions of the role of internal and environmental factors in corporate entrepreneurship. In particular, the role of the environment has not always been clear. Some authors, such Covin and Slevin (1991) and Hornsby et al. (2002), suggest that internal organizational factors play a more relevant role in encouraging entrepreneurship within companies than environmental factors. The results of this research contribute to the discussion by showing that the external environment also has an impact on corporate entrepreneurship. Furthermore, the results show that the role of informal institutions (i.e. culture-related variables) may be even more relevant than implied in other studies as they have a direct and indirect (moderating) effect (Chapters 4, 5, 6, 7 and 8). Therefore, the results of this thesis add to the literature that seeks to examine the moderating effects between institutional factors (De Clercq et al., 2013). Informal institutions (such as culture or fear of failure) may reinforce certain personal characteristics and penalize others; hence, some

countries and regions are more likely to develop corporate entrepreneurship activities than others (Mueller and Thomas, 2000). Formal and informal institutions can legitimize (or delegitimize) business activity as a socially valued or attractive activity and promote (or constrain) the entrepreneurial spirit (Aidis et al., 2008). Institutions are composed of cultural and social relations and human, social and cultural capital are often antecedents to acquiring financial capital and other resources needed to start a business.

In addition, when studying environmental factors through IE, heterogeneity appears as a necessary condition. Therefore, using multi-country databases is a crucial factor in this type of research. However, some authors have highlighted that when studying entrepreneurship using IE, the use of global datasets is not common (Bruton et al., 2010). Overall, the results of this thesis contribute by combining information from different databases which contain information on a global basis.

Related to this, the study confirms the positive relationship between corporate entrepreneurship and firm growth (Chapter 9). As the theoretical and practical relevance of studying the antecedents of the corporate entrepreneurship phenomenon stems mainly from this positive relationship with firm performance, this result is a significant contribution. In this respect, to the best of my knowledge, there is little research in the European context focusing on this matter; similarly, there are few studies using a multi-country database (for an exception, see Zahra and Hayton, 2008). Overall, based on previous research, this thesis provides a general model for examining and understanding the antecedents and consequences of the corporate entrepreneurship phenomenon. Figure 10.1 shows the structure of this model.

Figure 10.1. Theoretical model for the antecedents and consequences of corporate entrepreneurship



Ultimately, this thesis also provides theoretical contributions in different specific areas (Chapters 6, 7 and 8). The results may have implications for the effects of an economic downturn on the antecedents of corporate entrepreneurship. Although the effect of the economic cycle has been considered relevant in the individual entrepreneurship literature (Klapper and Love, 2011), it has not been studied in the corporate entrepreneurship field. The results might contribute to shedding light in this specific context by showing that an economic crisis barely influences the antecedents of corporate entrepreneurship. Similarly, the role of gender has rarely been taken into account in the literature, but here the results provide evidence that there might be some gender differences when developing entrepreneurial activities in established companies. Ultimately, the results provide evidence for the Spanish case and contribute to the literature by outlining significant differences between the regions studied.

10.3. Recommendations

From a practical point of view, the results show how a set of different conditioning factors at different levels of analysis (individual, company and the environment) affect the development of corporate entrepreneurship activities. These factors contribute to explaining the significant differences between countries in terms of the entrepreneurial projects developed by established companies (Bosma et al., 2013).

Thus, this study has implications for managers who are interested in fostering and promoting corporate entrepreneurship in their companies. Specifically, managers (or entrepreneurial employees) have particular influence on those variables at the individual and company levels of analysis. In this respect, the differing effects of the variables studied in the research on corporate entrepreneurship activity contribute to a better understanding of the corporate entrepreneurship phenomenon. For instance, having previous experience in entrepreneurship emerges as one of the most relevant factors for corporate entrepreneurship activity several times in the thesis (Chapters 3, 5, 6 and 7). This suggests that when companies want to develop entrepreneurial and innovative actions and strategies, they should have (or they should hire) employees with this type of profile. Employees with entrepreneurial experience tend to have developed skills and competencies as well as a network of contacts. In addition, they are considered to be more likely to perceive business opportunities and to have the confidence to start businesses in sectors in which they are not experts (Westhead and Wright, 1998). Some of these personal characteristics are highlighted within the thesis as crucial for the development of entrepreneurial projects.

Similarly, the results could also be helpful to government policies that are meant to promote and foster corporate entrepreneurship; in this case they could influence especially those antecedents at the environmental level of analysis. More specifically, the findings could be useful to companies operating in different countries or in different institutional environments as both informal and formal institutional factors have an effect on corporate entrepreneurship. From this perspective, the literature has highlighted that modifying informal institutions (such as culture or fear of failure) through policy practice takes a long period of time (Williamson, 2000), especially when compared to modifying formal institutions (such as regulations). Therefore, we should take into account that the results of this thesis show that informal institutions play a very significant role in the development of corporate entrepreneurial activities. Thus, if policy makers want to focus on this issue, they should have a continued and long-term commitment towards this issue. Following this reasoning, promoting entrepreneurial role models (entrepreneurship success stories) may emphasize entrepreneurship as a cultural norm (Autio et al., 2013). Here, the role of media has also been highlighted as it can influence individuals' perceptions and therefore it can also influence the processes that enable new businesses to emerge (Lounsbury and Glynn, 2001). Policy makers and

company managers could also consider the possibility of providing employees with entrepreneurship courses as several authors have highlighted that taking this type of training can reduce the perceived risks associated with entrepreneurial activities (Coduras et al., 2008; Graevenitz et al., 2010).

In addition, the results also contribute to the development of regulations that are meant to influence the creation of entrepreneurial initiatives. It is shown that when public policy reduces the cost and burdens of creating new companies, opportunities could be exploited to a greater extent via individual entrepreneurship than via corporate entrepreneurship (and vice versa). Therefore, policy makers in the entrepreneurship area should bear in mind this wide perspective of the consequences of their actions for entrepreneurial activities.

Finally, in the third phase of the research (corporate entrepreneurship specificities, Chapters 6, 7 and 8), implications for practice in some specific contexts are provided. The results show that the policies aimed at fostering corporate entrepreneurship should not only differ by country, but in some cases also by region (Chapter 8). In less-developed regions, fear of failure plays a more significant role and so this issue should be addressed to foster corporate entrepreneurship in low-income regions. Also, understanding which factors influence corporate entrepreneurship in different periods of time and in different economic contexts (e.g. crisis context) could be useful to public institutions that are meant to foster entrepreneurship. Ultimately, the results also show that to promote entrepreneurial initiatives in established companies, gender differences need to be taken into account.

10.4. Limitations and future research lines

This research has several theoretical and empirical limitations and suggests some future research lines. The first theoretical limitation has to do with the fact that there is no unanimous and widely accepted definition of the corporate entrepreneurship phenomenon. Some authors consider corporate entrepreneurship to be a very wide concept, but most studies (including this one) measure the phenomenon partially (Zahra, 1991; Alpkan et al., 2010). The dependent variables used in this thesis as proxies for corporate entrepreneurship activity, were also used by previous studies; however, some of these variables were not originally conceived to measure corporate entrepreneurship

specifically (Reynolds et al., 2005). Also, further studies could focus on the specific components of corporate entrepreneurship (e.g. new business venturing, innovativeness, self-renewal, proactiveness and risk taking). Indeed, studies analysing and comparing the different types of corporate entrepreneurship are scarce in the literature. In addition, the results of studies focusing on the characteristics and consequences of different types of entrepreneurship are not unanimous and therefore further research might be necessary. More specifically, future studies could examine in greater depth the similarities and differences between the conditioning factors of individual entrepreneurship and corporate entrepreneurship. Also, as noted in Chapter 2, the net effect for both types of ventures is not clear (Kacperczyk, 2012). Hence, future research could study and compare the effect of exploiting opportunities via individual entrepreneurship or corporate entrepreneurship in terms of economic growth or job creation. Similarly, although corporate entrepreneurship has been considered relevant for companies of all sizes, there are few studies comparing the characteristics and effects of projects depending on their size.

Another theoretical limitation of this thesis is related to the decision concerning what should be considered an internal or an environmental factor. Similarly, this limitation can be extended to what may be conceptualized as human capital factors, resources and capabilities and institutional factors. In this instance, the main purpose of the research has been to use variables (proxies) that are coherent with the current literature. From this perspective, in most cases the study has used variables employed in other relevant previous literature. However, the complications of measuring intangible factors have already been examined by previous studies (Molloy et al., 2011). Sometimes in social sciences, the boundaries between different constructs are not completely clear. In this thesis, the individual, company-related and environmental-level variables measure different information, but in further studies better proxies could be used to make the differences more evident and unambiguous. In relation to this, factor analysis could be developed before running the regressions.

Several times in this research the importance of environmental informal institutions (e.g. culture or fear of failure) is highlighted as having both a direct and an indirect (moderating) effect on corporate entrepreneurship. However, a limitation in this regard should be stressed. Previous literature has explained that the relationships between the institutional environment and entrepreneurial activity may be affected by endogeneity

(Bruton et al., 2010). Two-way causality could mean, for instance, that a higher level of corporate entrepreneurial activity has a positive effect on attitudes towards entrepreneurship and role models in society, which in turn could influence the overall informal institutional setting.

Data availability represents another constraint of the study as some of the databases used refer to periods of time in which many countries were affected by the economic crisis, which in some cases could affect the development of entrepreneurial initiatives in established companies. Indeed, in Chapter 6, the study focuses on how the antecedents of corporate entrepreneurship are affected by the economic context and the results show that being in an economic crisis affects (slightly) the behaviour of these conditioning factors.

Another potentially relevant research path could be to place emphasis on the conditioning factors for corporate entrepreneurship comparing successful and unsuccessful initiatives. Such research could derive some significant implications both for theory and practice. Similarly, research could also focus on other unstudied challenges when creating a new company within an established one. That is, new corporate businesses often need to blend with other well-established operating and financial systems, processes and cultures, which may generate conflicts among both organizations (the corporate start-up and the mother company).

Finally, future research could also use other research techniques to study corporate entrepreneurship. Specifically, the use of structural equation modelling seems particularly suitable as it is coherent with the literature and therefore could provide further insights in this area. Indeed, some previous studies have already used this methodological approach (Antoncic and Hisrich, 2001).

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APPENDIX

Appendix. List of articles studied in chapter 2

Author/s (year)	Title	Journal	Theoretical framework	Objective	Research type	Methodology	Research technique	Cites	Research phase
Westfall (1969)	Stimulating Corporate Entrepreneurship in the US industry	Academy of Management Journal	-	Understand how to stimulate corporate entrepreneurship	Empirical	Focus: companies top executives	ANOVA	0	2
Rind (1981)	The Role of Venture Capital in Corporate Development	Strategic Management Journal	-	Understanding the problems and potentialities of different approaches to venture capital	Theoretical	-	-	36	1
Burgelman (1983)	A process model of internal corporate venturing in the diversified major firm	Administrative Science Quarterly	-	To present a model on internal corporate venturing	Empirical	Case study of a diversified company	-	649	2
Nielsen, Peters, Hisrich (1985)	Intrapreneurship Strategy for internal markets-corporate, non-profit and government institution cases	Strategic Management Journal	-	Explains the conceptual foundations for the intrapreneurship strategy	Empirical	3 case studies	-	17	3
Block, Ornati (1987)	Compensating corporate venture managers	Journal of Business Venturing	-	To study the incentive practices of venture managers	Empirical	CEOs of Fortune 500 companies (42 surveys)	Descriptive statistics	50	2

DeSarbo, MacMillan, Day (1987)	Criteria for corporate venturing: Importance assigned by managers	Journal of Business Venturing	-	To study the way in which managers go about evaluating a venture and what importance they attach to the various criteria they use to asess them	Empirical	Focus: company managers	Probit	12	2
MacMillan, Day (1987)	Corporate ventures into industrial markets: Dynamics of agressive entry	Journal of Business Venturing	-	To study the relationship between entry strategy and performance of corporate start ups	Empirical	PIMS SPI start-up data base (81 companies)	ANOVA and correlation analysis	72	4
Miller, Wilson, Adams (1988)	Financial performance patterns of new corporate ventures: An alternative to traditional measures	Journal of Business Venturing	-	To describe the limitations of the variables that measure performance	Empirical	PIMS database (124 corporate new ventures)	Lineal regression	18	4
Shortell, Zajac (1988)	Internal corporate joint ventures: Development processes and performance outcomes	Strategic Management Journal	-	To study the internal corporate joint ventures	Empirical (quali+quanti)	Interviews + company quantitative data	Regression	23	2, 4
Siegel, Siegel, MacMillan (1988)	Corporate venture capitalists: Autonomy, obstacles, and performance	Journal of Business Venturing	-	Several objectives (related to the objectives of corporate venture capitalists)	Empirical (interview+survey)	Survey to 52 corporate venture capitalists	Cluster analysis + ANOVA	77	2,4

Jennings, Lumpkin (1989)	Functioning modeling corporate entrepreneurship: An empirical integrative analysis	Journal of Management	-	To develop a definition for corporate entrepreneurship	Empirical	56 companies from Texas S&L (survey to CEO)	MANOCOVA (covariance analysis)	29	-
Miller, Gartner, Wilson (1989)	Entry order, market share, and competitive advantage: A study of their relationships in new corporate ventures	Journal of Business Venturing	-	To study if entry order determines a group of competitive factors	Empirical	PIMS database (119 companies)	Regression + Ancova + Manova	30	2
Sykes, Block (1989)	Corporate venturing obstacles: Sources and solutions	Journal of Business Venturing	-	To identify the origin and principles of 10 management practices	Theoretical	-	-	54	2
Guth, Ginsberg (1990)	Guest editors introduction: Corporate entrepreneurship	Strategic Management Journal	-	Introduction to special issue	Theoretical	-	-	221	-
Schendel (1990)	Introduction to the special issue on corporate entrepreneurship	Strategic Management Journal	-	Introduction to special issue	Theoretical	-	-	18	-

Sykes (1990)	Corporate venture capital: Strategies for success	Journal of Business Venturing	-	To study how 8 factors affect venture capital programs	Empirical	31 phone surveys	ANOVA	28	2
Miller, Spann, Lerner (1991)	Competitive advantages in new corporate ventures: the impact of resource sharing and reporting level	Journal of Business Venturing	-	To study if having a direct relationship with top management has a positive effect on corporate entrepreneurship	Empirical	PIMS project (94 observations)	Cluster	9	2
Tsai, MacMillan, Low (1991)	Effects of strategy and environment on corporate venture success in industrial markets	Journal of Business Venturing	Population ecology and strategy adaptation	Until what extent the environment and the strategy are important for corporate venture performance?	Empirical	PIMS start up database (161 companies)	Regression	63	2
Zahra (1991)	Predictors and financial outcomes of corporate entrepreneurship: an exploratory study	Journal of Business Venturing	-	To present a model on the antecedents and effect of corporate entrepreneurship	Empirical	119 Fortune 500 industrial firms (to CEOs)	Regression (canonic regression)	229	2, 4
Garud, Van de ven (1992)	An empirical evaluation of the internal corporate venturing process	Strategic Management Journal	-	To develop a model of the internal corporate venture process	Empirical (quali+quanti)	Longitudinal data on only one company	Regression	72	-
Gupta, Sapienza (1992)	Determinants of venture capital firms' preferences regarding the industry diversity and geographic scope of their	Journal of Business Venturing	-	To investigate why the venture capital companies may prefer to invest in different sectors and geographical contexts	Empirical	169 venture capital companies (from the Pratt's guide to venture capital sources)	Regression	85	2

	investments								
Jones, Butler (1992)	Managing internal corporate entrepreneurship: An agency theory perspective	Journal of Management	(Information) and Agence theory perspective	How do agency problems affect corporate entrepreneurship?	Theoretical	-	-	62	-
Lengnick (1992)	Innovation and competitive advantage: What we know and what we need to learn	Journal of Management	-	It studies how 4 different factors influence in the relationship between innovation and competitive advantage	Theoretical	-	-	63	2
McDougall, Robinson, Denisi (1992)	Modeling new venture performance: An analysis of new venture strategy, industry structure and venture origin	Journal of Business Venturing	-	It studies the role of strategy, industry structure and origin on new ventures profitability and growth	Empirical	247 new ventures (8 or less years)	Regression	49	4
Ohe, Honjo, Merrifield (1992)	Japanese corporate ventures: success curve	Journal of Business Venturing	-	Triple objective: The three of them related to the success of japanese corporate ventures	Empirical	38 corporate ventures	Regression	2	3
Russell, Russell (1992)	An examination of the effects of organizational norms, organizational structure and	Journal of Management	-	To develop a measure on the innovation management process	Empirical	77 answers from CEOs and middle management	Factor analysis + regression	50	2

	environmental uncertainty on entrepreneurial strategy								
Sykes (1992)	Incentive compensation for corporate venture personnel	Journal of Business Venturing	-	It studies if corporate venture managers should have an special compensation	Empirical	Case study (8 big companies)	-	15	3
Brazeal (1993)	Organizing for internally developed corporate ventures	Journal of Business Venturing	-	It studies how to maintain corporate ventures in time	Empirical	Survey to 196 upper middle managers from Fortune 500	Regression	28	-
Morris, Avila, Allen (1993)	Individualism and the modern corporation: Implications for innovation and entrepreneurship	Journal of Management	Hofstede approach	Until what extent is corporate entrepreneurship a consequence of more individualistic cultures?	Empirical	252 questionnaires to marketing executives	MANOVA + Regression	52	2
Zahra (1993)	Environment, corporate entrepreneurship, and financial performance: A taxonomic approach	Journal of Business Venturing	Taxonomic approach	It studies the relationship between the environment, corporate entrepreneurship and performance	Empirical	102 surveys to CEOs	Cluster analysis + regression	229	2, 4
Hatfield, Pearce II (1994)	Goal achievement and satisfaction of joint venture partners	Journal of Business Venturing	-	Doble: 1. How objectives affect joint ventures. 2. To determine if having a wide variety of objectives affects joint ventures success	Empirical	Survey to 72 joint ventures (to executive officers) created between 1981 i 1988	Factors analysis + regression	16	4

Morris, Davis, Allen (1994)	Fostering corporate entrepreneurship: Cross-cultural comparisons of the importance of individualism vs collectivism	Journal of International Business Studies	Hofstede approach	To evaluate to impact of individualism/collectivism on companies' entrepreneurship	Empirical	Survey to marketing executives in 3 countries: USA (252 surveys), Southafrica (225) and Portugal (25)	ANOVA + Regression	93	3
McGrath, Venkataraman, McMillan (1994)	The advantage chain: Antecedents to rents from internal corporate ventures	Journal of Business Venturing	Resource Based View	To develop a theoretical framework that combines corporate venture with RBV	Theoretical	-	-	26	1
Stopford, Baden-Fuller (1994)	Creating corporate entrepreneurship	Strategic Management Journal	-	To demonstrate how different types of corporate entrepreneurship have elements in common	Empirical	Case studies (7 companies in different countries). Data collected between 1985 i 1990	-	161	-
Badguerahanian, Abetti (1995)	Case study the rise and fall of the merlin-gerin foundry business	Journal of Business Venturing	-	To discuss the history and development of a French corporate venture capital	Empirical	Case study	-	8	3
McGrath (1995)	Advantage from adversity: learning from disappointment in internal corporate ventures	Journal of Business Venturing	Resource Based View (implicitly)	To study corporate entrepreneurship placing emphasis on the disappointment it may cause	Empirical	Case study (23 US companies)	-	26	3

Sorrentino, Williams (1995)	Relatedness and corporate venturing: Does it really matter?	Journal of Business Venturing	General literature on strategic management	To study if "relationships" play an important role in corporate entrepreneurship success	Empirical	88 new companies from PIMS project	Correlation + ANOVA	23	4
Sykes, Dunham (1995)	Critical assumption planning: A practical tool for managing business development risk	Journal of Business Venturing	-	To develop a process (focusing on learning) to manage risk	Theoretical	Fortune 100 companies	-	8	-
Zahra (1995)	Corporate entrepreneurship and financial performance: The case of management leveraged buyouts	Journal of Business Venturing	-	Triple: 1. How entrepreneurship activity changes after a LBO. 2. How performance changes after and LBO. 3. Relationship between changes in entrepreneurial activity and performance	Empirical	Interview to two senior executives from 47 LBO firms	MANCOVA, ANCOVA + regression	90	4
Zahra, Covin (1995)	Contextual influences on the corporate entrepreneurship-performance relationship: A longitudinal analysis	Journal of Business Venturing	-	To study the impact of corporate entrepreneurship on firm performance	Empirical	Info. from three different databases (1983-1990)	Regression	336	4
Zahra (1996)	Governance, ownership, and corporate entrepreneurship: The moderating impact of industry technological opportunities	Academy of Management Journal	Agency theory	To study the relationship between government systems and property for the development of corporate entrepreneurship initatives	Empirical	138 surveys to CEOs from Fortune 500 list in 1988	Factor analysis + regression	254	2

Zahra (1996)	Technology strategy and new venture performance: A study of corporate-sponsored and independent biotechnology ventures	Journal of Business Venturing	-	To study the differences between technological strategies and performance between independent companies and corporate ventures	Empirical	112 observations from biotech companies	Discriminant analysis + regression	128	4
Abetti (1997)	The birth and growth of toshiba's laptop and notebook computers: A case study in japanese corporate venturing	Journal of Business Venturing	-	To explain the Toshiba case study	Empirical	Study the Japanese company Toshiba	-	12	3
Birkinshaw (1997)	Entrepreneurship in multinational corporations: The characteristics of subsidiary initiatives	Strategic Management Journal	-	To examine the initatives by multinational branches	Empirical	Quali+quanti	ANOVA	270	3
Park, Kim (1997)	Market valuation of joint ventures: Joint venture characteristics and wealth gains	Journal of Business Venturing	-	To explore how a company is affected by the announcement of a joint venture	Empirical	Sample of 174 companies (158 joint ventures)	Regression	46	-
Pearce II, Kramer, Robbins (1997)	Effects of managers' entrepreneurial behavior on subordinates	Journal of Business Venturing	-	To investigate the efficacy of corporate entrepreneurship programs	Empirical	Answers from 833 employees and 102 managers (in different moments in time)	Regression	38	4

Shrader, Simon (1997)	Corporate versus independent new ventures: resource, strategy and performance differences	Journal of Business Venturing	Resource Based Theory	To study the differences between independent ventures and corporate ventures	Empirical	Matched sample from 30 independent ventures and 30 corporate ventures	ANOVA + Regression	48	3
West III, Meyer (1998)	To agree or not to agree? Consensus and performance in new ventures	Journal of Business Venturing	-	It studies the consensus among the top management team	Empirical	35 surveys to CEOs and top management team	Regression	30	4
Westhead, Wright (1998)	Novice, portfolio and serial Founders: are they different?	Journal of Business Venturing	-	To explore the differential behaviour between new entrepreneurs and serial entrepreneurs	Empirical	621 british companies	ANOVA	144	-
Barringer, Bluedorn (1999)	The relationship between corporate entrepreneurship and strategic management	Strategic Management Journal	-	It studies the relationship between corporate entrepreneurship intensity and 5 different strategies	Empirical	169 manufacturing firms	Factor analysis + regression	179	2
Covin, Slevin, Heeley (1999)	Pioneers and followers: Competitive tactics, environment and firm growth	Journal of Business Venturing	-	To explain how is performance affected by being a pioneer or a follower	Empirical	Longitudinal sample of 115 companies	Cluster	76	4
Filatotchev, Wright, Buck, Zhukov (1999)	Corporate entrepreneurs and privatized firms in Russia, Ukraine, and Belarus	Journal of Business Venturing	-	Comparative analysis of corporate entrepreneurship in transition economies	Empirical	105 Russian companies, 100 Ucranian and 68 a Belarusian	ANOVA	14	3

Lyon, Lumpkin, Dess (2000)	Enhancing entrepreneurial orientation research: operationalizing and measuring a key strategic decision making process	Journal of Management	Based on the entrepreneurial orientation concept by Lumpkin and Dess	It studies the weaknesses and strengths of three different aproximations to the Entrepreneurial Orientation concept	Theoretical	-	-	124	-
Thornhill, Amit (2000)	A dynamic perspective of internal fit in corporate venturing	Journal of Business Venturing	Resource Based View	It studies the relationship between parent and subsidiary company (in terms of corporate entrepreneurship)	Empirical	Sample of 97 companies	Logistic regression	41	-
Zahra, Neubaum, Huse (2000)	Entrepreneurship in medium-size companies: exploring the effects of ownership and governance systems	Journal of Management	Agency theory	It studies the factors that lead managers to support corporate entrepreneurship	Empirical	239 medium sized companies	Factors analysis + regression	153	2
Zahra, Garvis (2000)	International corporate entrepreneurship and firm performance: The moderating effect of international environmental hostility	Journal of Business Venturing	-	It explores the effects of international corporate entrepreneurship on performance	Empirical	98 companies	Regression	132	4
Ahuja, Lampert (2001)	Entrepreneurship in the large corporation: A longitudinal study of how established	Strategic Management Journal	-	To present a model that explains how established companies develop breakthrough inventions	Empirical	Sample of company patents (years 1980-1995, 721 observations)	Poisson regression	422	2

	firms create breakthrough inventions								
Antoncic, Hisrich (2001)	Intrapreneurship: construct refinement and cross-cultural validation	Journal of Business Venturing	-	To generalize the intrapreneurship construct with a cross country study	Empirical	145 Slovenian companies and 56 US companies	Structural equation modelling	157	-
Hornsby, Kuratko, Zahra (2002)	Middle managers' perception of the internal environment for corporate entrepreneurship: assessing a measurement scale	Journal of Business Venturing	Resource Based View (implicitly)	It evaluate a scale that measures the internal factors that lead middle managers to start corporate entrepreneurship activities	Empirical	Two samples of 231 and 530 middle managers	ANOVA + Factor analysis	117	2
Kemelgor (2002)	A comparative analysis of corporate entrepreneurial orientation between selected firms in the Netherlands and the USA	Entrepreneurship and Regional Development	-	To examine how a firm's strategic management practices influence its entrepreneurial behaviour as compared to an international competitor	Empirical	Comparative between 4 dutch companies and 4 american	-	34	2
Simon, Elango, Houghton, Savelli (2002)	The successful product pioneer: Maintaing commitment while adapting to change	Journal of Small Business Management	-	Until what extent the internal commitment and adaptability strenghten the relationship between being a pioneer and the small businesses performance	Empirical	51 small computer firms	Regression	17	4

Dess, Ireland, Zahra, Floyd, Janney, Lane (2003)	Emerging issues in corporate entrepreneurship	Journal of Management	Organizational learning theory	To highlight the importance of corporate entrepreneurship to develop an organizational learning	Theoretical	-	-	163	1
Messeghem (2003)	Strategic entrepreneurship and managerial activities in SMEs	International Small Business Journal	-	It studies the relationship between the companies characteristics and its entrepreneurial orientation	Empirical	72 interviews to food companies (France)	ANOVA	14	2
Doh, Pearce II (2004)	Corporate entrepreneurship and real options in transitional policy environments: theory development	Journal of Management Studies	-	To describe a theoretical framework explaining how entrepreneurial strategies by companies are affected by public policies	Theoretical	-	-	15	-
Gupta, MacMillan, Surie (2004)	Entrepreneurial leadership: developing and measuring a cross-cultural construct	Journal of Business Venturing	-	It develops the entrepreneurial leadership concept	Empirical	GLOBE sample for 15000 middle managers in 62 different countries	Factor analysis	50	-
Husted, Vintergaard (2004)	Stimulating innovation through corporate ventures bases	Journal of World Business	-	To provide insights on how corporate ventures can improve the quality and quantity of ideas they have	Theoretical	Based on 22 semi estructured interviews to danish multinational managers	-	7	2
Keil (2004)	Building external corporate venturing capability	Journal of Management Studies	Resource Based View (implicitly)	To propose a model that describes how firms develop a capability to create and develop ventures through corporate venture capital,	Empirical	Two longitudinal case studies	-	45	2

				alliances, and acquisitions					
Dushnitsky, Lenox (2005)	When do firms undertake R&D by investing in new ventures?	Strategic Management Journal	-	To study how companies have innovative ideas through the acquisition of corporate ventures	Empirical	1171 companies and 60444 observations. Longitudinal study (1990-1999)	Panel (probit and tobit)	95	3
Iacobucci, Rosa (2005)	Growth, Diversification, and Business group formation in entrepreneurial firms	Small Business Economics	-	To study the groups formation through the entrepreneurial diversification	Empirical	66 Italian high growth companies	Regression	18	-
Kuratko, Ireland, Covin, Hornsby (2005)	A model of middle level managers' entrepreneurial behaviour	Entrepreneurship Theory and Practice	Partially based on equity theory and expectancy theory	To develop a conceptual model on middle managers and corporate entrepreneurship	Theoretical	-	-	86	1
Ravasi, Turati (2005)	Exploring entrepreneurial learning: A comparative study of technology development projects	Journal of Business Venturing	-	To explain the learning process of entrepreneurial innovation	Empirical	Two longitudinal case studies	-	45	-

Schild, Maula, Keil (2005)	Explorative and exploitative learning from external corporate ventures	Entrepreneurship Theory and Practice	-	It studies the antecedents of technological learning on corporate ventures	Empirical	110 big companies from the TIC sector	Logistic regression	82	2
Srivastava, Lee (2005)	Predicting order and timing of new product moves: the role of top management in corporate entrepreneurship	Journal of Business Venturing	-	It studies the relationship between top management team characteristics and entry order of new products	Empirical	223 companies from three different sectors (years 1975-1990)	Regression	22	2
DeClerq, Fried, Lehtonen, Sapienza (2006)	An entrepreneur's guide to the venture capital galaxy	Academy of Management Perspectives	-	This article provides a foundation for an understanding of the dynamics of venture capital from the entrepreneur's point of view	Theoretical	-	-	31	1
Dushnitsky, Lenox (2006)	When does corporate venture capital investment create firm value?	Journal of Business Venturing	-	It studies in which conditions the corporate venture capital investment creates value for investors	Empirical	Panel of companies (1173 US companies) years 1990-1999	Panel	66	4
Hoy (2006)	The complicating factor of life cycles in corporate venturing	Entrepreneurship Theory and Practice	Family firms area	It studies the role of life cycle on corporate venturing	Theoretical	-	-	16	-

Janney, Dess (2006)	The risk concept for entrepreneurs reconsidered: New challenges to the conventional wisdom	Journal of Business Venturing	-	It studies the differential role of risk between a new company and an established one	Theoretical	-	-	23	-
Kellermanns, Eddleston (2006)	Corporate entrepreneurship in family firms: A family perspective	Entrepreneurship Theory and Practice	-	It studies how a set of factors affect corporate entrepreneurship in family firms	Empirical	126 questionnaires to family businesses	Regression	53	3
Wadhwa, Kotha (2006)	Knowledge creation through external venturing: Evidence from the telecommunications equipment manufacturing industry	Academy of Management Journal	-	To explain in which conditions the corporate venture capital investments influence the knowledge creation in investors	Empirical	383 observacions de 36 empreses pel període 1989-1999	Panel data	76	3
Walter, Auer, Ritter (2006)	The impact of network capabilities and entrepreneurial orientation	Journal of Business Venturing	-	To study the impact of network capability and Entrepreneurial Orientation on performance	Empirical	149 academic spin offs	Factor analysis + regression	121	4
Allen, Hevert (2007)	Venture capital investing by information technology companies: Did it pay?	Journal of Business Venturing	-	To study the economic value of corporate venture capital for the sponsoring firms	Empirical	90 information technology firms (1990-2002)	Panel	14	4

Teng (2007)	Corporate entrepreneurship activities through strategic alliances: A resource based approach toward competitive advantage	Journal of Management Studies	Resource Based Theory	To provide an explanation on how strategic alliances facilitate the corporate entrepreneurship activities	Theoretical	-	-	61	1
Corbett, Hmieleski (2007)	The conflicting cognitions of corporate entrepreneurs	Entrepreneurship Theory and Practice	-	To study the relationship between two "role schema". 1. Individuals in organizations i 2. Event schema necessary to create a new company	Theoretical	-	-	20	1
Covin, Miles (2007)	Strategic use of corporate venturing	Entrepreneurship Theory and Practice	-	To describe different manners in which the company strategy and corporate venturing, function in a company	Empirical	15 in depth interviews to executives from, USA, UK and Sweden companies	-	36	2
Marvel, Griffin, Hebda, Vojak (2007)	Examining the technical corporate entrepreneurs motivation: Voices from the field	Entrepreneurship Theory and Practice	-	To study the effect of 5 elements on corporate entrepreneurship	Empirical	Multiple case studies	-	9	2
Simsek, Veiga, Lubatkin (2007)	The impact of managerial environmental perceptions on corporate entrepreneurship: Towards understanding discretionary slacks pivotal role	Journal of Management Studies	They use slack literature	To investigate how the companies' competitive environment affects entrepreneurial activity in companies	Empirical	495 surveys to SMEs	Factor analysis + regression	34	2

Verbeke, Chrisman, Yuan (2007)	A note on strategic renewal and corporate venturing in the subsidiaries of multinational enterprises	Entrepreneurship Theory and Practice	-	It discusses the importance of distinguishing between strategic renewal and corporate venturing	Theoretical	-	-	11	1
Yiu, Lau, Bruton (2007)	International venturing by emerging economy firms: the effects of firm capabilities, home country networks, and corporate entrepreneurship	Journal of International Business Studies	Institutional Economics (implicitly)	To study how a set of variables moderate the relationship between type of property and international venturing	Empirical	565 chinese companies (years 2003 and 2004)	Factor analysis + regression	133	3
Brundin, Patzelt, Shepherd (2008)	Managers' emotional displays and employees willingness to act entrepreneurially	Journal of Business Venturing	-	To study how emotional factors affect entrepreneurial behaviour of students	Empirical	31 surveyed companies (6 times between 1996 to 1999)	Regression	32	-
Cumming, Fleming, Schwienbacher (2008)	Financial intermediaries, ownership structure and the provision of venture capital to SMEs: Evidence from Japan	Small Business Economics	-	To study how the property structure of the investor affects corporate venture	Empirical	Data from 127 japanese venture capitalfirms	Lineal regression + Logistic regression	6	3
Gaba, Meyer (2008)	Crossing the organizational species barrier: How venture capital practices infiltrated the information technology sector	Academy of Management Journal	-	To examine the contagion processes whereby practices originating in one organizational population spread and diffuse into another	Empirical	Information technology firms	-	14	-

Green, Covin, Slevin (2008)	Exploring the relationship between strategic reactiveness and entrepreneurial orientation: The role of structure style fit	Journal of Business Venturing	-	To explore the relationship between strategic reactiveness and entrepreneurial orientation	Empirical	Data from 110 manufacturing firms	Regression	33	-
Hill, Birkinshaw (2008)	Strategy-organization configurations in corporate venture units: Impact on performance and survival	Journal of Business Venturing	-	To develop a tipology of corporate venture based on its strategic role	Empirical	3 phases: Interview + survey + follow up (data from 2001 - 2003)	Regression + logit + ANOVA	30	-
Keil, Maula, Schildt, Zahra (2008)	The effect of governance modes and relatedness of external business development activities on innovative performance	Strategic Management Journal	-	It examines how different forms of managing the company affect innovative performance	Empirical	110 US companies	Panel	41	2, 4
Keil, Autio, George (2008)	Corporate venture capital, disembodied experimentation and capability development	Journal of Management Studies	-	Related to the development of future capabilities	Empirical	5 case studies	-	17	-
Lee, Jones (2008)	Networks, communication and learning during business start-up: The creation of cognitive social capital	International Small Business Journal	-	Double: 1. Evaluate the relationship between the entrepreneurs network structures and their communicative actions. 2. To discuss the learning styles that allow to access	Empirical	Interview to 6 entrepreneurs	-	15	-

				additional resources					
Ling, Simsek, Lubatkin, Veiga (2008)	Transformational leadership role in promoting corporate entrepreneurship: Examining the Ceo-TMT interface	Academy of Management Journal	-	It studies how the relationship between CEOs and top management team affects corporate entrepreneurship	Empirical	Data on 152 companies	Structural equation modelling	74	3
Wooldridge, Schmid, Floyd (2008)	The middle management perspective on strategy process: Contributions, synthesis and future research	Journal of Management	-	To organize the research in the area of middle managers	Theoretical	-	-	68	-
Yiu, Lau (2008)	Corporate entrepreneurship as resource capital configuration in emerging market firms	Entrepreneurship Theory and Practice	Dynamic capabilities (RBT)	To examine how the companies in emerging markets use different networks to develop corporate entrepreneurship	Empirical	565 chinese companies (years 2003 and 2004)	Structural equation modelling	28	-
Zahra, Hayton (2008)	The effect of international venturing on firm performance: The moderating influence of absorptive capacity	Journal of Business Venturing	.	To study how the effects of international venturing on performance depend on the absorptive capacity	Empirical	217 global manufacturing companies	Regression	51	3, 4

Akehurst, Comeche, Galindo (2009)	Job satisfaction and commitment in the entrepreneurial SME	Small Business Economics	.	To investigate which elements in the work team environment allow the development of an entrepreneurial spirit	Empirical	Data from 114 companies and 228 collaborators (ARDAN)	Structural equation modelling	8	-
Burgers, Jansen, Van den Bosch, Volberda (2009)	Structural differentiation and corporate venturing: The moderating role of formal and informal integration mechanisms	Journal of Business Venturing	.	To study the effectiveness of different organizational forms on corporate venturing	Empirical	240 dutch companies	Regression	18	2
Dushnitsky, Shaver (2009)	Limitations to interorganizational knowledge acquisition: The paradox of corporate venture capital	Strategic Management Journal	.	To explore the limitations of knowledge acquisition among companies	Empirical	Sample of 1646 corporate ventures created during the 90s	Logit	41	-
Heavey, Simsek, Roche, Kelly (2009)	Decision comprehensiveness and corporate entrepreneurship: The moderating role of managerial uncertainty preferences and environmental dynamism	Journal of Management Studies	.	To present a model that studies how the learning capacity affects when pursuing corporate entrepreneurship activities	Empirical	Sample of 349 CEOs	Regression	11	3

Hill, Maula, Birkinshaw and Murray (2009)	Transferability of the venture capital model to the corporate context: Implications for the performance of corporate venture units	Strategic Entrepreneurship Journal	.	To study which venture capital dimensions can be associated to success and survival	Empirical	Longitudinal data for 95 CV units (year 2001). Corporate venturing directory + venture Xpert database	ANOVA + Regression	10	4
Hornsby, Kuratko, Shepherd, Bott (2009)	Managers corporate entrepreneurial actions: Examining perception and position	Journal of Business Venturing	.	To study how the managers abilities differ when trying to obtain the maximum return	Empirical	Sample of 458 managers	Regression	31	3, 4
Ireland, Covin, Kuratko (2009)	Conceptualizing corporate entrepreneurship strategy	Entrepreneurship Theory and Practice	.	To present a model that explains the main antecedents of corporate entrepreneurship	Theoretical	-	-	64	1
Keupp, Gassmann (2009)	The past and the future of international entrepreneurship: A review and suggestions for developing the field	Journal of Management	.	They study 179 international entrepreneurship articles	Theoretical (lit. review)	-	-	86	1
Maula, Autio, Murray (2009)	Corporate venture capital and the balance of risks and rewards for portfolio companies	Journal of Business Venturing	Learning literature and agency theory	It studies the corporate venture capital from the investor point of view	Empirical	Sample of 91 CEOs	Structural equation modelling	5	2

Phan, Wright, Ucbasaran, Tan (2009)	Corporate entrepreneurship: Current research and future directions	Journal of Business Venturing	-	To suggest future research lines in the corporate entrepreneurship area	Theoretical	-	-	32	1
Shepherd, Covin, Kuratko (2009)	Project failure from corporate entrepreneurship: Managing the grief process	Journal of Business Venturing	Social cognitive theory and psychological theories	To propose that certain approaches to failure allow for more learning than other approaches	Theoretical	-	-	22	3
Van de Vrande, Vanhaverbeke, Duysters (2009)	External technology sourcing: The effect of uncertainty on governance mode choice	Journal of Business Venturing	-	To study the role of uncertainty on the governance mode	Empirical	Data for the 153 empreses biggest pharma companies in the world (1990 - 2000)	Multinomial logit	38	-
Yang, Narayanan, Zahra (2009)	Developing the selection and valuation capabilities through learning: The case of corporate venture capital	Journal of Business Venturing	-	To examine the effect of experience on the capabilities that allow to have a higher financial return	Empirical	2110 cases from the VentureXpert database	Regression	12	2, 4
Zahra, Filatotchev, Wright (2009)	How do threshold firms sustain corporate entrepreneurship? The role of boards and absorptive capacity	Journal of Business Venturing	Knowledge based theory of the firm	To highlight the importance of board of directors and absorptive capacity for corporate entrepreneurship	Theoretical	-	-	50	2

Kelley, Peters, Collarelli (2009)	Intra-organizational networking for innovation-based corporate entrepreneurship	Journal of Business Venturing	Network theoretical perspective	It studies the innovation based corporate entrepreneurship	Empirical	246 interviews to 12 global companies	-	20	3
Casillas, Moreno (2010)	The relationship between entrepreneurial orientation and growth: The moderating role of family involvement	Entrepreneurship and Regional Development	-	It studies the relationship between family involvement and the relationship between entrepreneurial orientation and growth	Empirical	449 Spanish companies	Factor analysis + regression	13	3, 4
Dimov, Gedajlovic (2010)	A Property Rights Perspective on Venture Capital Investments Decisions	Journal of Management Studies	Property rights theory	It studies the differences between the type of opportunity pursued by venture capital firms depending on if they are public, a company or a bank	Empirical	69939 companies from the VentureXpert database (1962-2004)	Lineal regression + Logistic regression	5	-
Dushnitsky, Lavie (2010)	How alliance formation shapes corporate venture capital investment in the software industry: A resource-based perspective	Strategic Entrepreneurship Journal	Resource Based Theory	How do alliances affect corporate entrepreneurship investment?	Empirical	372 software companies (1990-1999). VentureXpert database	Negative binomial panel data	10	3
Dushnitsky, Shapira (2010)	Entrepreneurial finance meets organizational reality: Comparing investment practices and performance of corporate and	Strategic Management Journal	-	It investigates the effect of employees compensation on its investments in new technologies	Empirical	Sample of 13096 investments (Thomson Financial Venture Economics Database)	Lineal regression + logit + negative binomial regression	20	4

	independent venture capitalists								
Fayolle, Basso, Bouchard (2010)	Three levels of culture and firms' entrepreneurial orientation: A research agenda	Entrepreneurship and Regional Development	-	They propose a theoretical framework that explains how culture affects entrepreneurial orientation	Theoretical	-	-	14	1
Hinkler, Mudambi, Kotabe (2010)	A Story of Breakthrough vs. Incremental Innovation: Corporate Entrepreneurship in the Global Pharmaceutical Industry	Strategic Entrepreneurship Journal	-	They study the entrepreneurial process among pharmaceutical multinational companies	Empirical	1699 observations from 98 companies (1992-2002)	Logit	14	3
Marchisio, Mazzola, Sciascia, Miles, Astrachan (2010)	Corporate venturing in family business: The effects on the family and its members	Entrepreneurship and Regional Development	-	It investigates the effect of corporate venturing on family businesses	Empirical	Case studies from Italian chemistry companies	-	3	4
Monsen, Patzelt, Saxton (2010)	Beyond simple utility: Incentive design and trade-offs for corporate employee-entrepreneurs	Entrepreneurship Theory and Practice	They use the Utility maximization concept	To develop a model for new venture participation	Empirical	61 employees and MBA students in the US	Conjoint field experiment of the 1952 decisions taken by the 61 employees	9	-

Nordqvist, Melin (2010)	Entrepreneurial families and family firms	Entrepreneurship and Regional Development	-	It explains the meanings and differences between an entrepreneurial family and a family business	Theoretical	-	-	14	-
Keil, Maula, Wilson (2010)	Unique resources of corporate venture capitalists as a key to entry into rigid venture capital syndication networks	Entrepreneurship Theory and Practice	-	They study how the corporate venture capitalists can quickly obtain a position in the syndication networks	Empirical	358 companies that have a subsidiary	Panel Tobit regression	11	-
Kistruck, Beamish (2010)	The interplay of form, structure and embeddedness in social intrapreneurship	Entrepreneurship Theory and Practice	-	To depeen in the social intrapreneurship concept	Empirical	Case study (10 companies in 7 developing countries)	-	18	3
Romero, Fernandez, Vazquez (2010)	Exploring corporate entrepreneurship in privatized firms	Journal of World Business	Agency theory	To study if public privatized companies are more entrepreneurial after the privatization process	Empirical	103 companies privatized by the spanish government (1985-2000)	ANOVA	2	3
Sahaym, Steensma, Barden (2010)	The influence of R&D investment on the use of corporate venture capital: An industry-level analysis	Journal of Business Venturing	Real options theory	To investigate how R&D affects corporate venture capital	Empirical	400 companies from VentureXpert database	Tobit regression	7	2

Salvato, Chirico, Sharma (2010)	A farewell to the business: Championing exit and continuity in entrepreneurial firms	Entrepreneurship and Regional Development	-	To study which factors lead company founders to exit their companies	Empirical	Combination of primary and secondary data	-	36	-
York, Venkataraman (2010)	The entrepreneur–environment nexus: Uncertainty, innovation, and allocation	Journal of Business Venturing	-	To study in which cases the entrepreneurial action focuses on solving environmental issues	Theoretical	-	-	22	-
Basu, Phelps, Botha (2011)	Towards understanding who makes corporate venture capital investments and why	Journal of Business Venturing	Resource Based View	To investigate when established companies participate in corporate venture capital	Empirical	477 companies (from Fortune 500, 1990-2000)	Negative binomial panel regression	8	2
Bradley, Wiklund, Shepherd (2011)	Swinging a double-edged sword: The effect of slack on entrepreneurial management and growth	Journal of Business Venturing	Resource Based View	To present a model on the relationship resource slack-growth	Empirical	1116 Swedish SMEs	Regression	13	-
Covin, Lumpkin (2011)	Entrepreneurial orientation theory and research: Reflections on a needed construct	Entrepreneurship Theory and Practice	-	It presents different aspects to develop an entrepreneurial orientation theory	Theoretical	-	-	26	1
Dada, Watson, Kirby (2011)	Toward a model of franchisee entrepreneurship	International Small Business Journal	-	To explain the entrepreneurial phenomenon in a franchisee environment	Empirical	6 case studies for UK firms	-	1	-

Grande, Madsen, Borch (2011)	The relationship between resources, entrepreneurial orientation and performance in farm-based ventures	Entrepreneurship and Regional Development	Resource Based View	To investigate how some company specific resources and its entrepreneurial orientation can influence on the performance of farm-based ventures	Empirical	Data for 277 farms (2003 and 2006)	Regression	4	3, 4
Henrekson, Sanandaji (2011)	Entrepreneurship and the theory of taxation	Small Business Economics	Theory of taxation	To study how taxation affects entrepreneurship	Theoretical	-	-	6	2
Jones, Coviello, Tang (2011)	International Entrepreneurship research (1989–2009): A domain ontology and thematic analysis	Journal of Business Venturing	-	To evaluate the academic situation of international entrepreneurship	Theoretical	323 articles on international entrepreneurship (published between 1989-2009)	-	61	1
Lin, Lee (2011)	Configuring a corporate venturing portfolio to create growth value: Within portfolio diversity and strategic linkage	Journal of Business Venturing	-	To study how corporate investors may increase their number of business opportunities	Empirical	779 new ventures (2000 - 2003)	Panel	5	2, 4
Parker (2011)	Intrapreneurship or entrepreneurship?	Journal of Business Venturing	Human capital theory	It explores which factors lead to exploit opportunities via entrepreneurship or intrapreneurship	Empirical	PSED data (1214 people between entrepreneurs and intrapreneurs)	Probit	19	3

Simsek, Heavey (2011)	The mediating role of knowledge based capital for corporate entrepreneurship effects on performance: A study of small to medium sized firms	Strategic Entrepreneurship Journal	Human capital theory	To demonstrate the positive effects of corporate entrepreneurship on human, social and organizational capital	Empirical	125 CEOs	Factor analysis + regression	10	4
Weber, Weber (2011)	Exploring the antecedents of social liabilities in CVC triads—A dynamic social network perspective	Journal of Business Venturing	Knowledge based theory of the firm	To investigate how social capital affects knowledge creation and transfer	Empirical	6 longitudinal case studies (german companies)	-	2	-
Biniari (2012)	The emotional embeddedness of corporate entrepreneurship: A case of envy	Entrepreneurship Theory and Practice	Based on the sociology of emotions (implicitly)	It studies the emotional aspects of the entrepreneurial act in a social context	Empirical	Case studies (in depth interviews)	-	4	3
Bojica, Fuentes (2012)	Knowledge acquisition and corporate entrepreneurship: Insights from Spanish SMEs in the ICT sector	Journal of World Business	-	To analyze how the knowledge acquisition through alliances affects the corporate entrepreneurship-performance relationship	Empirical	203 technology based SMEs	Regression	2	3, 4
Camelo, Fernandez, Sousa (2012)	The intrapreneur and innovation in creative firms	International Small Business Journal	Cognitive approach	To analyze how the demographic and personal characteristics of the entrepreneur influence the innovative performance of small firms	Empirical	396 companies (SABI database, year 2005)	Regression	2	2, 4

Cruz, Nordqvist (2012)	Entrepreneurial orientation in family firms: a generational perspective	Small Business Economics	-	To develop a model that explains how the influence of different factors on entrepreneurial orientation varies depending on the family generation of the company	Empirical	882 family firms (year 2005)	Regression	13	2
Eddleston, Kellermanns, Zellweger (2012)	Exploring the entrepreneurial behaviour of family firms: Does the stewardship perspective explain differences?	Entrepreneurship Theory and Practice	Stewardship theory	To investigate until what extent a family firm becomes involved in corporate entrepreneurship depending on the stewardship theory	Empirical	179 family firms	Regression	11	3
Fini, Grimaldi, Marzocchi, Sobrero (2012)	The determinants of corporate entrepreneurial intention within small and newly established firms	Entrepreneurship Theory and Practice	Theory of planned behaviour	To study the determinants of corporate entrepreneurship intention	Empirical	Sample of 200 entrepreneurs	Structural equation modelling	7	2
Fuller, Rothaermel (2012)	When stars shine: The effects of faculty founders on new technology ventures	Strategic Entrepreneurship Journal	-	It studies the effects of academics that become entrepreneurs on the new ventures performance	Empirical	238 university related new technology ventures at 65 universities	Logit	3	4
Finkle (2012)	Corporate entrepreneurship and innovation in Silicon Valley: The case of google, Inc.	Entrepreneurship Theory and Practice	-	To explain the Google case	Theoretical	-	-	3	-

Gaba, Bhattacharya (2012)	Aspirations, Innovation and venture capital: A behavioural perspective	Strategic Entrepreneurship Journal	Behavioral theory of the firm	To investigate when and why companies use corporate venture to take advantage of new opportunities	Empirical	204 information technology firms (1992-2003)	Regression	6	-
Johnson (2012)	The Role of Structural and Planning Autonomy in the Performance of Internal corporate ventures	Journal of Small Business Management	-	To examine how to different types of autonomy affect corporate venture performance	Empirical	38 CVs	Regression	0	2, 4
Kacperczyk (2012)	Opportunity Structures in Established Firms: Entrepreneurship versus Intrapreneurship in mutual funds	Administrative Science Quarterly	-	It studies if the big and mature companies are less intrapreneurial	Empirical	7447 fund managers (1979 - 2005). Center for Research in Security Prices	Regression	2	2
Kellermanns, Eddleston, Sarathy, Murphy (2012)	Innovativeness in family firms: a family influence perspective	Small Business Economics	-	To investigate the relationship between family influence and family performance	Empirical	126 questionnaires (70 family businesses)	Regression	12	4
Kiessling, Harvey, Moeller (2012)	Supply-chain corporate venturing through acquisition: Key management team retention	Journal of World Business	Resource Based View	To study how to maintain the company key managers in case of acquisition	Empirical	99 surveys to top managers from supply-chain firms	Regression	1	-

Park, Steensma (2012)	When does corporate venture capital add value for new ventures?	Strategic Management Journal	-	They explore in which conditions corporate venture capital is beneficial for a new company	Empirical	VentureXpert (technological companies). 1990 - 2003	Regression	8	4
Plambeck (2012)	The development of new products: The role of firm context and managerial cognition	Journal of Business Venturing	-	They study how a set of organizational and cognitive factors affect entrepreneurial actions	Empirical	84 german automobile companies (2002)	Factor analysis + regression	2	2
Pontikes (2012)	Two Sides of the Same Coin: How Ambiguous Classification Affects Multiple audiences evaluation	Administrative Science Quarterly	-	To question the idea that when companies are difficult to classify they suffer in terms of external valuations	Empirical	4566 software companies	Tobit regression	20	-
Souitaris, Zerbinati, Liu (2012)	Which iron cage? Endo and exoisomorphism in corporate venture capital programs	Academy of Management Journal	Institutional Economics	To unravel how new organizational units resolve competing forces from two different institutional environments	Empirical	6 venture capital programs	-	7	-
Thorgren, Wincent, Ortqvist (2012)	Unleashing synergies in strategic networks of SMEs: The influence of partner fit on corporate entrepreneurship	International Small Business Journal	Resource Based View	To study how do partner fit influence corporate entrepreneurship networking	Empirical	41 companies from the wood industry (2000-02 and 2002-04)	Structural equation modelling	2	-

Zellweger, Sieger (2012)	Entrepreneurial orientation in long-lived family firms	Small Business Economics	-	To apply the entrepreneurial orientation construct to long lived family firms	Empirical	2 swiss case studies (2006-07)	-	15	-
Bertoni, Colombo, Grilly (2013)	Venture capital investor type and the growth mode of new technology based firms	Small Business Economics	-	To look for differences between independent venture capital and corporate venture capital	Empirical	531 New technologies Italian companies (years 1994-2004)	Panel	4	3
Dokko, Gaba (2013)	Venturing into New Territory: Career Experiences of Corporate Venture capital managers and practice variation	Academy of Management Journal	Institutional Economics	To present a conceptual framework that explains the role of individuals when a company adopts new practices	Empirical	70 companies (1992 - 2008). Corporate venturing yearbook + ventureXpert database	Panel	4	-
Douglas, Fitzsimmons (2013)	Intrapreneurial intentions versus entrepreneurial intentions: distinct constructs with different antecedents	Small Business Economics	Theory of planned behaviour	To study the differences in terms of intention between entrepreneurs and intrapreneurs	Empirical	414 MBA students	Factor analysis + regression	0	3
Gentry, Dalziel, Jamison (2013)	Who Do Start-Up Firms Imitate? A Study of New Market Entries in the CLEC Industry	Journal of Small Business Management	Institutional Economics	They study until what extent companies imitate each other	Empirical	1067 start-ups (1996 to 2004)	Logit	0	-

Martiarena (2013)	What's so entrepreneurial about entrepreneurs?	Small Business Economics	Utility Maximization theory	To discuess the determinants of being an intrapreneur	Empirical	GEM data (2008)	Multinomial logit	2	2
Park, Steensma (2013)	The selection and nurturing effects of corporate investors on new venture innovativeness	Strategic Entrepreneurship Journal	Multiple agency perspective	To study the effect of corporate investors on new companies	Empirical	508 hardware companies. VentureXpert database	Regression	1	3
Rosenbusch, Rauch, Bausch (2013)	The Mediating Role of Entrepreneurial Orientation in the Task Environment performance relationship: A meta analysis	Journal of Management	-	To study how different environmental factors affect entrepreneurial orientation	Empirical	Combination of meta analysis and structural equation modelling	Structural equation modelling + Meta analysis	7	2
Smith, Shah (2013)	Do innovative users generate more useful insights? An analysis of corporate venture capital investments in the medical device industry	Strategic Entrepreneurship Journal	-	To develop a framework that explains how users knowledge may have more value for companies than other sources of knowledge	Empirical	128 companies. VentureXpert database	Negative binomial regression	1	-
Stam (2013)	Knowledge and entrepreneurial employees: a country-level analysis	Small Business Economics	Knowledge spillover theory	To study the knowledge and entrepreneurial activity among employees in different countries	Empirical	GEM data (2011)	Logit	2	-

VandeVrande, Vanhaverbeke (2013)	How Prior corporate venture capital investments shape technological alliances: A real options approach	Entrepreneurship Theory and Practice	-	To study how corporate venture capital among two companies affects the possibility that these two companies establish alliances	Empirical	Sample of pharma companies (1990-2000). Then data from VentureXpert database US patent office,	Logit (complementary log models)	1	3
Wales, Gupta, Mousa (2013)	Empirical research on entrepreneurial orientation: An assessment and suggestions for future research	International Small Business Journal	-	To review the existing literature in the entrepreneurial orientation area	Theoretical	-	-	3	1
Wang, Wan (2013)	Explaining the variance underpricing among venture capital backed IPOs: A comparison between private and corporate vc firms	Strategic Entrepreneurship Journal	Resource Based View, multiple agency theory	To show that corporate venture capital and private venture capital have a different effect on the price of IPOs	Empirical	Sample of 200 VC backed IPOs. (2000-2007). Thomson financial securities data corporation, VentureXpert database	Regression	0	3
Anderson, Potocnik, Zhou (2014)	Innovation and Creativity in Organizations: A State-of-the-Science Review, Prospective Commentary, and Guiding Framework	Journal of Management	-	To review the literature on creativity and innovation	Theoretical	-	-	1	1

Anokhin, Wincent (2014)	Technological arbitrage opportunities and interindustry differences in entry rate	Journal of Business Venturing	Knowledge spillover theory	To investigate the relationship between technological arbitrage opportunities and entry rates	Empirical	US Census Bureau + Compustat	Panel	0	-
Covin, Miller (2014)	International Entrepreneurial Orientation: Conceptual Considerations, Research themes, Measurement Issues and Future Research Directions	Entrepreneurship Theory and Practice	-	To explore the essential nature of the EO construct	Theoretical	-	-	2	1
Fryges, Wright (2014)	The origin of spin-offs: a typology of corporate and academic spin-offs	Small Business Economics	-	To improve our appreciation and awareness of spin offs research	Theoretical	-	-	0	1
Hill, Birkinshaw (2014)	Ambidexterity and Survival in Corporate Venture Units	Journal of Management	Literature on firm ambidexterity	To shed light on the specific challenges of managing a CV unit	Empirical	Own survey to 95 CV units	Path analysis (=Structural equation)	0	2
Larrañeta, Zahra, Galan Gonzalez (2014)	Research Notes and Commentaries: Strategic Repertoire Variety and new venture growth: The effects of Origin and industry dynamism	Strategic Management Journal	-	Examine two conditions under which the choice between strategic simplicity and variety is beneficial for new ventures growth	Empirical	140 Spanish companies (SABI/ Amadeus)	Regression	0	4

Maes, Sels (2014)	SMEs' Radical Product Innovation: The Role of Internally and Externally Oriented Knowledge capabilities	Journal of Small Business Management	Knowledge based perspective	Examine the role of some capabilities on innovation on SMEs	Empirical	PASO database	Path analysis (=Structural equation)	0	2
Noyes, Brush, Hatten, Smith-Doerr (2014)	Firm Network Position and Corporate Venture Capital Investment	Journal of Small Business Management	Resource dependence theory and embeddness perspective	It investigates why some firms have been more likely to make corporate venture capital investment than others	Empirical	Data from S&P 500 + venture xpert database	Regression	0	2
Shepherd, Williams, Patzelt (2014)	Thinking About Entrepreneurial Decision Making: Review and Research Agenda	Journal of Management	-	To provide a review of the literature on entrepreneurial decision making	Theoretical	-	-	0	1
Souitaris, Zerbinati (2014)	How do corporate venture capitalists do deals? An exploration of corporate investments practices	Strategic Entrepreneurship Journal	-	How do corporate venture capitalists (CVCs) do deals?	Empirical	Case study	13 cases of CVC programs		3
Wang, Chugh (2014)	Entrepreneurial Learning: Past Research and Future Challenges	International Journal of Management Reviews	-	Literature review on the advancements in entrepreneurial learning	Theoretical	Systematic Literature Review	-	1	1

Wincent, Thorgren, Anokhin (2014)	Entrepreneurial Orientation and Network board diversity in network organizations	Journal of Business Venturing	-	To study how network board characteristics influence network level EO	Empirical	53 networks for the years 2000 - 2004	Panel	0	-
Yang, Narayanan, De Carolis (2014)	The relationship between portfolio diversification and firm value: The evidence from corporate venture capital activity	Strategic Management Journal	Real options theory	To study the relationship between the corporate venturing company portfolio and the creation of value it generates	Empirical	119 CV companies (1990 - 2004). VentureXpert database	Panel	1	4
Zahra, Wright, Abdelgawad (2014)	Contextualization and the advancement of entrepreneurship research	International Small Business Journal	-	This article explores the importance of contextualization as a means of advancing future research on the nature and contributions of entrepreneurial activities	Theoretical	-	-	0	1