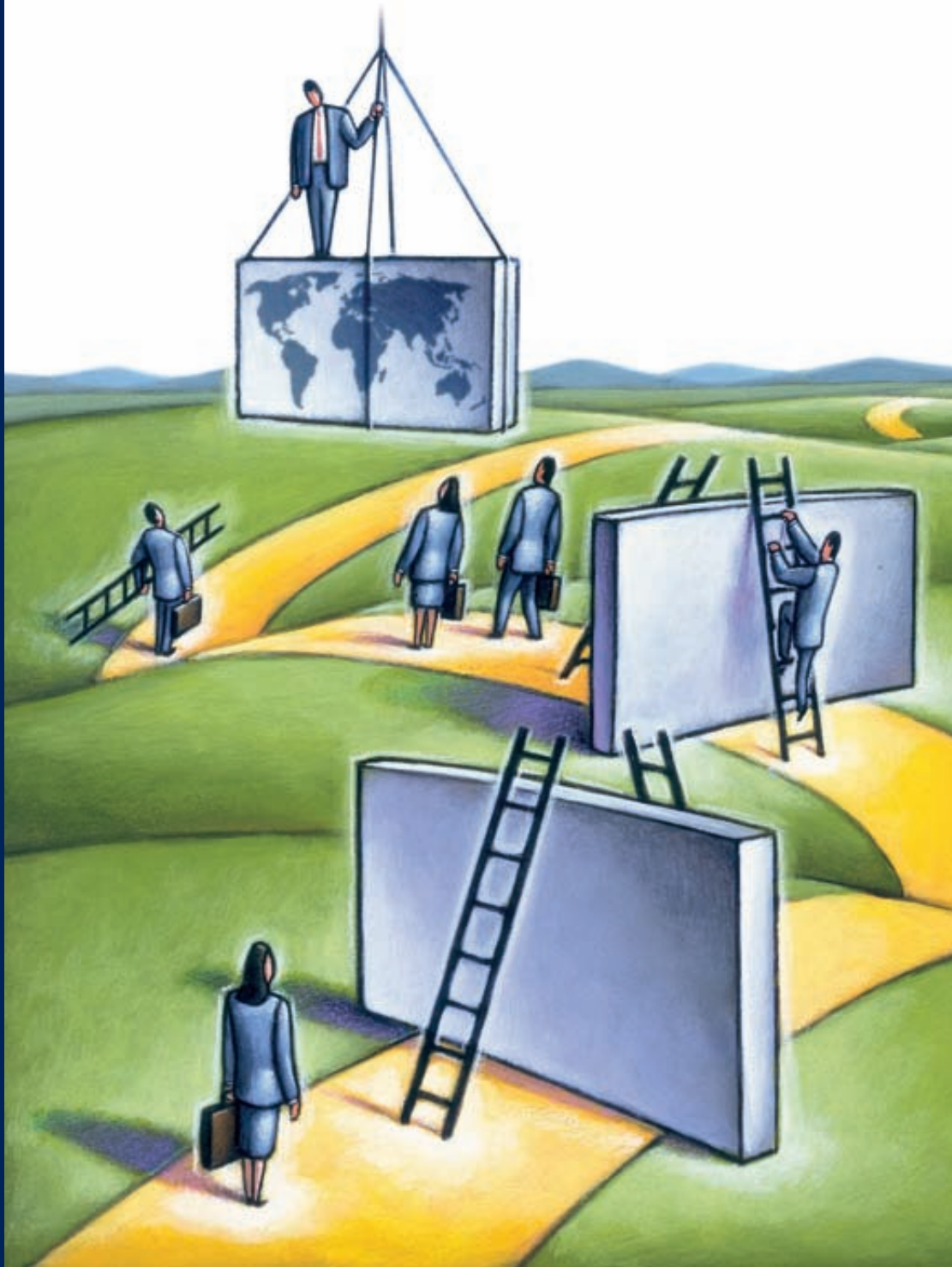
PETER VAN DER ZWAN

The Entrepreneurial Process

An International Analysis of Entry and Exit



The Entrepreneurial Process:
An International Analysis of Entry and Exit

The Entrepreneurial Process: An International Analysis of Entry and Exit

Het ondernemerschapsproces:
Een internationale analyse van toe- en uittreding

THESIS

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Preface (Voorwoord)

Donderdag 1 maart 2007, 9.00 uur: het begin van mijn vierjarige avontuur op de twaalfde verdieping van het H-gebouw van de Erasmus Universiteit Rotterdam. Hoewel ik het aankomsttijdstip van die dag (9.00 uur stipt) nimmer heb weten te evenaren gedurende mijn promotietraject, was ik – op een enkele uitzondering na – elke dag aanwezig. Zo geef ik ook op deze zonnige woensdag acte de présence, een aantal dagen voordat ik mijn proefschrift naar de drukker zal sturen. Een mijlpaal! En tevens een uitstekend moment om mijn dankwoord uit te brengen. Flink wat mensen hebben namelijk bijgedragen aan een zeer onvergetelijke en leerzame periode. Hieronder doe ik een poging deze lijst van individuen zo volledig mogelijk de revue te laten passeren.

Ik zal bij het begin beginnen. Het moet eind 2005 zijn geweest dat ik een college Multivariate Statistiek volgde van Patrick Groenen. Daar vertelde Roy Thurik over een interessant afstudeerproject bij EIM. Mijn enthousiasme liet me ook ditmaal niet in de steek en met een volmondig 'ja' nam ik het aanbod aan. Dit bleek bepaald geen overhaaste beslissing, want een aantal maanden later wist ik mijn scriptie met succes te verdedigen. Mijn academische ontdekkingsreis kreeg een passend vervolg middels een vierjarig promotietraject onder de bezielende supervisie van Roy. Ik bedank Roy voor zijn inspirerende ideeën, maar ook voor de bij tijd en wijle vermakelijke gesprekken. En gelukkig was er nog iemand die mij deadlines oplegde! Patrick Groenen ben ik ook dankbaar voor zijn rol als promotor.

Op kamer H12-16 is er door de jaren heen flink gezwoegd. Toch was het er vaak (te) gezellig. Ten eerste werd dit veroorzaakt door de verzameling flessen (wijn, rosé, champagne, sake, bier en wat dies meer zij) die allengs imposanter werd. Deze verzameling vloeide voort uit meer dan veertig afstudeersessies waarbij ik als begeleider of meelezer optrad. Afstudeersessies mondden al snel uit tot een favoriet tijdverdrijf. De uitgelatenheid van student(e) en familie na afloop blijft erg mooi om mee te maken.

Ten tweede mogen de 'bewoners' van H12-16 niet onvermeld blijven. Haibo en ik waren in de zomermaanden dikwijls de enige aanwezigen op de gehele twaalfde verdieping. Met cola en een hoop andere versnaperingen wisten we ons echter prima te redden. Haibo, ik heb

genoten van onze gezamenlijke periode op de Erasmus en ik hoop dat ik je de Nederlandse taal een beetje bij heb kunnen brengen! Met Niels heb ik alleen het laatste halfjaar doorgebracht. Voorlopig zal ik je slechts twee dagen per week vergezellen, maar dat betekent natuurlijk niet dat we geen vervolg kunnen geven aan de eerste succesvolle maanden op H12-16!

Het woord 'paranimf' heeft bij sommige buitenstaanders een nogal curieuze associatie. Toch zijn mijn beide paranimfen van onmisbare waarde geweest tijdens mijn promotieperiode. Ik kon altijd op Hans rekenen om de weekenden en dagelijkse (vaak hilarische) beslommeringen door te nemen. Deze vaste prik is zelden doorbroken en ik hoop dat ik mijn proefschrift net zo goed verdedig als jij met de jouwe hebt gedaan. Heel erg bedankt voor al je gezelligheid! Ook op Stephanie kon ik altijd bouwen, al was dat vooral buiten werktijd. We hebben een hoop gelachen, niet alleen in Rotterdam tijdens de vele etentjes, maar ook in het buitenland tijdens de talloze snoepreisjes. Als onderneemster moet dit proefschrift je wel bekoren!

De vermakelijke lunches, de vrijdagmiddag- en avonddrankjes en het gezamenlijke uitje naar de Ardennen met de lunchgroep staan onuitwisbaar in mijn geheugen gegrift. Ik denk dat het uniek is dat we zo'n hechte en gezellige AiO-groep zo lang in stand hebben weten te houden (en hopelijk zullen houden). De kamer van Arco en Kar Yin bood altijd soelaas wanneer ik weer eens wanhopig op zoek was naar wat aanspraak. Gelukkig was er ook vaak iets te eten aanwezig! Met Yuri heb ik eigenlijk vooral de laatste tijd veel contact gehad; van je verhalen en gezelligheid kan ik nog steeds genieten. Eelco is een 'zekerheidje' met wie het zelden saai is, of het nu in Nederland of elders is. Heerlijk! Het zal even wennen zijn dat we binnenkort niet meer zomaar bij elkaar langs kunnen lopen. Gelukkig zal 'eventjes langslopen' voorlopig nog wel mogelijk zijn bij Mathijn, met wie er nog een hoop lunches in het verschiet liggen!

Meerdere coauteurs hebben hun bijdrage geleverd aan diverse hoofdstukken in dit proefschrift. Ik wil hen hieronder apart bedanken.

Met Ingrid heb ik al in een erg vroeg stadium op een productieve en gezellige manier samengewerkt. Onvergetelijke hoogtepunten in de vorm van meerdere congressen, ons verblijf in Brussel bij de Europese Commissie en de roadtrip naar Duitsland zullen altijd op mijn netvlies gebrand blijven staan.

Jolanda zorgde steevast voor de vrolijke noot op de woensdagen. Mijn treinreizen werden er meteen een stuk gezelliger op! Dat we vanaf 1 maart twee keer collega's zijn, belooft veel voor onze samenwerking (en etentjes) in de toekomst.

Isabel, without you, this book would have been much thinner. I take this opportunity to thank you for all the contributions and advices you have provided in the last few years. Although lately we have not had as much contact as in the period before and shortly after 2007,

you obviously played a prominent role during my PhD period. Thank you for providing the opportunity to visit the European Commission in 2009, and for making available all editions of the Flash Eurobarometer datasets that have been used in numerous chapters of this thesis.

Furthermore, I would like to thank Jörn for his quick contributions and intelligent input for our takeover paper. You were good company in my neighboring office at the twelfth floor!

Erik Stam, bedankt voor de soepele samenwerking bij ons exit-paper (je noemde het een 'geoliede coalitie' in een van je e-mails) en dat je in de commissie wilt plaatsnemen.

Erik Canton and Josefina, thank you for your hospitable company in Brussels in 2009! Let's continue our joint publication efforts.

Ik wil Martin Carree, Jaap de Koning, Richard Paap, Enrico Pennings en Mirjam van Praag bedanken voor het plaatsnemen in de kleine of grote commissie.

All other entrepreneurship colleagues also deserve a word of thanks here. They made my life at the Erasmus a lot easier and more joyful! Katrin, Marcus, Matthijs and Philipp are excellent colleagues and can be counted on at dinner occasions. José and Conchi, I remember several highlights of your Erasmus period of which the Sinterklaas party and the adventures on the bowling lane are only two random examples. Brigitte, alhoewel je niet betrokken bent geweest bij mijn hoofdstukken, hoop ik nog veel met je te pingpongen! En laten we elkaar alsjeblieft blijven overtreffen met sterke verhalen. André, je hilarische bespiegelingen op het dagelijkse reilen en zeilen worden altijd gewaardeerd! Ik moet spontaan terugdenken aan alle merkwaardige gebeurtenissen tijdens onze gezamenlijke congressen, zoals in Caen. Geertjan, de trip naar Duitsland was een waar avontuur en ik hoop op meer van zulke reizen!

Verder bedank ik Anka, Gerda (mag ik dat zeggen?), Nita en Ramona voor de secretariële ondersteuning en enthousiaste ontvangst op de dertiende verdieping en de EIM'ers Chantal, Gerrit en Mickey voor plezierig congresgezelschap. Ik verheug me erop bij EIM aan de slag te gaan! Verschillende hoofdstukken in dit proefschrift zijn geschreven in het kader van het onderzoeksprogramma SCALES, dat uitgevoerd wordt in opdracht van EIM en gefinancierd wordt door het Ministerie van Economische Zaken.

Alhoewel ik veel avonden en nachten in Rotterdam heb doorgebracht, is mijn sociale leven in Den Haag ook van invloed geweest op het functioneren op de universiteit. Het voert te ver door iedereen bij naam te noemen die in meer of mindere mate interesse heeft getoond in de voortgang van dit boek. De geregelde belangstelling van Catherine en Madicke wil ik toch niet onvermeld laten.

De vele gezellige zondagavonden en -nachten hebben mijn maandagmorgenaankomsten steevast vertraagd. De oorzaak hiervan was de zogenaamde 'harde kern' (Anjali, Martin K., Matthijs) die eigenlijk nooit te beroerd was (en gelukkig nog steeds niet is...) voor een afzakkertje. In het bijzonder heb ik bijvoorbeeld nooit spijt gehad Matthijs uit te nodigen voor mijn afstudeerfeestje. We leerden elkaar precies aan het begin van mijn proefschriftperiode kennen.

Toch zou ik een dikker boek dan het huidige kunnen schrijven over al onze avonturen van de afgelopen jaren!

Tot slot waardeer ik de nimmer aflatende steun van al mijn reispartners. Ik houd het voor het gemak bij de trouwe skigroep van de afgelopen reis naar 'Oh oh Valtho': Alex, Casper, Eelco, Stephanie en Wai-On. Het was een mooie tijd op en naast de piste!

Hoe kijk ik terug op de afgelopen jaren? Vooral tevredenheid, omdat ik altijd vergezeld was van een fantastische groep mensen die mijn functioneren op de werkvloer, op congressen en buiten de universiteit een stuk makkelijker en plezieriger maakte. Ook heerst er tevredenheid (en ook wel een beetje trots...) vanwege het feit dat ik binnen vier jaar dit proefschrift heb weten af te ronden. Voor een terugslag ben ik meermaals gewaarschuwd, maar zo'n mindere periode heb ik gelukkig niet ondervonden. Uiteindelijk beslaat dit boek acht afzonderlijk leesbare hoofdstukken. Het geheel wordt voorafgegaan door een inleidend hoofdstuk. De publicatiestatus van mijn hoofdstukken kan in Hoofdstuk 1 (Tabel 1.1) teruggevonden worden. Daarnaast zijn uit een handvol andere projecten ondertussen twee publicaties voortgevloeid. Het werken aan zoveel projecten heeft me altijd een hoop voldoening gegeven. Ik hoop in hetzelfde tempo en met hetzelfde enthousiasme voorlopig actief te blijven op dit interessante en relevante onderzoeksterrein.

Ten slotte wil ik mama, papa en Marco bedanken voor alle getoonde interesse. Het is fijn dat Marco en Esther vanmiddag toch aanwezig zijn. Nou ja, mits het vliegtuig op tijd op Schiphol landt natuurlijk...

Peter van der Zwan
Rotterdam, maart 2011

Chapter 1

Introduction and conclusion

This thesis deals with the entrepreneurial process from an international perspective. Part I explores which people decide to enter entrepreneurship and to what extent this decision is influenced by the country one lives in. Part II examines why people quit their entrepreneurial initiatives, taking account of two times at which this entrepreneurial exit may happen: before and after the business has been established. Part II also analyzes the decision to re-enter entrepreneurship after having experienced an entrepreneurial exit; as in Part I, an international context is considered in Part II.

The entrepreneurial process is captured by an analysis of entrepreneurial entry, exit, and re-entry. The process view of entrepreneurship, central to this thesis, is further emphasized by distinguishing between several stages that make up the decision to become an entrepreneur. In other words, this thesis regards setting up a business as a process that consists of levels of entrepreneurial engagement, ranging from no entrepreneurial activity to intentional, nascent, young, and established entrepreneurship.

The rest of this chapter is structured as follows. Section 1.1 is devoted to the motivation and relevance of the present topic. Section 1.2 expounds upon the three main contributions of this thesis. Section 1.3 proceeds with an overview and discussion of the eight remaining chapters. This is followed by a discussion of the six research questions and their specific contributions and relevance in Section 1.4. Section 1.5 discusses the data, and the main results are presented in Section 1.6. This chapter ends with the implications of the results and some concluding remarks (Section 1.7) and directions for further research (Section 1.8). An overview of the publication status of each chapter is given in Section 1.9.

All subsequent chapters can be read separately.

1.1 Motivation

Why would it be relevant to know which people from which countries are most likely to engage in entrepreneurship or quit their entrepreneurial activities?

First of all, this interest is related to the often-discussed link between entrepreneurship and economic prosperity (Wennekers *et al.*, 2005; Van Praag and Versloot, 2007; Carree and Thurik, 2010), which has been (over)enthusiastically embraced by academics and policymakers. Countries that are munificent in terms of entrepreneurial resources and opportunities have a forward position in terms of job creation, competitiveness, and, ultimately, economic growth (Audretsch and Keilbach, 2004; European Commission, 2008, Chapter 3). Especially in recent periods of economic downturn, entrepreneurship may play a role in the recovery process of countries (Koellinger and Thurik, 2009). In addition, at the individual level, being an entrepreneur affects several types of satisfaction in a positive way (Blanchflower and Oswald, 1998; Blanchflower, 2000; Benz and Brey, 2008; Block and Koellinger, 2009).[1]

From a policy point of view, there has been much interest in the conditions under which individuals decide to pursue or exit from entrepreneurial activities. For example, the Lisbon Strategy initiated by the European Union (EU) in 2000 – which was re-launched in 2005 and is now called the Europe 2020 Strategy – stresses the view that the promotion of small and medium-sized enterprises (SMEs) is essential in enhancing the EU's competitiveness. The interest of the EU and of national governments lies in the creation of economic value by stimulating entrepreneurial activity. At the same time, economic value should not be wasted. Hence, conditions should be shaped that promote entry into entrepreneurship and encourage re-entry after exit. This thesis attempts to reveal these conditions. The findings may then be useful for policymakers to exert influence on the entrepreneurial position of individuals, regions, or countries.

Entrepreneurial conditions can be modified at the individual and at the regional (or country) levels. Starting with the individual level, there are many interesting intervening possibilities from a policy point of view. For example, entrepreneurship is about individual decision-making. In addition to the objective circumstances, individuals are guided by their subjective evaluations of these circumstances when engaging in entrepreneurial behavior. Entrepreneurs even tend to rely more on subjective perceptions than on objective expectations when undertaking steps to start a new business (Krueger and Brazeal, 1994; Arenius and Minniti, 2005; Koellinger *et al.*, 2007). This thesis takes account of individuals' perceptions about financial, administrative, or informational barriers regarding setting up a business. When, for example, perceptions of administrative difficulties impede a specific transition in the start-up process, modifying these perceptions to

[1] Despite these merits of increasing entrepreneurial activity, there have been discussions on the extent to which governments should promote entrepreneurship. For example, Shane (2009) argues that the focus should be on a small number of high-quality and high-growth start-ups that generate job and wealth creation because the majority of entrepreneurs do not contribute to economic growth (Blanchflower, 2004; Henrekson and Johansson, 2010).

prevent individuals from unnecessarily dropping out of the process is an attractive option. This would especially be the case when individuals misperceive the objective environment. Another example of the use of perception variables relates to credit constraints, which have been argued to play a role when engaging in entrepreneurship (Evans and Jovanovic, 1989; Evans and Leighton, 1989; Blanchflower and Oswald, 1998). First, this thesis devotes attention to individuals' perceptions of financial barriers and the ways in which these perceived barriers influence entrepreneurial engagement and exit (Chapters 2, 3, 4 and 7). Second, the perceived difficulty of access to bank loans by SMEs is the central topic of Chapter 5.

In addition to these individual perceptions, this thesis includes many other individual characteristics as determinants of entrepreneurial entry, exit, or re-entry. For example, personality characteristics, such as risk attitudes, are included. The role of risk in explaining entrepreneurial entry traces back to Cantillon (1755) who positions the entrepreneur as a person involved in uncertain transactions and uncertain incomes, thereby bearing risk in his daily activities. The important role of risk in occupational choice was further refined by Knight (1921). Knight focuses on uncertainty rather than risk, a situation in which there is a lack of knowledge not only about the probability distribution of the outcomes but also about the outcomes themselves. Following Cantillon (1755) and Knight (1921), many other authors have prominently implemented risk in their occupational choice models (Kihlstrom and Laffont, 1979; Parker, 1997). When empirically validating these occupational choice models, one indeed finds that risk-tolerant people are more likely to have preferences (Grilo and Thurik, 2005a; Grilo and Irigoyen, 2006) or intentions (Lüthje and Franke, 2003; Segal *et al.*, 2005) for self-employment than more risk-averse people. Another frequently used input of occupational choice models is entrepreneurial ability (Lucas, 1978; Lazear, 2005). Entrepreneurial ability is a major focus of Chapters 8 and 9. Furthermore, other socio-demographic characteristics, such as sex, age, education, and parents' occupations, appear frequently throughout this thesis. Chapter 6 specifically relates personality characteristics (such as risk tolerance, inventiveness, and locus of control) to the preferred mode of entry.

Other than individual-level conditions that can be modified, the environmental context also plays an important role. That is, the environment in which entrepreneurial activities are exploited is essential for the viability and success of these initiatives. Some regions are munificent in terms of entrepreneurial opportunities or resources, whereas others have a hindering impact on achieving entrepreneurial progress. In addition, cultural aspects (that is, the way in which societal norms and values embrace entrepreneurship) affect entrepreneurial entry, exit, and re-entry. Societies simply value entrepreneurial careers differently. For example, in the US, pursuing an entrepreneurial career is widely acknowledged as an attractive career alternative, whereas other countries may be less encouraging of this pursuit.

The importance of understanding country differences at several positions in the entrepreneurial process relates to the fact that learning processes between countries may occur ("best

practices"). For example, the District of Creativity Network is an international cooperation of regions that is aimed at stimulating entrepreneurial activity and innovation. This network unites 14 regions in the world, such as Flanders (Belgium), Catalonia (Spain), Lombardy (Italy), and Rio de Janeiro (Brazil). An international analysis may reveal which regions are better at shaping entrepreneurial conditions, and at which positions in the entrepreneurial process. This may guide other regions or countries in improving their conditions for entrepreneurship.

The process view of entrepreneurship, central to this thesis, is of particular interest for government policy. Governments may intervene at positions in the entrepreneurial process where certain characteristics, such as perceptions about the entrepreneurial environment, hinder the entrepreneurial progress of individuals. The present study examines three perceived impediments to entrepreneurship: the perception of administrative complexities, the perception of lack of start-up information, and the perception of lack of financial support. Knowing whether and where these perceptions play a role in the advancement in the entrepreneurial process is crucial for the support of entrepreneurial activities. Governments can intervene at specific rungs on the entrepreneurial ladder where (potential) entrepreneurs are hindered in their progress. As another example, women represent an interesting target group to foster the entrepreneurial climate across countries and regions (Baughn *et al.*, 2006). Women continue to systemically lag behind men regarding business ownership in most parts of the world (De Bruin *et al.*, 2006; Langowitz and Minniti, 2007). The distinction between stages in the entrepreneurial process enables an accurate assessment of where in the process women start to lag behind men. Is the underperformance of women mainly due to differences in the intention, decision, or action stages of entrepreneurship? The answer to this question has important implications for government policy.

1.2 Contribution

This thesis generally complements the existing knowledge on the entrepreneurial process in the following three ways. Section 1.1 has elaborated on the importance of this new knowledge from a policy point of view.

1.2.1 Process view on entrepreneurial entry

Many empirical investigations on the question "Who becomes an entrepreneur?" are inspired by occupational choice models. Occupational choice models usually distinguish between (different forms of) wage employment and entrepreneurship. Individuals make occupational choices based on the highest (expected) utility. Several examples are illustrated by Lucas (1978) and Lazear (2005), whose studies are based on different endowments of entrepreneurial ability among individuals, and Kihlstrom and Laffont (1979) and Parker (1997), who assume different risk-taking behavior among individuals.

In these occupational choice models, entrepreneurship has traditionally been treated as a single state that one can either adopt or not. In reality, however, the decision to become an entrepreneur is not as static as these models imply. Therefore, this thesis takes a dynamic approach and sees setting up a business as a process that consists of several stages. A distinction is made between no entrepreneurial activity and intentional, nascent, young, and established entrepreneurship. Individuals are said to "climb the entrepreneurial ladder" as they proceed to subsequent levels of increasing entrepreneurial involvement.

This dynamic approach provides important information on why people engage in entrepreneurship (Baron and Markman, 2005; Shane, 2003) and provides new insights on the determinants of entrepreneurial entry (Chapters 2, 3, 4). In other words, because entrepreneurs perform different tasks and activities at each stage in the entrepreneurial process, the influences of determining factors may differ across stages (Baron and Markman, 2005). That is, characteristics that influence entry into the early stages of entrepreneurship do not necessarily influence engagement in later stages of entrepreneurship. Current studies usually take into account a single stage of entrepreneurial engagement and therefore provide a fragmented and incomplete view of the determinants of entrepreneurial entry.

Parker (2009, Chapter 4) gives an overview of studies that treat entrepreneurship as a single state (relative to wage employment) and investigates factors that influence the probability of being in this entrepreneurship state. Other stages in the entrepreneurial process have also received considerable research attention. For example, there are studies that examine the determining factors of a preference for self-employment vis-à-vis wage employment (Blanchflower *et al.*, 2001; Grilo and Irigoyen, 2006) and of start-up intentions (Davidsson, 1995; Krueger *et al.*, 2000; Wilson *et al.*, 2007; Zhao *et al.*, 2010; Lee *et al.*, 2011). There is also research on the determinants of nascent entrepreneurship (Reynolds, 1997; Delmar and Davidsson, 2000; Kim *et al.*, 2003) and the success of nascent activities, *i.e.*, whether nascent activities lead to a start-up (Davidsson and Honig, 2003; Parker and Belghitar, 2006; Lichtenstein *et al.*, 2007; Dimov, 2010; Townsend *et al.*, 2010; Van Gelderen *et al.*, 2006, 2011). Finally, there is an entire literature on the drivers of success, measured, for example, in terms of survival or firm growth (Davidsson, 1991; Brüderl *et al.*, 1992; Cooper *et al.*, 1994; Van Praag, 2003; Stam *et al.*, 2010; Zhao *et al.*, 2010; Unger *et al.*, 2011).

This thesis integrates these lines of empirical research on the determinants of entrepreneurship in an international, process-based view of entrepreneurship, providing a more complete understanding of who initiates entrepreneurial activities (Baron and Markman, 2005; Shane, 2003). The distinction between stages is crucial for the investigation of the exit side of entrepreneurship (Chapter 7) and for the understanding of the relationship between exit from and re-entry into entrepreneurship (Chapters 8 and 9).

1.2.2 Focus on entrepreneurial exit and re-entry

At some point, entrepreneurs will exit any of the aforementioned stages of the entrepreneurial process. Hence, the entrepreneurial process is not only the series of activities that leads to new firm creation but also includes entrepreneurial exit (DeTienne, 2010). However, research on entrepreneurial exit is limited (DeTienne, 2010, Stam *et al.*, 2010; Wennberg *et al.*, 2010). That is, whereas exit at the firm or industry-level has received considerable attention, evidence regarding exit at the personal level is scarce. This latter observation holds true particularly for exit before business start-up (Barnett *et al.*, 2003), mainly as a result of the difficulty of obtaining data about entrepreneurs who attempted to start businesses but ultimately gave up these efforts. In other words, although there is relatively much known about the recognition and exploitation of entrepreneurial opportunities, little is known about the evaluation of entrepreneurial opportunities by potential entrepreneurs. However, the investigation of exit before business start-up is relevant, as these individuals ultimately evaluate whether to start their businesses, and, hence, are crucial contributors to the variation in the economy (Baumol, 2002).

After having experienced an entrepreneurial exit, individuals may turn to wage employment, remain inactive, or re-engage in the entrepreneurial process. Recent literature suggests that the same people often exit and re-enter the start-up process, known as "revolving door entrepreneurship" or "serial entrepreneurship". Much is known about the interplay between entry and exit (Carree and Thurik, 1996; Fok *et al.*, 2009), their variability over time and across industries (Geroski, 1995) and the way they bring about change (Audretsch, 1995; Baumol, 2002; Bartelsman *et al.*, 2004). Again, much less is known about individuals who decide to exit and re-enter the entrepreneurial process. Only a handful of studies have investigated this link, and they have done so only in a national context and without considering entrepreneurship as a process (Wagner, 2003; Stam *et al.*, 2008; Amaral *et al.*, 2009). Chapters 8 and 9 focus on this link between entrepreneurial exit and re-engagement by distinguishing between several stages of entrepreneurship. Chapter 9 fills another lacuna in empirical research on entrepreneurial exit. This chapter asserts that the relationship between entrepreneurial exit and re-engagement depends on the quality of the exit experience, which is influenced by the specific reason for exit. In other words, Chapter 9 incorporates the often-ignored distinctions among several reasons for exit, such as a sell-off, a forced exit because of financing problems, or retirement. Chapter 9 therefore agrees with DeTienne and Cardon (2010) that "(…) *exit may not be a unidimensional construct but rather may comprise many exit paths which must be specified in order to understand the construct fully*."

1.2.3 International focus

All relationships are investigated through an international lens. This extension to multiple regions is important because regions are heterogeneous regarding their opportunities and

barriers for entrepreneurial progress. That is, some regions or countries are more conducive to entrepreneurship than others. For example, countries differ in the ways they regulate and stimulate entry and firm development (Baumol, 1990; Klapper *et al.*, 2006; Van Stel *et al.*, 2007a; Capelleras *et al.*, 2008). In addition, an entrepreneurial culture is crucial for achieving entrepreneurial progress (Baum *et al.*, 1993; Noorderhaven *et al.*, 2004; Uhlaner and Thurik, 2007; Wennekers *et al.*, 2007). For example, a country's culture in terms of risk-taking propensity and stigmatization of failure is likely to play a dominant role regarding the willingness of people to engage in entrepreneurial initiatives, not only for the first time but also for subsequent attempts. Furthermore, the mode of entry (business takeover or new venture start-up, Chapter 6) is likely to be influenced by risk tolerance or stigmatization of failure. The riskier mode of the two – starting from scratch – may be avoided more often in countries where the willingness to take risks is lower and the stigmatization of failure is higher. Finally, the economic system of a country is essential in creating entrepreneurial opportunities and barriers. This idea is illustrated in (former) transition economies in Europe and Asia, where entrepreneurial activity and the development of its support infrastructure have been found to differ from those in more developed market economies (Aidis, 2005; Manolova *et al.*, 2008; Yang and Li, 2008; Estrin and Mickiewicz, 2010). The opportunities and constraints that European and Asian countries in different stages of market reform impose on new venture creation are central to Chapter 3. There have not been many attempts to compare European and Asian transition and non-transition countries regarding the opportunities and barriers for entrepreneurship.

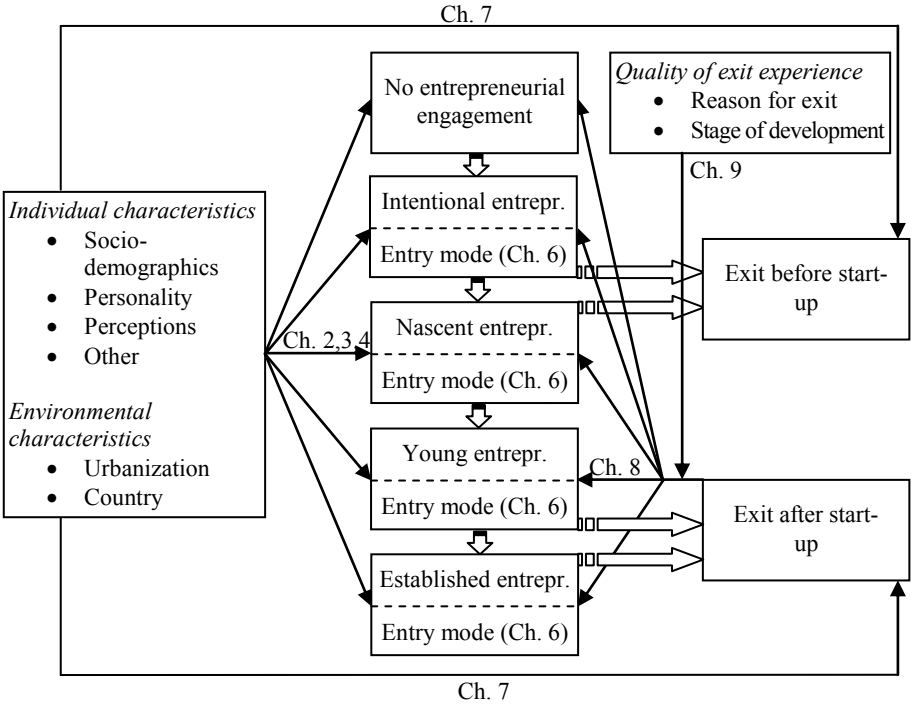
1.3 Overview of chapters

This section presents an overview of all the chapters in this thesis. It also explains how the chapters are linked.

1.3.1 Part I: Determinants of entrepreneurial entry (Chapters 2 to 6)

In this thesis, individuals can achieve entrepreneurial progress by moving through a number of sequential levels of increasing entrepreneurial involvement. Specifically, we distinguish between the following groups of individuals: 1) those without any affinity with entrepreneurship; 2) those with intentions to engage in entrepreneurship; 3) those who are actively taking steps to engage in entrepreneurship (*i.e.*, nascent entrepreneurs); 4) young entrepreneurs; and 5) established entrepreneurs. Individuals can transition between these "engagement levels". The dependency between these engagement levels is illustrated in Figure 1.1. Individual and environmental characteristics (in the text box on the left side of Figure 1.1) influence an individual's engagement in these stages. Chapters 2, 3 and 4 focus on these relationships.

Figure 1.1: Set-up of this thesis: entrepreneurial entry, exit, and re-entry.



Note: Only relationships that are investigated in this thesis are displayed in this figure (by means of solid arrows).

Individuals with at least start-up intentions have a certain idea about their preferred mode of engaging in entrepreneurship: they either prefer to take over an existing firm or to start a firm from scratch. The relationships between individual and environmental characteristics and this preferred mode of entry are central to Chapter 6, as illustrated in Figure 1.1.

Chapter 5 covers a specific topic: it explains the perceived difficulty of access to bank loans by SMEs with an analysis of firm-specific and country-specific characteristics.

1.3.2 Part II: Determinants of entrepreneurial exit and re-entry (Chapters 7 to 9)

The second part of this thesis focuses on explaining the probabilities of exiting and re-entering entrepreneurial activities. Individuals can decide to exit from entrepreneurial activities at four engagement levels, displayed in Figure 1.1.

Chapter 7 focuses on two specific times of exit: exit before start-up (may happen while having intentions or undertaking nascent activities) and exit after start-up (may happen while having a young or an established businesses). The influences of individual and environmental

characteristics on these two types of exit are assessed in Chapter 7. Again, these relationships are illustrated in Figure 1.1.

The final topic deals with the path dependency between entrepreneurial exit and subsequent entrepreneurial engagement. Chapters 8 and 9 focus on serial entrepreneurs, that is, individuals who decide to exit their entrepreneurial activities and start another venture subsequently. Chapters 8 and 9 investigate whether these serial processes are common among former entrepreneurs. They also shed light on the conditions under which individuals decide to re-engage in entrepreneurship. Chapter 9 attempts to further interpret the findings of Chapter 8 by investigating whether the relationship between exit and re-entry depends on the quality of the exit experience (expressed as the reason for exit or the stage of development of a country). The principal topics of Chapters 7 to 9 are also depicted in Figure 1.1.

1.4 Research questions

We divide the eight remaining chapters into six research questions. The relevance of each research question is explained below. In addition, we specify in what way each research question contributes to existing knowledge on entrepreneurial entry, exit, and re-entry.

1.4.1 Part I: Determinants of entrepreneurial entry (Chapters 2 to 6)

Research question 1. What are the determinants of the engagement levels on the entrepreneurial ladder? *(Chapters 2, 3 and 4)*

Relevance:

This thesis adopts a dynamic view that sees entrepreneurship as a process that consists of several stages or engagement levels (Reynolds, 1997; Rotefoss and Kolvereid, 2005; Grilo and Thurik, 2008). A distinction is made between no entrepreneurial activity, intentional, nascent, young, and established entrepreneurship. Hence, this thesis follows theoretical work that advocates the incorporation of stages in decision-making in general (Ajzen, 1991) and in the area of entrepreneurship in particular (Krueger and Carsrud, 1993; Krueger *et al.*, 2000). Basically, these models state that being in a certain stage provides valuable information and therefore increases chances of displaying behavior that is associated with a subsequent stage. For example, the Theory of Planned Behavior argues that actual behavior is dependent on intentions to perform this behavior. Krueger *et al.* (2000) specify this dependency for entrepreneurial decision-making. However, despite these theoretical propositions, discrepancies between stages are likely to exist in practice. For example, many individuals prefer to have their own businesses but are not actually self-employed (Grilo and Thurik, 2005a); others attempt to start a business (Reynolds, 2009) but do not succeed (Parker and Belghitar, 2006). Hence, characteristics that have an influence on belonging to an early stage of entrepreneur-

ship do not necessarily influence engagement in later stages of entrepreneurship, and vice versa. This observation is important from a policy point of view, as governments can intervene at positions in the entrepreneurial process where certain characteristics hinder entrepreneurial progress or where regions lag behind.

***Contribution*:**

We follow Shane (2003) and Baron and Markman (2005) who claim that most existing research on entrepreneurship has focused on a single stage of entrepreneurship – such as the actual employment status or the survival of entrepreneurial ventures – which leads to an inadequate understanding of entrepreneurship. This thesis adds to a comprehensive understanding of entrepreneurial decision-making by focusing on individuals' decisions at several stages of the entrepreneurial process.

Research question 2. What are the determinants of the perceived difficulty of access to bank loans by SMEs? *(Chapter 5)*

***Relevance*:**

SME promotion is a significant part of the Europe 2020 Strategy to improve Europe's competitiveness. In this context, it is important to know whether SMEs are constrained when trying to obtain external financing. The degree of asymmetric information between lender and borrower (*i.e.*, the unobservability by creditors of the quality of the projects of the borrowing firms) is thought to play an important role in this context, especially in the case of SMEs.

***Contribution*:**

Subjective evaluations of loan accessibility play important roles because they provide relevant information of the underlying (objective) environmental conditions. There has not been much research on what factors affect perceived access to bank loans by SMEs because a self-assessment criterion has rarely been used. New knowledge on this issue could, however, be vital to encouraging the creation and growth of SMEs.

Research question 3. What are the determinants of the preferred mode of entry (taking over an existing firm versus starting a new firm)? *(Chapter 6)*

***Relevance*:**

It has been observed that an enormous number of businesses seek suitable takeover candidates (Le Breton-Miller *et al.*, 2004; Parker and Van Praag, 2010; Van Teeffelen, 2010). Approximately one-third of European enterprises will require a takeover candidate in the next ten years (European Commission, 2006, p. 8). If incumbent business owners do not find successors, the economic value of these firms may be lost, with negative implications for jobs,

entrepreneurial experience, and economic development. This welfare loss is of concern to policymakers.

***Contribution*:**

The question of whether (prospective) entrepreneurs prefer taking over an existing firm or starting a new venture is under-researched. We found only two national studies going into this research direction. This is surprising as research on mode of entry into entrepreneurship may guide policymakers to take targeted measures making the succession process more effective and the dynamics of business formation more efficient.

1.4.2 Part II: Determinants of entrepreneurial exit and re-entry (Chapters 7 to 9)

Research question 4. What are the determinants of exit before business start-up and exit after business start-up? *(Chapter 7)*

***Relevance*:**

Investigating both types of exit is relevant. Exit before business start-up may prevent excess entry (Camerer and Lovallo, 1999) and overinvestment. However, valuable resources may be wasted, as individuals who exit before start-up do not have the chance to experiment or to accumulate entrepreneurship-specific human capital in terms of knowledge and experience. Exit after business start-up may induce private losses and the waste of resources (*i.e.*, sunk costs) as negative consequences but possible individual and vicarious learning about entrepreneurship and markets (Knott and Posen, 2005) as a positive result.

***Contribution*:**

Research on entrepreneurial exit is scarce (DeTienne, 2010; Stam *et al.*, 2010; Wennberg *et al.*, 2010). This extrapolates to two dimensions. First, whereas existing research has mainly focused on exit after start-up, Chapter 7 also focuses on exit before start-up. This type of exit has hardly received research attention.

Second, exit after start-up has earlier been related to firm- and industry-specific characteristics, such as firm size, firm age, or industry growth and entry rates. However, Chapter 7 focuses on personal and ecological characteristics that have hardly been focused on. The ecologies in which entrepreneurs are active are important to incorporate because they differ in their levels of competition and resource munificence.

Research question 5. Which people decide to re-engage in entrepreneurial activities after having experienced an exit? ***(Chapter 8)***

Research question 6. To what extent is entrepreneurial re-engagement influenced by the reason for exit and a country's stage of development? ***(Chapter 9)***

Relevance:

Studies have demonstrated the importance of exiting firms to the evolution of industries and economies (Audretsch *et al.*, 2004; Bartelsman *et al.*, 2004). When an individual decides to exit his/her firm, resources are released that can be redeployed in new, emerging, or existing entrepreneurial initiatives. Thus, an exit may have benefits for the entrepreneur, the old and new firm the entrepreneur is related to, the industry, and the economy (DeTienne, 2010). Hence, assessing the prevalence of entrepreneurial re-entry in an international context and uncovering the conditions under which individuals decide to re-engage in entrepreneurial activities are relevant research themes.

***Contribution*:**

Few studies have focused on the determinants of entrepreneurial re-engagement. Hence, a clear international picture concerning the pervasiveness of entrepreneurial re-entry is lacking. In addition, we add two factors that are argued to influence the probability of re-engagement: the reason for exit and the stage of development of the country in which the exit takes place. For example, exits because of retirement may be less likely to be associated with re-entry than sell-offs. Furthermore, in higher income countries, an exit experience may be more likely to lead to accumulated human capital that may be redeployed in new initiatives than in lower income countries.

1.5 Data

This thesis follows an empirical approach. That is, expected relationships between individual characteristics and entrepreneurial entry, exit, and re-entry are tested with data on individuals and SMEs from various countries. Below, descriptions are given of the two individual-level databases and the SME-level database. In addition, limitations of their use will be discussed.

1.5.1 Individual-level databases

The results in this thesis are derived from three datasets. First, the empirical analyses in Chapters 2, 3, 4, 6 and 7 are based on individual-level data from the Flash Eurobarometer Survey on Entrepreneurship. Data from the years 2004, 2007, and 2009/2010 are used.[2] The European Commission started to investigate entrepreneurial behavior and attitudes among EU

[2] The survey numbers associated with these years are 160, 192, and 283, respectively.

citizens in 2000 with telephone-based interviews in the 15 EU Member States with approximately 8,000 individuals. Since then, the scope of this survey has been extended, in terms not only of covered countries and national sample sizes but also of the number of survey questions. After 2000, similar surveys were conducted in 2001, 2002, 2003, 2004, 2007, and 2009/2010. Typical sample sizes consist of 500 or 1,000 respondents for each country. The most recent and most extensive data are used in Chapters 3 and 6. These data cover all 27 EU Member States, 5 other European countries (*i.e.*, Croatia, Iceland, Norway, Switzerland, and Turkey), the US, and 3 selected Asian countries (*i.e.*, China, Japan and South Korea). Older versions are used in Chapter 2 (2004) and in Chapters 4 and 7 (2007).

Second, individual-level GEM (Global Entrepreneurship Monitor) data from 2004 to 2009 are used. The GEM research program is an annual assessment of national levels of entrepreneurial activity. This program was initiated in 1999 with 10 participating countries and currently comprises 59 countries. Telephone or door-to-door interviews on entrepreneurial activity are conducted with random samples of at least 2,000 adults in each participating country. Chapter 8 uses individual-level data from 2004, 2005, and 2006; Chapter 9 uses data from 2007, 2008, and 2009.

A clear benefit of the two individual-level surveys is the representativeness of the national samples of the entire adult population, including those who have never considered pursuing an entrepreneurial career. This feature enables the distinction between engagement levels throughout this thesis. Concerning their international coverage, the Eurobarometer data mainly cover European countries and the US – although the scope has been extended in the 2009/2010 edition – whereas GEM also includes many lower-income countries.

1.5.2 Limitations

Although these two datasets clearly have their merits, there are also some drawbacks that should be addressed here. For example, although we make use of several years of the Flash Eurobarometer Survey on Entrepreneurship and the Global Entrepreneurship Monitor, these surveys concern repeated cross sections. Hence, no panel structure is incorporated, which prevents us from establishing causal relationships based on different points in time. A panel structure would have been beneficial regarding both the transition between engagement levels in the first part of this thesis and the relationship between recent exit and subsequent entrepreneurial engagement in Chapters 8 and 9. A second issue relates to the measurement of variables. For example, the issue of perception variables has a prominent place in this thesis, but the associated conclusions are based on one question measuring the underlying construct. There may be several dimensions of administrative complexities (*e.g.*, the number of procedures or the amount of time it takes to set-up a business; see Djankov *et al.*, 2002) but the measurement in this thesis is restricted to one item. Third, some determinants may be unable to be measured or are simply unavailable at all. The preclusion of certain factors in the expla-

nation of entry or exit (*e.g.*, family situation; marital status; minority information; sector information; previous labor market, sector or entrepreneurial experience) may cause an omitted variable bias. Finally, the settings in some chapters are based on pre-recession data, whereas others rely on data that have been assembled in periods of economic downturn (2008, 2009, and 2010).

1.5.3 Firm-level database

Chapter 5 makes use of another Flash Eurobarometer Survey. This third database focuses on the financing structure of SMEs. Therefore, it is the only survey in this thesis with interviews conducted at the firm level and not at the individual level. More precisely, Chapter 5 uses data from the "Flash Eurobarometer 174: SME Access to Finance" survey and the "Flash Eurobarometer 184: SME Access to Finance in the New Member States" survey of the European Commission. Together, these datasets cover 4,583 SMEs in 25 EU countries, whereas national samples are based on 100 to 300 completed telephone interviews. Hence, the two surveys are very useful to study businesses' perceptions of the credit market and to identify differences between countries.

1.6 Main results

Research question 1. What are the determinants of the engagement levels on the entrepreneurial ladder? *(Chapters 2, 3 and 4)*

Findings show that distinguishing between engagement levels provides valuable insights into entrepreneurial dynamics, both at the individual level and the country level. For example, regarding individual characteristics, we find that differences in entrepreneurial propensity between women and men tend to diminish as the level of entrepreneurial engagement increases. In other words, the lower engagement of women in entrepreneurship is mainly because they are less likely to consider entrepreneurship as a career option or to undertake serious attempts to start a business. Furthermore, individual perceptions of administrative complexities hinder entrepreneurial progress only in the two earliest stages of entrepreneurial involvement. However, this result only holds for Europe. Specifically, the relationship between this perception variable and entrepreneurial progress is stronger in European transition countries than in European non-transition countries. In addition, the perception of insufficient start-up information has a negative influence on the two earliest stages in European transition countries only. In our most recent Flash Eurobarometer on Entrepreneurship (2009/2010), perceived financial difficulties do not influence entrepreneurial progress.

Regarding country differences, we notice large variation regarding the ease with which businesses come into existence and survive. This large variation can mainly be explained by the degree of risk-taking that is inherent in societies and the level of economic development.

Although US citizens have an advantage over Europeans in the earliest stage of entrepreneurship – in which people start to think about entrepreneurship as an interesting career alternative – in later stages, they gradually lose their advantageous position. Also, China is found to have a forward position during the early stages of entrepreneurship, which is in contrast to a lack of early-stage entrepreneurial potential in the other Asian countries under investigation, *i.e.*, Japan and South Korea. However, converting nascent activities into a business start-up seems to be most difficult in China and the US among all countries in our dataset.

Research question 2. What are the determinants of the perceived difficulty of access to bank loans by SMEs? ***(Chapter 5)***

At the firm level, we find that perceptions of access to bank loans can be alleviated by reducing the degree of asymmetric information between lender and borrower according to the following dimensions. Young firms (existing less than ten years) perceive more problems with obtaining credit than their older counterparts. The finding of this reputation/track record aspect suggests that the presence of a credit history relaxes perceived credit constraints. Furthermore, turnover – which is seen as an approximation of the ability to provide collateral – is an important factor in relaxing perceived financing constraints. Whereas relationship banking alleviates perceptions, no significant relationships are found for the ownership structure of the firm or the number of employees.

There is large cross-country variation regarding the perceived difficulty of bank loan accessibility. For example, after controlling for firm-level and country-level characteristics, German firms are most pessimistic concerning their access to credit, whereas firms in Estonia and Finland are at the other end of the spectrum. The cross-country variation can be partly explained by the Herfindahl index in that a more concentrated banking sector is related to easier access to credit.[3] To illustrate this, whereas Estonia and Finland have the largest values of the Herfindahl index, Germany has the lowest.

Research question 3. What are the determinants of the preferred mode of entry (taking over an existing firm versus starting a new firm)? ***(Chapter 6)***

First, the preference for taking over an existing firm versus starting from scratch depends on the specific stage in the entrepreneurial process. More precisely, existing business owners report higher preferences than nascent entrepreneurs or than those just thinking about setting up a business. Regarding socio-demographic characteristics, we find that the preference for taking over decreases with education and increases with age. Furthermore, risk-tolerant and inventive individuals are more likely to start a firm from scratch. Finally, cross-country differences are apparent, even after controlling for all individual characteristics. Specifically, taking

[3] This is somewhat surprising, though some other studies have shown that a more concentrated banking system (explained by economies of scale and scope) could also be compatible with a more efficient structure (see European Central Bank, 2005).

over is especially preferred to starting from scratch in Japan and South Korea and in some European transition countries. These country differences are thought to be mainly related to the degree of risk-taking and stigmatization of failure inherent within a country's culture.

Research question 4. What are the determinants of exit before business start-up and exit after business start-up? ***(Chapter 7)***

Findings indicate that exit in imagined (exit before start-up) and in real (exit after start-up) markets have different determinants. For example, personal characteristics, such as being risk tolerant and having a self-employed parent, reduce the probabilities of exit in imagined markets and exit in real markets due to business failure. Ecological characteristics related to urbanization and welfare state regimes have contrasting relationships with exit in imagined markets as compared to exit in real markets. More precisely, urbanization is negatively related to exit in imagined markets but positively related to exit in real markets. Conversely, corporatist and Southern European regimes are positively related to exit in imagined markets, but negatively related to exit in real markets.

Research question 5. Which people decide to re-engage in entrepreneurial activities after having experienced an exit? ***(Chapter 8)***

When relating recent entrepreneurial exit with subsequent entrepreneurial engagement, we find that a recent exit substantially increases the probabilities of being involved in intentional, nascent, young, or established entrepreneurship. Thus, entrepreneurs who have experienced a recent entrepreneurial exit provide an important source of entrepreneurial energy. We relate this increased probability of re-entry to accumulated levels of entrepreneurship-specific human capital that results from the recent entrepreneurial exit. When we investigate the conditions under which an exit increases engagement in entrepreneurial activities, we find that this link is stronger for males, for persons who know an entrepreneur, and for persons with a low fear of failure. Educational attainment is not relevant. Moreover, there exists large cross-country variation in the probability of entrepreneurial engagement after exit.

Research question 6. To what extent is entrepreneurial re-engagement influenced by the reason for exit and a country's stage of development? ***(Chapter 9)***

We find support for our expectation that entrepreneurial exit fosters subsequent entrepreneurial engagement directly, and it does so indirectly, too, through enhanced entrepreneurial ability. With respect to the relationship between recent entrepreneurial exit and subsequent entrepreneurial engagement, results show that exit through sell-off has the strongest relationship. In addition, strong positive relationships are found for entrepreneurs with negative business experiences, such as those having difficulties with obtaining financing or those who exited because of an unprofitable business. When taking account of a country's stage of develop-

ment, serial processes seem to be hardly present in countries that are in the earliest stage of economic development.

1.7 Implications and discussion

This discussion revolves around the conditions under which individuals decide to enter, exit, or re-enter entrepreneurship (see Section 1.1). First, regarding individual-level conditions, how can governments exert influence on entrepreneurial activity? In terms of perceptions, we see that people with pessimistic views about the administrative start-up environment seem to be discouraged in having intentions or undertaking attempts to set up their own businesses, mainly in Europe, as compared to the United States and the Asian countries (Chapters 2, 3 and 4). Together with the important role of the perception of the availability of start-up information in some European countries, this provides valuable policy information. For example, the focus can be on making information more transparent and readily available to potential entrepreneurs. Policies may be aimed at tackling inflated perceptions of administrative or informational barriers (in the case of misperceptions of the environment) or directly lowering these barriers to entrepreneurship (in the case of perceptions more or less equal the objective state of the environment).

Concerning the determinants of exit before start-up and exit after start-up, we find that urbanization is negatively related to exit in imagined markets and positively related to exit in real markets (Chapter 7). This finding for urbanization points at the presence of overoptimistic entrepreneurs in these areas. Hence, it seems that this phenomenon of low-quality entrepreneurship can be diminished by making potential entrepreneurs more aware of the strong selection mechanisms and, accordingly, high probabilities of failure in these high-density areas. In other words, governments should not seek too actively to encourage new business activity in these high-failure areas, as this will mainly impact the foundation of "typical" start-ups instead of a selected number of start-ups having high-growth potential. This finding adds to the discussion of Shane (2009), who argues that this latter small group of start-ups contributes to job creation and ultimately to a region's prosperity.

One of the findings of Chapter 9 is that individuals are inclined to enter the entrepreneurial process again after having experienced an exit. This finding holds true for "positive" exit experiences, such as a sell-off, and for exits with more negative connotations, such as an unprofitable business or financing difficulties. This gives rise to two ideas. The consistent tendency to re-enter entrepreneurship across various exit types suggests that people are very much "dedicated" to entrepreneurship and do not seem to let an exit stand in the way of their entrepreneurial ambitions. In addition, the fact that those who have not received the necessary funding are likely to engage in any form of subsequent entrepreneurial involvement (while at the same time not being unprofitable per se) calls into question the functioning of the credit

market in terms of preserving the economic value of existing businesses. Lastly, the finding that serial processes are rarely present in countries that are in the earliest stage of economic development raises the question of whether these former entrepreneurs remain active or resort to paid employment. The distinction between these two occupational choices is currently not made in Chapter 9.

Second, how can countries learn from each other? Two observations are worth mentioning here. Whereas the entrepreneurial progress of individuals is not hampered by perceived financial barriers, country variations *are* explained in terms of the ease of obtaining finance (Chapter 4). In addition, concerning the perceived accessibility of bank loans (Chapter 5), we find a negative relationship between the degree of concentration of financial institutions and the perceived difficulty of bank loan accessibility. This seems somewhat surprising, although some studies have shown that a more concentrated banking system could also be compatible with a more efficient structure. Finland is an example in which SMEs are generally positive toward the accessibility of bank loans. This forward position of Finland can be partly explained by its high Herfindahl index, that is, a highly concentrated banking sector. Also, there exist many support programs in Finland that support access to bank loans, of which "Finnvera" is an example.

Governments should be aware of the need of takeover candidates in their countries (Chapter 6). They should make this mode of entry more widely known among its citizens and facilitate the process of taking over a firm. European countries differ significantly regarding the implementation of these suggestions to improve the business-transfer environment (European Commission, 2003a). Therefore, this is a way for countries to learn from each other's best practices.

Finally, regarding the determinants of exit before start-up and exit after start-up (Chapter 7), we find that corporatist and Southern European welfare regimes have a positive relationship with exit in imagined markets (before business start-up) and a negative relationship with exit in real markets (after business start-up). Because start-up attempts are given up relatively easily in these countries, and given the low likelihood of exit after start-up, potential entrepreneurs in these countries should be encouraged to persist in their entrepreneurial initiatives.

1.8 Suggestions for future research

At least two avenues for further research can be addressed. The first research opportunity is related to country differences that have been established throughout the chapters. This has been done in terms of achieving entrepreneurial progress (Chapter 2, 3 and 4), perceived access to finance (Chapter 5), the preferred mode of entry (Chapter 6), probabilities of exit (Chapter 7), and probabilities of re-entry after exit (Chapters 8 and 9). The degree of risk-taking or stigmatization of failure within a country has been explicitly incorporated (Chapter

4) or suggested (Chapter 6) as an explanation for these country differences. Furthermore, country income has also been used as a country-level determinant in Chapters 4 and 9. Some chapters apply classifications of countries, for example, in terms of welfare state regimes, to gain more insight into international differences. However, because of the widespread variation across countries found in numerous chapters and the practical importance of this variation, future research should explain in more detail where these differences stem from. One may think of alternative measures of entry regulation in Chapter 4 to explain entrepreneurial progress or characteristics of the financial market structure in Chapter 5 (*e.g.*, bank capitalization) to explain cross-country perceptions of access to bank loans. The degree to which government programs have been implemented regarding access to finance (Chapter 5) or facilitation of the takeover process (Chapter 6) are also worth investigating as potential drivers of country differences.

The second avenue for future research relates to success measures of entrepreneurial initiatives. Although the distinction between engagement levels provides information about achieved entrepreneurial progress, indications of the success of entrepreneurial ventures can hardly be given. Distinguishing between young and established firms reveals survival chances to some extent, but essential information on success measures like profits, sales, or time to failure, is missing. This issue also extends to other topics in this thesis. For example, future research should reveal whether the mode of entry determines success (Chapter 6). Furthermore, information on survival rates could provide valuable information about financing constraints in Chapter 5, as this chapter only includes established firms, while credit rationing could prevent the successful start-up of a business.

1.9 Publication status of chapters

Table 1.1 gives an overview of each chapter, together with the research question (RQ) it addresses, the particular dataset, and publication status. The chapters were co-authored by the following people: Jörn Block, Erik Canton, Isabel Grilo, Jolanda Hessels, Josefa Monteagudo, Erik Stam, Roy Thurik, and Ingrid Verheul (in alphabetical order). Four chapters have been accepted for publication in international journals, and an additional three have been submitted for publication.

Table 1.1 lists a few other manuscripts that are not included in this thesis, which have appeared as working papers or have been submitted. These manuscripts address the following topics: gender differences on the entrepreneurial ladder, opportunity and necessity entrepreneurship, and social entrepreneurship. In sum, this thesis adds to the existing literature in various ways but does certainly not give a complete picture of the entrepreneurial process.

Table 1.1: Overview of chapters and other manuscripts.

Chapter	Title	RQ	Dataset	Publication status
	Part I: Determinants of entrepreneurial entry			
2	The entrepreneurial ladder and its determinants	1	Flash Eurobarometer on Entrepreneurship (2004, No. 160)	Accepted *Applied Economics*
3	The entrepreneurial ladder in transition and non-transition economies	1	Flash Eurobarometer on Entrepreneurship (2009/2010, No. 283)	Accepted *Entrepreneurship Research Journal*
4	Entrepreneurial progress: climbing the entrepreneurial ladder in Europe and the US	1	Flash Eurobarometer on Entrepreneurship (2007, No. 192)	Submitted
5	Investigating the perceptions of credit constraints in the European Union	2	Flash Eurobarometer "SME Access to Finance" (2005 and 2006; No. 174 and 184)	Submitted
6	Business takeover or new venture? Individual and environmental determinants from a cross-country study	3	Flash Eurobarometer on Entrepreneurship (2009/2010, No. 283)	Submitted
	Part II: Determinants of entrepreneurial exit and re-entry			
7	Entrepreneurial exit in real and imagined markets	4	Flash Eurobarometer on Entrepreneurship (2007, No. 192)	Accepted *Industrial and Corporate Change*
8	Entrepreneurial exit and entrepreneurial engagement	5	Individual GEM data (2004, 2005, 2006)	Accepted *Journal of Evolutionary Economics*
9	Entrepreneurial exit, ability and re-engagement across countries in different stages of development	6	Individual GEM data (2007, 2008, 2009)	Submitted
	Other manuscripts[*]			
	Explaining preferences and actual involvement in self-employment: gender and the entrepreneurial personality		Flash Eurobarometer on Entrepreneurship (2004, No. 160)	Accepted *Journal of Economic Psychology*
	The entrepreneurial ladder, regional development and gender		Flash Eurobarometer on Entrepreneurship (2009/2010, No. 283)	Accepted *Small Business Economics*
	Engagement in social entrepreneurship: the role of perceived barriers, risk and social-demographics		Flash Eurobarometer on Entrepreneurship (2009/2010, No. 283)	–
	Factors influencing the entrepreneurial engagement of opportunity and necessity entrepreneurs		Flash Eurobarometer on Entrepreneurship (2007, No. 192)	–

[*] The first two manuscripts are based on Verheul *et al.* (2011) and Van der Zwan *et al.* (2011b), respectively.

Part I

Determinants of entrepreneurial entry

Chapter 2

The entrepreneurial ladder and its determinants

We test a new model where the entrepreneurial decision is described as a process of successive engagement levels, i.e., as an entrepreneurial ladder. Five levels are distinguished using nearly 12,000 observations from the 2004 "Flash Eurobarometer Survey on Entrepreneurship, No. 160" covering the 25 European Union member states and the United States. The most surprising of the many results is that perception of lack of financial support is no obstacle for moving to a higher entrepreneurial engagement level whereas perceived administrative complexity is a significant obstacle. We also show that the effect of age on the probability of moving forward in the entrepreneurial process becomes negative after a certain age implying that if entrepreneurial engagements are not taken early enough in life they may well never be taken.

This chapter is based on Van der Zwan *et al.* (2010).

2.1 Introduction

The theory of occupational choice has dominated the investigations of the entrepreneurship (self-employment) decision (Parker, 2009, Chapter 4; Grilo and Thurik, 2008). It views agents as (expected) utility maximizers taking an occupational choice decision – to become employees or entrepreneurs – on the grounds of the utility associated with the returns accruing from these two types of activity. Rooted in the work of Knight (1921) this theory sees entrepreneurship as a state which one can adopt or not. This "static" view has been updated by a more "dynamic" one acknowledging that setting up a business is a process which consists of several stages (Reynolds, 1997). This view led to a wave of research of the determinants of so-called nascent entrepreneurs (Davidsson, 2006). Nascent entrepreneurs are people who are taking certain steps to become self-employed but are not yet officially established. The work of the Global Entrepreneurship Monitor (GEM) is inspired by this view (Reynolds *et al.*, 2005).

Grilo and Thurik (2005b, 2008) introduce the concept of engagement levels to discriminate between the various stages of setting up or closing down a business. They apply a multinomial logit model to analyze the determinants of the various stages. The engagement levels in the present chapter are analyzed in an *ordered* context, in the sense that each level is seen as an increasing level of involvement in the entrepreneurial process. The idea behind this approach is that entrepreneurship can be described as a process one becomes involved in and where different engagement levels can be distinguished, with determinants having not necessarily identical impacts on the various levels. (Potential) entrepreneurs climb the entrepreneurial ladder. In the present chapter we analyze five of these naturally *ordered* engagement levels. Nearly 12,000 observations are used from the 2004 "Flash Eurobarometer Survey on Entrepreneurship" covering 25 European Union Member States and the United States to analyze whether an *ordered* regression model with five engagement levels gives an adequate description of the entrepreneurial process and to what extent the available covariates are determinants of this process. In other words, we analyze whether these covariates have an influence on moving people up the entrepreneurial process.

The contribution of the present chapter is that, *first*, while in earlier studies only a multinomial logit model has been used, here we extend this framework to an *ordered* context. Hence, we investigate whether there is a natural ordering of the dependent variable supporting the view of entrepreneurship as a process. *Second*, we determine which variables "drive" (potential) entrepreneurs through this process.

2.2 Data

In the 2004 "Flash Eurobarometer Survey on Entrepreneurship"[4] the following question was used to construct the dependent variable: "*Have you started a business recently or are you taking steps to start one?*" The following options for answering were given:

1) "It never came to your mind."
2) "No, but you are thinking about it."
2a) "No, you thought about it or had already taken steps to start a business but gave up."
3) "Yes, you are currently taking steps to start a new business."
4) "Yes, you have started or have taken over a business in the last three years and are still active."
5) "Yes, you started or took over a business more than three years ago and are still active."
5a) "No, you once started a business, but currently you are no longer an entrepreneur."

Without engagement levels 2a and 5a we expect the process to be naturally ordered in terms of involvement in the entrepreneurial process. We will abbreviate the remaining five stages as "never thought about it", "thinking about it", "taking steps", "young business", and "old business", respectively.

Other than demographic variables such as gender (male=1), age, education level (age when finished full time education) and whether parents are self-employed (one or both of the parents are/were self-employed=1), the set of explanatory variables used includes four perceptions of "obstacles", a crude measure of risk tolerance, internal and external locus of control and country-specific effects. We refer to the usual literature of the determinants of entrepreneurship for justifying the use of these variables (Parker, 2009, Chapter 4; Davidsson, 2006; Grilo and Thurik, 2005a, 2005b, 2008).[5]

The perception variables include the perception by respondents of: lack of available financial support, of complex administrative procedures, of lack of sufficient information on starting an own business, and of an unfavorable economic climate. These variables as well as the risk tolerance variable are captured, respectively, using the question "*Do you strongly agree, agree, disagree or strongly disagree with the following statements?*":

- "It is difficult to start one's own business due to a lack of available financial support."
- "It is difficult to start one's own business due to the complex administrative procedures."
- "It is difficult to obtain sufficient information on how to start a business."
- "The current economic climate is not favorable to start one's own business."

[4] Fore more information: http://ec.europa.eu/public_opinion/flash/fl160_en.pdf.
[5] Following this literature we also apply quadratic terms for age and education next to the linear ones.

- "One should not start a business if there is a risk it might fail."

For the four "obstacle" statements a dummy variable is constructed which equals 1 in the case of "strongly agree" or "agree". For the risk tolerance statement a dummy variable is constructed which equals 1 if "disagree" or "strongly disagree" has been chosen.

Internal locus of control measures whether an individual believes that (s)he can influence events through own ability, effort or skills. On the other side of the spectrum, external locus of control measures whether an individual believes that external forces determine the outcome. Respondents can choose between five answers on the following question "*When one runs a business, what do you think most determines its success?*":

- "The director's personality."
- "The general management of the business."
- "The overall economy."
- "The political context."
- "Outside entities."

The dummy internal success factors equals 1 if one or both of the first two possibilities is/are mentioned, without mentioning any of the last three. On the contrary, external success factors equals 1 if one or more of the last three possibilities is/are mentioned, without giving any of the first two possible choices as a response.

Country-specific effects are controlled for using country dummies where the US serve as the base country.

2.3 Ordered logit model

The ordered logit model builds upon a latent continuous variable, y_i^*, which is modeled using the linear regression $y_i^* = X_i'\beta + \varepsilon_i$, where $i = 1,\ldots,n.$ For example, y_i^* can be thought of as an unobserved willingness to be(come) an entrepreneur. The disturbance terms, ε_i, are uncorrelated and for the ordered logit model it holds that all ε_i follow a logistic distribution with mean zero and variance equal to $\pi^2/3$. X_i is a $k \times 1$ vector of explanatory variables for individual i with corresponding coefficient vector β ($k \times 1$) which is the same across all observations i and engagement levels j.

In contrast with this unobservable latent variable we observe the variable Y_i (the engagement level which individual i belongs to) with outcomes y_i, where $y_i = 1,\ldots,J$ and J is the number of engagement levels. Next, y_i^* is related to y_i by means of $J-1$ unobserved threshold levels $\alpha_1,\ldots,\alpha_{J-1}$:

$$Y_i = \begin{cases} 1 & \text{if} \quad y_i^* \le \alpha_1; \\ j & \text{if} \quad \alpha_{j-1} < y_i^* \le \alpha_j, \ \text{for} \quad j = 2,\ldots,J-1; \\ J & \text{if} \quad \alpha_{J-1} < y_i^*. \end{cases}$$

Hence, for $j = 2,\ldots,J-1$, each probability of belonging to engagement level j for individual i is given by $\Pr(Y_i = j) = F(\alpha_j - X_i'\beta) - F(\alpha_{j-1} - X_i'\beta)$ with $F(\cdot)$ the cumulative logistic distribution function. For $j = 1$ we have $\Pr(Y_i = 1) = F(\alpha_1 - X_i'\beta)$ and for $j = J$ this probability equals $1 - F(\alpha_{J-1} - X_i'\beta)$. Note that $X = (X_1,\ldots,X_n)$ does not contain a row of ones for identification purposes.

The above model can be extended to the heteroskedastic case by taking the variance of ε_i to be $E(\varepsilon_i^2) = (1/3)\pi^2 \exp(z_i'\gamma)^2$ (with z_i a vector of observed variables without intercept) so that $\varepsilon_i / \exp(z_i'\gamma)$ is now a homoskedastic error term. In the remainder we use the notation $\sigma_i = \exp(z_i'\gamma)$. The probability $\Pr(Y_i = j)$ in the heteroskedastic case equals $F((\alpha_j - X_i'\beta)/\sigma_i) - F((\alpha_{j-1} - X_i'\beta)/\sigma_i)$.

2.4 Model evaluation

The estimation results of both the homoskedastic and heteroskedastic ordered logit model with five engagement levels are shown in Table 2.1.[6] The magnitude of the coefficients and their significance do not differ much between the two models (only education squared is insignificant at a ten per cent significance level in the heteroskedastic formulation). Threshold estimates are of different magnitude in both models but their absolute differences are comparable.

Variables that have a significant influence on the variance of the disturbance term in the heteroskedastic regression are gender (positive coefficient), age (positive), self-employed parents (positive), education (negative), preference for self-employment (negative) (all at a one per cent significance level) and economic climate (positive) and lack of sufficient info (positive) (both at five per cent).[7]

[6] We also ran regressions with 1) all engagement levels, 2) only without engagement level 2a, and 3) only without engagement level 5a. It turns out that all diagnostics are in favor of the model we use.

[7] We used a simple likelihood ratio principle to test for the significance of γ in the heteroskedastic specification $\sigma_i = \exp(z_i'\gamma)$. This test statistic, which compares the restricted log likelihood value (when γ=0) with the unrestricted one, is asymptotically χ^2 distributed under the null hypothesis with 7 degrees of freedom (number of restrictions imposed). Note that we did not include a constant in z_i, again due to an identification problem. The resulting value of the test statistic (261.40) is far above the five per cent critical value of a χ^2 distribution with 7 degrees of freedom (14.07) and hence, we reject the null hypothesis of γ=0 finding statistically sufficient evidence that the heteroskedastic ordered logit model is preferred to the homoskedastic ordered model.

Table 2.1: Estimation results ordered logit model (estimates of coefficient vector β and threshold levels with corresponding standard errors between parentheses).

	Homoskedastic		**Heteroskedastic**	
Gender	0.547 ***	(0.041)	0.806 ***	(0.096)
Age	0.134 ***	(0.007)	0.317 ***	(0.030)
$(Age/100)^2$	-16.864 ***	(0.841)	-44.869 ***	(4.300)
Education	0.068 ***	(0.013)	0.115 ***	(0.030)
$(Education/100)^2$	-7.264 ***	(2.534)	-9.264	(5.983)
Self-employed parents	0.398 ***	(0.046)	0.464 ***	(0.104)
Perc. lack financial support	-0.019	(0.053)	-0.100	(0.097)
Perc. administrative complex.	-0.192 ***	(0.047)	-0.306 ***	(0.088)
Perc. insufficient info	0.052	(0.044)	0.008	(0.087)
Risk tolerance	0.169 ***	(0.043)	0.254 ***	(0.081)
Economic climate	0.029	(0.046)	-0.056	(0.090)
Preference self-employment	1.756 ***	(0.045)	3.539 ***	(0.251)
Internal success factors	-0.030	(0.049)	-0.062	(0.091)
External success factors	-0.064	(0.055)	-0.100	(0.105)
Austria	0.319 **	(0.160)	0.360	(0.301)
Belgium	-0.725 ***	(0.133)	-1.403 ***	(0.259)
Cyprus	-0.394 ***	(0.147)	-0.861 ***	(0.258)
Czech Republic	0.334 ***	(0.125)	0.634 **	(0.247)
Denmark	-0.029	(0.157)	-0.218	(0.303)
Estonia	0.700 ***	(0.148)	1.114 ***	(0.306)
Finland	0.369 **	(0.154)	0.562 *	(0.288)
France	-0.874 ***	(0.129)	-1.680 ***	(0.270)
Germany	0.216 *	(0.117)	0.260	(0.228)
Greece	0.172	(0.112)	0.194	(0.212)
Hungary	0.237 *	(0.128)	0.207	(0.237)
Ireland	-0.491 ***	(0.144)	-0.940 ***	(0.265)
Italy	-0.546 ***	(0.116)	-1.176 ***	(0.234)
Latvia	0.009	(0.140)	-0.057	(0.267)
Lithuania	0.339 **	(0.139)	0.559 **	(0.268)
Luxembourg	-0.572 ***	(0.156)	-1.217 ***	(0.284)
Malta	-0.620 ***	(0.171)	-1.182 ***	(0.318)
Netherlands	0.157	(0.124)	0.308	(0.244)
Poland	0.015	(0.118)	-0.070	(0.207)
Portugal	-0.584 ***	(0.124)	-1.383 ***	(0.244)
Slovakia	0.746 ***	(0.140)	1.373 ***	(0.297)
Slovenia	0.230	(0.142)	0.373	(0.266)
Spain	-0.918 ***	(0.129)	-1.846 ***	(0.259)
Sweden	-0.359 **	(0.156)	-0.787 ***	(0.293)
United Kingdom	-0.023	(0.122)	-0.002	(0.232)
Threshold 1	4.876 ***	(0.239)	9.302 ***	(0.711)
Threshold 2	6.492 ***	(0.243)	12.469 ***	(0.913)
Threshold 3	6.855 ***	(0.244)	13.220 ***	(0.967)
Threshold 4	7.355 ***	(0.245)	14.309 ***	(1.046)

Table 2.1 (continued)

Number of observations	11,751	11,751
Log likelihood	-10,928	-10,666
LR statistic	3,349 (χ^2, 39 df.)	3,872 (χ^2, 46 df.)
Akaike Inform. Criterion	1.867	1.824
Bayesian Inform. Criterion	1.894	1.855
Pseudo R^2 (McFadden)	0.133	0.154

Notes: ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively.

Economic interpretation of the heteroskedastic results is somewhat difficult. For instance, one could say that men and older people, ceteris paribus, generate a higher variance of the disturbance term ε_i in the latent regression. In these cases, there is a higher uncertainty in the (latent) value y_i^* and hence, there is more uncertainty about the specific engagement level of the entrepreneurial process an individual belongs to.

Though we found that the heteroskedastic model is statistically superior to the homoskedastic formulation, we proceed with the interpretation of the homoskedastic model as no important differences are present in the estimation results of the variables and thresholds (apart from education squared).

A crucial assumption underlying the ordered logit model is the "parallel regression assumption" (same coefficient vector β for each engagement level j). Given J engagement levels in the ordered logit model, the equality of the coefficients of all *J-1* binary logit regressions for k explanatory variables can be investigated by means of a Wald test proposed by Brant (1990).[8] The coefficient vectors of these *J-1* logit regressions are denoted as δ_j, $j=1,\ldots,$ *J-1*. The null hypothesis of the Wald test assumes *J-1* parameter equalities across k variables and hence – as Kim (2003) indicates – we cannot expect this assumption to be true, particularly not in large samples. In our homoskedastic model the "parallel regression assumption" for *all* variables is violated. One can also check the violation of the "parallel regression assumption" for each variable separately: only for male, age, age squared, self-employed parents and preference for self-employment, the null hypothesis of equal parameter estimates is rejected at one per cent (country dummies are again not considered here). See Table 2.2 (left hand column). For the variables that do not "pass the test", it is therefore relevant to look at the results of the binary logit regressions. In Table 2.2 the estimates of the coefficient vectors δ_j are displayed together with their standard errors as well as marginal effects (not for country dummies).[9] With these marginal effects in mind, one can investigate how impacts of variables change (and the signi-

[8] To illustrate these binary regressions, suppose one has three engagement levels. One can now perform two separate binomial logit regressions: $\Pr(Y_i=1)$ versus $\Pr(Y_i>1)$ and $\Pr(Y_i\leq 2)$ versus $\Pr(Y_i=3)$. For each binary regression a different coefficient vector is estimated. When these coefficient vectors do not significantly differ from each other, there is no reason to reject the "parallel regression assumption".

[9] The computation of the marginal effects is done as follows: for each observation a marginal effect is calculated and the sample averages of these values are displayed in Table 2.2 for each variable. The p-values of these effects are comparable to p-values of the coefficients of the binary regressions in Table 2.2.

ficance of these impacts) with increasing level of involvement.[10] Outcomes are discussed in our section on interpretation.

While testing the "parallel regression assumption" homoskedasticity is assumed. So, rejection of the "parallel regression assumption" may be a consequence of not permitting a non-linear function of the latent variable, *i.e.*, a heteroskedastic specification of the error variance. A similar argumentation can be given the other way around: rejecting the homoskedastic specification may be caused by the fact that the "parallel regression assumption" is not justified, that is, a non-linear specification might be better, while this test is performed under the assumption of equal δ_js.

Allowing for a heteroskedastic specification we test the "parallel regression assumption" to investigate what the "real" cause is of rejecting the left side model in Table 2.1. For each heteroskedastic binary regression we have $\Pr(Y_i = j) = F(X_i'\delta_j^* / \exp(z_i'\gamma_j^*))$. The estimates of δ_j^* and γ_j^* as well as marginal effects are displayed in Table 2.3 (omitting country dummies and constant). The Wald statistic points at rejection of the "parallel regression assumption" at a one per cent significance level only for preference for self-employment. However, it sometimes gives negative values. The results for gender, age, age squared, self-employed parents and administrative complexities tend to show less spread across the four binary regressions than the results of homoskedastic binary regression given in Table 2.2. For these five variables the "parallel regression assumption" is violated in the homoskedastic case while the coefficients are significant. It is tempting to conclude that rejection of the "parallel regression assumption" in the homoskedastic model is due to not allowing for a heteroskedastic formulation.[11]

2.5 Interpretation

Interpretation of the ordered logit model is best done using the log odds ratios $\log(\Pr(Y_i \le j)/\Pr(Y_i > j)) = \alpha_j - X_i'\beta$. So, for each engagement level j, a positive coefficient implies that an increase in the corresponding variable, while keeping all other variables equal, leads to a situation where an individual is more likely to move to an engagement level above j than to stay in j.

[10] If the "parallel regression assumption" is not violated for a variable, this does not necessarily imply that the marginal effects in Table 2.2 are statistically the same across all binary regressions.

[11] Furthermore, we investigated the redundancy of the variables in the heteroskedastic specification (testing $\gamma_i^* = 0$ for each j) with a likelihood ratio test statistic (7 degrees of freedom, 0.05 critical value is 14.07). The four test statistics given in Table 2.3 (79.42; 69.08; 58.20; 51.22) are all in excess of 14.07, leading us to the conclusion that for each binary regression the heteroskedastic specification is again preferred to the homoskedastic specification. We also assessed the significance of each binary heteroskedastic regression in its totality (46 degrees of freedom, 0.05 critical value is 62.83). The four test statistics given in Table 2.3 (3,343.66; 2,034.88; 1,776.52; 1,351.76) are all in excess of 62.83.

Table 2.2: Results from four homoskedastic binary logit regressions (estimates of coefficient vectors δ_j, together with average marginal effects).

	Binary regressions							
	(1) vs. >(1)		<=(2) vs. >(2)		<=(3) vs. >(3)		<=(4) vs. (5)	
	coeff.	effect	coeff.	effect	coeff.	effect	coeff.	effect
Gender$^{###,\wedge\wedge\wedge}$	0.509 ***	0.091	0.753 ***	0.077	0.819 ***	0.067	0.853 ***	0.049
Age$^{###,\wedge\wedge\wedge}$	0.104 ***	0.018	0.241 ***	0.025	0.306 ***	0.025	0.328 ***	0.019
(Age/100)$^{2###,\wedge\wedge\wedge}$	-14.498 ***	-2.548	-26.190 ***	-2.687	-31.671 ***	-2.615	-32.273 ***	-1.908
Education$^{\wedge\wedge\wedge}$	0.068 ***	0.012	0.068 ***	0.007	0.079 ***	0.007	0.064 **	0.004
(Education/100)$^{2\wedge\wedge\wedge}$	-6.368 **	-1.119	-8.934 **	-0.917	-13.017 ***	-1.075	-11.827 **	-0.699
Self-employed parents$^{###,\wedge\wedge\wedge}$	0.340 ***	0.061	0.608 ***	0.067	0.685 ***	0.061	0.684 ***	0.044
Lack financial support	-0.003	-0.001	-0.069	-0.007	-0.023	-0.002	-0.063	-0.004
Administr. complex.$^{##,\wedge\wedge\wedge}$	-0.143 ***	-0.025	-0.283 ***	-0.030	-0.338 ***	-0.029	-0.270 ***	-0.017
Insufficient info$^{##}$	0.042	0.007	0.162 **	0.017	0.114	0.009	-0.005	0.000
Risk tolerance$^{\wedge\wedge\wedge}$	0.167 ***	0.029	0.200 ***	0.021	0.246 ***	0.020	0.200 **	0.012
Economic climate$^{##}$	-0.003	-0.001	0.080	0.008	0.184 **	0.015	0.235 ***	0.013
Preference self-empl.$^{###,\wedge\wedge\wedge}$	1.783 ***	0.348	1.758 ***	0.178	1.605 ***	0.130	1.654 ***	0.093
Internal success factors	-0.076	-0.013	0.061	0.006	0.082	0.007	0.076	0.005
External success factors	-0.101 *	-0.018	0.042	0.004	-0.001	0.000	0.040	0.002
Number of observations	11,751		11,751		11,751		11,751	
Log likelihood	-6,183		-3,931		-3,270		-2,467	
LR statistic (χ^2, 39 df.)	3,264		1,966		1,718		1,301	
Akaike Inform. Criterion	1.059		0.676		0.563		0.427	
Bayesian Inform. Criterion	1.084		0.701		0.588		0.452	
Pseudo R^2 (McFadden)	0.209		0.200		0.208		0.209	

Notes: ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively. Furthermore, ###, ##, and # mean that the "parallel regression assumption" is violated at the 1%, 5%, and 10% level, respectively. Finally, ^^^ denotes significance at the 1% level in the homoskedastic logit regression (see Table 2.1).

The estimates of the thresholds show that the first is relatively far away from the second (the confidence intervals do not even overlap). It seems difficult to switch from "thinking about it" to "taking steps". Once in the entrepreneurial process, the step from "taking steps" to "young business" is relatively easily made. This gap again is smaller than the one from "young business" to "old business".[12]

Demographic variables: gender, age, education

Table 2.1 reveals that the gender coefficient is significantly different from zero: men have a higher probability than women of moving to a higher level of entrepreneurial involvement. Note that for this gender variable the "parallel regression assumption" has been violated, because of a different coefficient in each binary regression (see Table 2.2). Furthermore we see in Table 2.2 that the effect of gender on the probability of being in engagement level $j+1$ versus j decreases as j increases. So, the effect of gender becomes weaker (it plays a less important role) when higher levels of engagement are attained.

[12] These results support the use of the influential TEA (Total Entrepreneurial Activity) measure of GEM where nascent and young entrepreneurs are taken together (Reynolds *et al.*, 2005).

As can be seen from Table 2.1, age and education are significantly present in the ordered regression. Because of the violation of the "parallel regression assumption" for the age variable we take a further look at Table 2.2. Taking into account the squared term we can calculate the turning points at which the effect of age becomes negative for each binary regression. It turns out that these turning points vary between 36 years old for the switch from "never thought about it" to higher levels of involvement and 51 years old in the last binary regression which confronts any level of engagement below having a business for at least 3 years versus the highest involvement level of being an owner for at least 3 years. These turning points increase steadily as the switch portrayed in the binary regression corresponds to higher levels of entrepreneurial involvement.[13] These results suggest that the "jump" into any form of entrepreneurial involvement, even the mildest "thinking about it", is more likely to be made until the mid-thirties with age playing against it as one gets older than that. Without making a case of the precision of this specific age, what this result implies as a message for those who design measures or incentives to help people consider an entrepreneurial carrier, is that the chances of success in triggering such a change of mind decrease after a certain age. In the same vein, using the information conveyed by the turning points implicit in the other binary regressions, every move towards higher levels of entrepreneurial engagement is less likely after a certain age.[14] These results, eventually complemented by additional research, are useful for policy makers in determining target groups depending on the type of measures envisaged to prompt an entrepreneurial response from the population.

For education, on the other hand, the "parallel regression assumption" has not been violated: the coefficient stays the same across all engagement levels. Furthermore, despite the negative sign of education squared in Table 2.1 the effect of education remains positive in the relevant range.[15]

Self-employment preference and self-employed parents

Preference for self-employment is significantly present in the ordered regression. This coefficient does not change as one becomes more active in the entrepreneurial world. The marginal effect of this variable, however, decreases heavily in moving forward in the entrepreneurial process, while this variable seems to be very important in the switching behavior as can be seen from the large marginal effects across all binary regressions.

[13] For each binomial regression in Table 2.2 the turning point where the effect of age becomes negative is 36, 46, 48 and 51 years old. These numbers are similar to those obtained in the heteroskedastic binary regressions, except that the turning point of any level of engagement below having a business for at least 3 years versus the highest involvement level of being an owner for at least 3 years becomes 50 years instead of 51.

[14] Reynolds (1997) using the concept of "nascent entrepreneurs" (those reporting two or more firm gestation behaviors) finds that age is the dominant factor affecting decisions to start a new firm and that this effect is non-monotonic attaining its peak for the age class 25 to 34.

[15] The turning point for education resulting from the coefficients in Table 2.1 takes the value of 47 for the variable "age when finished full time education".

Having self-employed parents also significantly increases the probability of moving to higher engagement levels, as the (large) significant marginal effects in Table 2.2 reveal.

Obstacle variables

The perception of lack of financial support does not affect the probability of moving forward in the entrepreneurial ladder. It does not seem to discourage respondents in setting up a business and becoming entrepreneurs. The same holds true for the lack of sufficient information. Also, the fact of perceiving an unfavorable economic climate does not play a role in switching through the whole entrepreneurial system, although in the last two binary regressions concerning levels of high involvement, this variable *does* have a significant effect.

The fact that a respondent perceives it to be difficult to start a business due to complex administrative procedures has a negative impact on the probability of advancing towards more "active" levels of entrepreneurship (see the significant negative coefficient estimate in Table 2.1 and the significant negative marginal effects in Table 2.2). Furthermore, if one is more risk tolerant, one is more likely to move to a higher engagement level in the entrepreneurial system than staying in the present engagement level.

Internal and external locus of control

Finally, internal and external success factors do not seem to be relevant in the context of the present setup. Hence, the fact that an individual believes that he or she can influence events through his/her own ability or skills does not have a significant influence on being in one of the five stages of the entrepreneurial process. The same can be concluded for the acknowledgement that external factors influence events.

Country dummies

Parameter estimates of the country dummies are insignificant in case of Denmark, Greece, Netherlands, United Kingdom, Latvia, Poland and Slovenia (at the ten per cent significance level), placing these countries at par with the US after controlling for the other covariates. Germany, Austria, Finland, Czech Republic, Estonia, Lithuania, Hungary and Slovakia display significant positive coefficients suggesting that, relative to the US, citizens from these countries are more likely to move forward in the entrepreneurial process. All remaining countries seem, other things equal, less likely to climb the entrepreneurial ladder than US respondents.

Table 2.3: Results from four heteroskedastic binary logit regressions (estimates of coefficient vectors δ_j^* and γ_j^*, together with average marginal effects).

	Binary regressions							
	(1) vs. >(1)		<=(2) vs. >(2)		<=(3) vs. >(3)		<=(4) vs. (5)	
	coeff.	effect	coeff.	effect	coeff.	effect	coeff.	effect
Gender^^^	0.413 ***	0.086	0.409 ***	0.074	0.518 ***	0.064	0.499 ***	0.047
Age^^^	0.088 ***	0.018	0.168 ***	0.023	0.235 ***	0.024	0.248 ***	0.018
$(Age/100)^2$^^^	-12.247 ***	-2.426	-18.315 ***	-2.486	-24.342 ***	-2.470	-24.745 ***	-1.784
Education^^^	0.046 ***	0.009	0.046 ***	0.007	0.064 ***	0.006	0.040 *	0.003
$(Education/100)^2$	-3.408	-0.675	-6.183 **	-0.839	-10.331 ***	-1.048	-7.918 *	-0.571
Self-employed parents^^^	0.229 ***	0.056	0.169 **	0.060	0.168 *	0.056	0.068	0.041
Lack financial support	-0.028	-0.006	-0.068	-0.009	-0.027	-0.003	-0.071	-0.005
Administr. complex.^^^	-0.100 **	-0.020	-0.186 ***	-0.026	-0.259 ***	-0.027	-0.231 ***	-0.017
Insufficient info	0.000	0.009	-0.030	0.015	-0.066	0.008	-0.051	0.000
Risk tolerance^^^	0.121 ***	0.024	0.135 ***	0.018	0.174 ***	0.018	0.157 **	0.011
Economic climate	-0.008	0.002	0.001	0.010	0.043	0.015	0.003	0.014
Preference for self-empl.^^^	2.002 ***	0.356	2.958 ***	0.183	2.822 ***	0.133	3.867 ***	0.095
Internal success factors	-0.058	-0.012	0.056	0.008	0.085	0.009	0.088	0.006
External success factors	-0.096 *	-0.019	0.027	0.004	-0.017	-0.002	0.013	0.001
Heteroskedastic equation								
Gender	0.034		0.125 ***		0.089 *		0.106 *	
Age	0.000		0.000		0.001		0.002	
Education	0.004		0.002		-0.001		0.002	
Self-employed parents	0.169 ***		0.260 ***		0.282 ***		0.300 ***	
Insufficient info	0.124 ***		0.139 ***		0.117 **		0.033	
Economic climate	0.053		0.070		0.084		0.135 **	
Preference for self-empl.	-0.573 ***		-0.746 ***		-0.646 ***		-0.808 ***	
Number of observations	11,751		11,751		11,751		11,751	
Log likelihood	-6,144		-3,896		-3,241		-2,441	
LR statistic (χ^2, 7 df.)	79.42		69.08		58.20		51.22	
LR statistic (χ^2, 46 df.)	3,344		2,035		1,777		1,352	
Akaike Inform. Criterion	1.054		0.671		0.560		0.423	
Bayesian Inform. Criterion	1.083		0.701		0.589		0.453	
Pseudo R^2 (McFadden)	0.214		0.207		0.215		0.217	

Notes: ***, **, and * denote significance of the coefficient and marginal effect at the 1%, 5%, and 10% level, respectively. Furthermore, ^^^ denotes significance at the 1% level in the homoskedastic logit regression (see Table 2.1).

2.6 Conclusion

We start from the assumption that the decision to become entrepreneur should be modeled as a process rather than as a binary choice. We discriminate between five stages of entrepreneurship (engagement levels). These stages are successive so that "climbing the entrepreneurial ladder" becomes the obvious metaphor. For each stage, 2004 survey data are available at the individual level for 25 EU Member States and the US. We analyze these engagement levels using an ordered logit model to investigate the influence of various explanatory variables on moving through the various stages of the process, *i.e.*, on climbing the ladder.

The estimation results of the ordered logit threshold levels reveal that it is difficult to switch from "thinking about starting a business" to "taking steps to start a business". Once in the entrepreneurial process, the step from "taking steps" to "having a young business" is made more easily. This gap is smaller than the one from "having a young business" to "having an old business".

We have shown that the effects of gender and education are positive and significant while those of age are positive up to a certain age, at which point they turn negative. Moreover, on the basis of a set of binary regressions it is shown that the turning point at which the effect of age turns negative increases with higher levels of entrepreneurial involvement. Men move more easily through the process than women while the effect of this variable decreases with the level of entrepreneurial involvement. Furthermore, better educated people move more easily through the process. Also, if one has a preference for self-employment, one is more likely to move to a higher engagement level than to stay in the current one. While the perception of lack of financial support, of insufficient information and of an unfavorable economic climate do not have a significant impact (this last variable has significant effects in the switching from "taking steps" to "young business" and from "young business" to "old business"), a respondent's perception that it is difficult to start a business due to complex administrative procedures has a negative impact on switching to higher engagement levels. Besides, more risk tolerant people find it easier to move upward through the various stages than people who are less risk tolerant.[16]

In this conclusion we want to stress the policy implications of two findings. First, we found that beyond the age of 36 years the probability of at least thinking about embracing an entrepreneurial carrier decreases. Together with the phenomenon of the aging European societies, this finding gives a sense of urgency to policies aimed at turning potential entrepreneurs into active ones. Second, our finding that perceived administrative complexities have a negative effect on the probability of moving forward in the entrepreneurial process lends support to the many public efforts to cut red tape and adopt better regulation approaches.

[16] The absence of a significant impact of the perception of lack of financial support as well as the unambiguous influences of the perception of administrative complexities, preference for self-employment and risk tolerance are in line with findings in earlier studies using different non-ordered models but also based on the "Flash Eurobarometer Survey on Entrepreneurship" data sets of different years (Grilo and Irigoyen, 2006; Grilo and Thurik, 2005a, 2008).

Chapter 3

The entrepreneurial ladder in transition and non-transition economies

This chapter compares (former) transition and non-transition economies in Europe and Asia with respect to the opportunities available to achieve entrepreneurial progress. In addition, the differential impacts of three perceived environmental barriers to new venture creation are investigated. Entrepreneurial progress is measured using five levels of incremental entrepreneurial involvement. Data from the 2009 "Flash Eurobarometer Survey on Entrepreneurship, No. 283" by the European Commission, which covers all 27 EU Member States, 5 other European countries, China, Japan, South Korea, and the US, are used. China is found to have a forward position during the early stages of entrepreneurial progress, which contrasts with a lack of early-stage entrepreneurial potential in Japan and South Korea. However, converting nascent activities into a business start-up seems to be the most difficult in China and the US. Furthermore, we find that perceived environmental constraints hinder entrepreneurial progress most in (former) European transition countries.

This chapter is based on Van der Zwan *et al.* (2011a).

3.1 Introduction

Some environments are more conducive to entrepreneurship than others. These environmental differences have been attributed to various economic and non-economic factors (Begley and Tan, 2001; Kitson *et al.*, 2004; Uhlaner and Thurik, 2007; Van Stel *et al.*, 2007a; Grilo and Thurik, 2008; Bowen and De Clercq, 2008). The economic system of a country, together with the way it is perceived, is essential in creating entrepreneurial opportunities and barriers. This idea is clearly illustrated in (former) transition economies in Europe and Asia, where entrepreneurial activity and the development of its support infrastructure have been found to differ from those in more developed market economies (Aidis, 2005; Manolova *et al.*, 2008; Yang and Li, 2008; Estrin and Mickiewicz, 2010). The opportunities and constraints that transition and non-transition environments impose regarding new venture creation are central to the present chapter.

The present chapter therefore has two aims. *First*, it compares European and Asian countries at different stages of market reform with respect to the opportunities available to achieve entrepreneurial progress. Only recently have studies started to investigate the determining factors of new venture creation and development in Central and Eastern Europe (Meyer and Peng, 2005). In the present context, entrepreneurial progress is achieved by moving through five sequential levels of increasing entrepreneurial involvement, namely, "never thought about starting a business", "thinking about starting a business", "taking steps to start a business", "running a business for less than three years", and "running a business for more than three years".[17] This ordering of engagement levels is referred to as the "entrepreneurial ladder" (Chapter 2 of this thesis).

Second, this chapter captures the extent to which a transition context imposes constraints on achieving entrepreneurial progress. That is, it investigates whether three perceived environmental barriers to new venture creation have differential effects on entrepreneurial progress across transition and non-transition countries. Whereas an economic climate presents prospective entrepreneurs with an objective barrier or stimulus, it is the individual's subjective perception of the entrepreneurial climate that drives the decision to pursue an entrepreneurial career. According to Arenius and Minniti (2005) entrepreneurs tend to rely more on subjective perceptions than on objective expectations when undertaking steps to start a new business (see also Krueger and Brazeal, 1994; Koellinger *et al.*, 2007). It can be expected that people in (former) transition economies have completely different perceptions of what constitute real barriers than citizens of non-transition countries, especially because the first group has experienced more economic hardship. However, barriers to entrepreneurship might be higher in transition countries than in non-transition countries because of the relatively underdeveloped

[17] Earlier literature has also distinguished between several stages of the entrepreneurial process (Alsos and Kolvereid, 1998; Kouriloff, 2000; Grilo and Thurik, 2008) when analyzing the decision to become an entrepreneur.

support infrastructure for entrepreneurship. The current chapter takes account of the perception of administrative complexities regarding business start-up, the perception of insufficient start-up information, and the perception of financial difficulties with respect to starting a business.

In many Central and Eastern European economies, a transition process from a centrally planned to a market economy started to occur in the late 20th century. The liberalization of markets appeared on policy agendas together with the development of a private business sector.[18] This development had major implications for the expansion of entrepreneurial activities in these countries (Grilo and Thurik, 2006). The proliferation of new and small businesses became an important aspect of the transition process. Entrepreneurs had a central role in this process by acting upon market opportunities (Smallbone and Welter, 2001b). As a result, the development of European transition economies benefited from an increasing share of entrepreneurial activities (McMillan and Woodruff, 2002; Aidis, 2005; Grilo and Thurik, 2006). However, despite recent reforms and the adoption of institutional frameworks that favor private enterprises, there are still many (mostly informal) obstacles to the creation of an entrepreneurial culture in these countries (Ireland *et al.*, 2008). Such obstacles are often cited to help explain why, thus far, small and medium-sized enterprises (SMEs) have failed to exert their transformatory power (Doern, 2009).

Similar to European transition countries, some Asian countries, both transition and non-transition, have been struggling with the creation of an entrepreneurial culture. The economic reforms that were initiated in the late 1970s have dramatically changed China's economy and society (Yang and Li, 2008). However, apart from the emergence of many entrepreneurial opportunities, economic liberalization has also given rise to a range of constraints for entrepreneurial development (Tsang, 1994). For example, on the basis of their three-stage model of market transitions, Yang and Li (2008, p. 353) argue that China is in an "early stage of market transition", which constrains "a healthy development of entrepreneurship" because markets and institutions are still underdeveloped. The Chinese situation sharply contrasts with that of Japan, where entrepreneurship played a prominent role in its post-war economic recovery period (Hawkins, 1993). However, in the 1980s, business ownership levels and start-up rates started to decline, and unemployment rates increased (Harada, 2005; Masuda, 2006; Van Stel *et al.*, 2007b).[19] Whereas Japanese entrepreneurship rates decreased in the last decades, the opposite development took place in South Korea (Bahn *et al.*, 2008), where the economy has traditionally been dominated by large businesses.

[18] Blanchard (1997) states that two main mechanisms can be recognized in European transition economies, namely, a reallocation process (that is, from state firms to new private firms and from manufacturing to service activities) and a restructuring of existing state firms. Reallocation, for example, explains why the transition process was initially associated with higher unemployment. Restructuring explains why the output recovery, which follows a U-shaped pattern, is associated in large part with increases in productivity and only with limited gains in employment (p. 56).

[19] Furthermore, although the bulk of Japanese economic activity is concentrated within SMEs, very few of them have a true entrepreneurial nature (Hawkins, 1993).

The present study is the first to use Asian survey data in a comparison with data on all European Union Member States to establish differences in entrepreneurial opportunities and barriers between transition and non-transition countries. To empirically investigate these differences, the "Flash Eurobarometer Survey on Entrepreneurship, No. 283" by the European Commission is used. The data appearing in this report were collected in December 2009 and January 2010. This means that the data on entrepreneurial attitudes and behavior were collected during a period of global economic downturn. Because most countries were confronted with similar crisis-related economic conditions, we are justified in using these data to investigate cross-sectional differences. However, we must be careful comparing our findings with other studies investigating similar topics in different periods (*i.e.*, pre- and post-recession periods). Thus, any policy implications that arise from this study should be understood within this particular context and cannot be copied thoughtlessly. The relationship between economic downturn and entrepreneurship has been investigated by several scholars (Koellinger and Thurik, 2009). At the macro-level, an unfavorable economic climate reduces opportunities for entrepreneurship, whereas at the micro-level, this climate may push people to become entrepreneurs (Thurik *et al.*, 2008). These effects may clearly affect entrepreneurial progress. For example, a recently unemployed individual may suddenly have an impulse to start up the company he had always wanted to start, thus facilitating a shift from the "thinking" stage to the "taking steps" stage.

The remainder of this chapter is structured as follows. The next section focuses on existing comparative work on transition and non-transition economies in general and (perceived) barriers to entrepreneurial progress in the transition context in particular. Subsequently, we introduce and discuss our data and methodology. Finally, we present and interpret the results and end with some concluding remarks.

3.2 Existing evidence on start-up barriers in transition and non-transition countries

The aim of this section is to provide a brief overview of findings from previous empirical studies on the relationships between transition context, (perceived) barriers to entrepreneurship, and entrepreneurial engagement. Entrepreneurs in transition economies operate in a "*turbulent environment that is characterized by complex political and economic changes*" (Ireland *et al.*, 2008, p. 124), where formal and informal institutional developments play important roles, including social norms and values with respect to entrepreneurship.

The characteristics of entrepreneurs and their businesses in European transition economies have extensively been investigated (*e.g.*, Smallbone and Welter, 2001a). Studies that specifically focus on *perceived barriers* to entrepreneurial engagement in European transition countries are mainly based on a few countries and/or specific populations. For example, Aidis

(2005) focuses on Lithuanian entrepreneurs and the barriers that they perceive in their business operations, which are mainly barriers regarding tax policy and lack of funds. Manolova *et al.* (2008) investigate the impeding role of the institutional environment according to Bulgarian, Hungarian and Latvian business students; they find evidence of negative societal attitudes toward entrepreneurship and dissatisfaction with laws and regulations promoting entrepreneurship. Pissarides *et al.* (2003) examine how different constraints restrict the formation and growth of Russian and Bulgarian SMEs, particularly constraints on obtaining external financing and the high cost of this financing. A large-scale study was conducted by Pissarides (1999), though it focuses on objective rather than perceived barriers. It provides evidence of the important role of lack of financing for the formation and growth of small and medium-sized firms in ten Central and Eastern European countries.[20] Begley *et al.* (2005) provide an international comparison (including South Korea and the US) of perceived problems to starting up a business. It relates perceived environmental munificence (*e.g.*, the availability of financing, supportive government regulation, and sufficient access to support services) to interest in starting a business, thereby showing that these perceptions are relevant prior to firm formation.[21] However, this study does not pay specific attention to the transition context. This transition context is incorporated in Grilo and Thurik (2006) who find no evidence of differential impacts of a range of perceived barriers to entrepreneurship in transition and non-transition countries in the EU. Overall, their results show that residents of an EU transition economy have a higher probability of being self-employed than those living in an EU market economy. Grilo and Thurik (2006) arrive at these results with an older "Flash Eurobarometer Survey on Entrepreneurship".

Even less comparative work has been done on the case of China. Formerly planned European economies cannot be easily compared to those in other parts of the world, such as China. According to Tsang (1994, p. 452), in China "*private businesses face a distinct environment very different from that of other developing countries, not to mention developed countries*". This distinct environment can be attributed partly to the fact that the Chinese government has long prevented any active encouragement of private businesses (Chow and Fung, 1996). Its economic reforms combined with socialist ideology do not only engender opportunities for entrepreneurship but also create several threats and barriers for entrepreneurs (Tsang, 1994).

Also, Chinese culture is different from that in the Western world. For example, *guanxi* based on personal contacts, connections and trust, has long been considered an important aspect in successfully conducting business in China (Tan *et al.*, 2009). Despite the uniqueness of the

[20] See also Estrin and Mickiewicz (2010) for an international comparison of the impeding role of the informal institutional framework, including social attitudes and norms regarding entrepreneurial activity (Ireland *et al.*, 2008).

[21] The question is whether these factors are more helpful in starting a business in one region versus another. For example, Begley *et al.* (2005) find that perceived access to financing relates more positively to the feasibility of starting a business in East Asian countries than in Anglo-Saxon or South Asian countries and that perceived access to support services relates more positively to feasibility in Anglo-Saxon than in South Asian countries.

Chinese business environment, there is some evidence that Chinese and US entrepreneurs have similar values (Holt, 1997). One of these values is the degree of individualism, which is comparable in both societies, even though the countries differ regarding their collectivist nature. This means that entrepreneurs in different parts of the world may still share similar values and may be driven by the same factors. In the present study, we aim to determine whether this is indeed the case or whether the country context and, in particular, the transition context explains entrepreneurial progress through the different stages mentioned above.

In summary, there appears to be a lack of systematic knowledge about the perceived barriers to entrepreneurship across transition and non-transition countries. The present study uses a large, unique international database to explore the effect of perceived barriers on entrepreneurial progress in both types of countries.

3.3 Data

To compare entrepreneurial progress internationally and to assess the influence of perceived environmental barriers on this progress, the "Flash Eurobarometer Survey on Entrepreneurship, No. 283" by the European Commission is used. In total, 26,168 randomly selected respondents aged 15 years and older from the US, Europe, and Asia were contacted by telephone between December 10, 2009 and January 16, 2010. In some countries,[22] face-to-face interviews (30% of all interviews) were conducted as well within this time period. The complete list of countries is as follows:

- all 27 EU Member States, including
  - the 15 "old" Member States: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom;
  - the 12 "new" Member States: Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, and Slovenia;
- five European countries that are not EU Member States: Croatia, Iceland, Norway, Switzerland, and Turkey;
- the US;
- three Asian countries: China, Japan, and South Korea.[23]

All 12 "new" EU Member States, excluding Cyprus and Malta, plus Croatia are defined as European transition countries. Because of the strong communist past of China, this country is

[22] Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, and Slovakia.

[23] In most countries, the target sample size is 500 respondents. In Belgium, China, the Czech Republic, France, Germany, Greece, Hungary, Italy, Japan, the Netherlands, Poland, Portugal, South Korea, Spain, the UK, and the US, the target sample size is 1,000.

considered an Asian transition country and will be compared to two non-transition countries in Asia, namely, Japan and South Korea. In sum, our analysis is based on five groups of countries: European non-transition countries, European transition countries, Asian non-transition countries, an Asian transition country (China), and the US.

To compare entrepreneurial progress internationally, we make use of the fact that individuals are classified according to their level of entrepreneurial engagement. This classification is important, as it enables us to focus on specific positions on the entrepreneurial ladder. As in Chapter 2 of this thesis, the classification is based on the survey question, "*Have you ever started a business or are you taking steps to start one?*" Answer categories include:[24]

- No, it never came to your mind ("never considered");
- No, but you are thinking about it ("thinking");
- Yes, you are currently taking steps to start a new business ("taking steps");
- Yes, you have started or have taken over a business in the last three years, and it is still active ("young business");
- Yes, you started or took over a business more than three years ago, and it is still active ("mature business").

Entrepreneurial progress is explained not only by an individual's country of residence and the three perceived environmental barriers (administrative complexity, insufficient start-up information, lack of financial support) but also by other individual characteristics. We use a range of individual characteristics as control variables. Table 2.1 gives a description of the perceived environmental barriers[25] and our control variables. The control variables consist of three socio-demographic characteristics (*i.e.*, gender, age, and education level), role models (*i.e.*, self-employed father or mother), risk tolerance, and urbanization (*i.e.*, urban versus rural residential location). Note that we also include a measure of an individual's optimism to disentangle to some extent the subjective perception of the barriers, which is influenced by the extent to which an individual is optimistic or pessimistic, and the objective state of these environmental barriers.

[24] The question contains three additional answer categories: 2a) No, you thought of it or had already taken steps to start a business but gave up ("gave up"); 5a) Yes, you once started a business, but you are currently no longer an entrepreneur since the business has failed ("failure"); 5b) Yes, you once started a business, but you are currently no longer an entrepreneur since the business was sold, transferred or closed ("sell-off"). The observations of these categories are not incorporated in our analysis. We refer to Chapter 7 of this thesis for an analysis that compares individuals who "gave up" with persons who are currently thinking about setting up a business or who are taking steps; that study also compares those who stopped (*i.e.*, "failed" or "sell-off") with those who currently have a business.

[25] Note that the perception questions on environmental barriers to business start-up can be interpreted by respondents in (at least) two different ways, namely, 1) they may think of their own situation; or 2) they may think of the general environment for or attitude toward entrepreneurship in their country, region, city, and so on. See also Kouriloff (2000).

3.4 Descriptive results

To provide an overall view of the entrepreneurial climate in the five country groups, the first column of Table 3.2 reports business ownership rates based on the engagement levels "young business" and "mature business" as fractions of the entire population who is at least 15 years old. In addition, respondents indicate whether they consider themselves as being self-employed, holding paid employment or having no professional activity. The self-employment categories are as follows: 1) farmer, forester or fisherman; 2) owner of a shop or craftsman; 3) professional (*e.g.*, lawyer, medical practitioner, accountant, or architect); 4) owner-manager of a company; and 5) other. The second column of Table 3.2 shows self-employment rates; the first category consisting of farmers, foresters and fishermen is excluded. We see that European transition and non-transition countries are characterized by relatively low business ownership and self-employment rates, whereas the US reports the highest rates. In addition, self-employment rates in Europe are lower than business ownership rates. In Asia and the US, the reverse is true, possibly due to the fact that a relatively large number of individuals in these countries are own-account workers without personnel. Another explanation might involve the prevalence of part-time self-employment, as every individual who is to some extent involved in business ownership as defined in the engagement levels "young business" or "mature business" is included in the business ownership numbers shown in Table 3.2.

For each group of countries, Table 3.3 shows the average values of the perceived environmental barriers and selected control variables. Concerning the perceived barriers to business start-up, we see that the European percentages are above average for the perception of administrative complexities and lack of financial support, whereas they are below average regarding the perception of insufficient start-up information. The reverse is true for the Asian countries. Thus, it appears that variations in these perceptions can be attributed in particular to differences between European and Asian countries rather than to the transition context. The same can be observed for self-employed parents; the prevalence rates for the Asian countries are far above average, whereas the European rates are around or below average. Interestingly, the share of risk-tolerant individuals in China is roughly on par with that of the US. There is a large gap between these numbers and those of Japan and South Korea.

Table 3.1: Perceived environmental barriers and control variables.

Variable name	Variable description
Perceived environmental barriers	
Perception of administrative complexities	Statement: "*It is difficult to start one's own business due to the complex administrative procedures*". Value 1 if "strongly agree" or "agree" is answered; value 0 if "strongly disagree" or "disagree" is answered.
Perception of insufficient information on starting an own business	Statement: "*It is difficult to obtain sufficient information on how to start a business*". Value 1 if "strongly agree" or "agree" is answered; value 0 if "strongly disagree" or "disagree" is answered.
Perception of lack of financial support	Statement: "*It is difficult to start one's own business due to a lack of available financial support*". Value 1 if "strongly agree" or "agree" is answered; value 0 if "strongly disagree" or "disagree" is answered.
Control variables	
Male	Value 1 if male; value 0 if female.
Age	Age of the respondent in years (at least 15 years).
Education level	Age when finished full time education. Value between 15 and 25; answers below 15 and above 25 have been recoded into these two values. Those who are still in full-time education have their age as education level.
Self-employed father/mother	Value 1 if the father/mother is or was self-employed; value 0 otherwise.
Risk tolerance	Statement: "*One should not start a business if there is a risk it might fail*". Value 1 if "strongly disagree" or "disagree" is answered; value 0 if "strongly agree" or "agree" is answered.
Optimism	Statement: "*I am optimistic about my future*". Value 1 if "strongly agree" or "agree" is answered; value 0 if "strongly disagree" or "disagree" is answered.
Urbanization	Value 1 if respondent indicates to live in a metropolitan or in an urban area; value 0 if this is a rural area.

Table 3.2: Business ownership and self-employment rates as percentage of population.

	Business ownership	Self-employment
Europe non-transition	9.7	8.7
Europe transition	9.9	7.2
Asia non-transition (Japan + South Korea)	10.8	11.1
Asia transition (China)	10.1	12.0
US	12.6	14.5
All observations	10.0	8.8

Notes: Business ownership rates are based on 24,776 observations (with 14,347; 6,602; 1,872; 985 and 970 observations for the groups of countries, respectively). Self-employment rates are based on 25,747 observations (14,899; 6,977; 1,935; 944 and 992). In the calculations for self-employment rates, the category of farmers, foresters and fishermen is not taken into account.

Table 3.3: Average values of perceived environmental barriers and some control variables.

	Perceived environmental barriers			Some control variables				
	Perc. admin. compl.	Perc. insuff. info	Perc. lack financial support	Educa-tion level (years)	Self-empl. father	Self-empl. mother	Risk tolerance	Optim-ism
Europe non-trans.	77.1%	57.5%	85.0%	19.2	28.9%	11.0%	48.6%	80.0%
Europe transition	79.6%	56.2%	88.6%	19.5	10.6%	5.9%	36.5%	73.8%
Asia non-transition	62.4%	63.6%	72.5%	19.3	47.2%	28.0%	28.7%	72.0%
Asia transition	57.3%	69.2%	81.1%	18.9	35.5%	37.2%	77.8%	81.2%
US	71.3%	46.4%	84.9%	21.1	22.3%	8.3%	73.3%	88.2%
All observations	75.6%	57.7%	84.8%	19.3	25.4%	11.8%	46.0%	78.1%

3.5 Analysis

This section first describes our methodology. Second, we compare entrepreneurial progress across the five groups of countries. Third, we focus on the differential impacts of perceived environmental impediments between transition and non-transition regions.

3.5.1 Methodology

For each engagement level, all individuals at that particular engagement level are compared with all individuals who advanced to a higher engagement level. That is, we perform four binary logit regressions and focus on specific positions along the entrepreneurial ladder. For example, individuals at the first engagement level (*i.e.*, "never considered") can be compared with individuals at the four remaining engagement levels. That is, we use a binary logit regression of $\Pr(Y_i>1)$ versus $\Pr(Y_i=1)$, where Y_i represents the specific engagement level (1="never considered",…, 5="mature business") and where the newly generated binary variable takes the value of 1 if $\Pr(Y_i>1)$ and the value of 0 if $\Pr(Y_i=1)$. Similarly, three other binary logit regressions can be performed based on three newly generated binary variables, namely, $\Pr(Y_i>2)$ versus $\Pr(Y_i=2)$, $\Pr(Y_i>3)$ versus $\Pr(Y_i=3)$, and $\Pr(Y_i=5)$ versus $\Pr(Y_i=4)$.[26]

The results obtained by the four binary logit regressions can be interpreted by using odds ratios. These odds ratios are computed by exponentiating the coefficients of the variables. The odds ratios inform us about the factor by which the odds of advancing to a higher engagement level are expected to change given a one-unit change in an independent variable. For example, in the first binary logit model, suppose that the coefficient of the dummy variable belonging to China equals 1. This value indicates that Chinese individuals are exp(1)=2.718 times more likely to be at a stage beyond "never considered" than individuals from European non-transition countries, which is the reference group in our regressions, holding constant all other

[26] This approach is inspired by the more parsimonious continuation ratio logit model (Chapter 4 of this thesis).

variables present in the model. In the same fashion, the impacts of the three perceived environmental barriers and control variables can be assessed.

3.5.2 Entrepreneurial progress

Table 3.4 presents the results of our *first* analysis. We perform four binary logit regressions with dummy variables representing the five groups of countries, taking the European non-transition countries as the reference group. Furthermore, the three perceived environmental barriers are included together with the control variables. In the remainder of this chapter, only variables with *p*-values below 0.05 are denoted as having a significant impact.

The first binary logit regression, which investigates the move from "never considered" to higher engagement levels, shows that the US and China take a leading position. In these countries, it is more than twice as likely to move to a higher engagement level as compared to European non-transition countries. Clearly, the US and China are characterized by a lively entrepreneurial spirit in which at least thinking about setting up one's own business is a pervasive phenomenon, whereas this spirit is clearly present less often in all other countries. There is also evidence of a transition effect here; the European and Asian non-transition countries perform worst with respect to moving up from the first rung on the entrepreneurial ladder. Hence, it appears that in non-transition economies in both Europe and Asia, people are less likely to consider starting up and running a business than in transition economies.

Focusing on the move from "thinking" to any higher engagement level, we see that China again is a strong performer. Citizens of this country are 1.5 times more likely to be beyond the "thinking" stage as compared to the reference group. A different pattern emerges regarding the transformation of nascent activities into an actual business start-up. While China and the US were the best-performing countries regarding the move from the lowest rung of the ladder, these countries lag behind at this particular move. The differences are striking; the odds ratios for China and the US are 0.261 and 0.345, respectively, making individuals in the other countries three to four times more likely to be beyond merely "taking steps".

In growing a business, there is a remarkable difference across transition countries. European transition countries rank first with respect to the likelihood of moving from the "young business" stage to the "mature business" stage, whereas China ranks last.

Table 3.4 also informs about the perceived environmental barriers. The significant negative impacts of perceived administrative complexities in the first three regressions together with the absence of a significant impact of perceived lack of financial support stand out as worth mentioning (see also Chapter 2 of this thesis). Although the focus of the present study is not on the impacts of the control variables; we address some noteworthy results. First, the gender effect decreases as the level of engagement increases. The same holds true for education level; the impact of education becomes negative in case of the final move. Finally, more optimistic individuals are more likely to make the first two moves on the ladder than less optimistic ones.

Table 3.4: Estimation results binary logit regressions; coefficients and odds ratios (OR) are displayed.

	"never consid." vs. higher		**"thinking" vs. higher**		**"taking steps" vs. higher**		**"young business" vs. "mature bus."**	
	coeff.	OR	coeff.	OR	coeff.	OR	coeff.	OR
Groups of countries								
Europe non-transition (*reference category*)								
Europe transition	0.346***	1.414	-0.223***	0.800	0.077	1.080	0.288**	1.333
Asia non-transition	-0.285***	0.752	-0.266**	0.766	-0.072	0.931	0.151	1.163
Asia transition	0.721***	2.056	0.368***	1.445	-1.343***	0.261	-0.560**	0.571
US	0.736***	2.087	0.020	1.020	-1.064***	0.345	-0.048	0.953
Perceived environmental barriers								
Perc. admin. complex.	-0.302***	0.739	-0.374***	0.688	-0.349***	0.705	-0.120	0.887
Perc. insufficient info	-0.114***	0.892	-0.001	0.999	-0.024	0.976	0.064	1.067
Perc. lack of finance	-0.031	0.969	-0.074	0.929	0.082	1.085	0.113	1.120
Control variables								
Male	0.762***	2.143	0.412***	1.509	0.197**	1.218	0.242**	1.274
Age	-0.033***	0.968	0.039***	1.039	0.052***	1.053	0.050***	1.052
Education level	0.075***	1.078	0.030***	1.031	-0.012	0.988	-0.039**	0.962
Self-empl. father	0.465***	1.593	0.212***	1.236	0.421***	1.523	-0.061	0.941
Self-empl. mother	0.309***	1.362	0.441***	1.554	-0.012	0.988	0.467***	1.595
Risk tolerance	0.479***	1.614	0.090	1.095	0.239**	1.269	0.119	1.126
Optimism	0.222***	1.248	0.261***	1.299	-0.203	0.816	-0.145	0.865
Urbanization	0.031	1.031	-0.074	0.928	-0.120	0.887	-0.293***	0.746
Intercept	-1.253***		-1.885***		-0.879**		-0.810**	
No. of observations	13,137		4,673		2,966		2,109	
Pseudo R^2 (McFadden)	0.134		0.071		0.128		0.082	

Notes: *** and ** denote significance at the 1% and 5% level, respectively. When a coefficient differs from zero at a certain significance level, the corresponding odds ratio differs from unity at this same significance level.

3.5.3 Perceived environmental barriers

In our *second* analysis, we are interested in the differential impacts of perceived environmental impediments between transition and non-transition regions. Effects of variables that are dependent on the specific region in which one lives may suggest a need for variations in policy recommendations across these regions. It may well be that perception variables in one or more stages of the entrepreneurial process have a hindering influence on advancement in one group of countries, but these same variables may appear less or not important in another geographical location (Begley *et al.*, 2005).

First, we focus on the perception of administrative complexities. In Table 3.4, this perception has a significant negative influence on the first three moves. For each binary logit regression, we include interaction terms between this variable and the four dummy variables representing the groups of countries. In this setup, we not only test for the significance of these four interaction terms but also assess whether the sum of the coefficient of the single perception variable, which now represents the coefficient of the reference group (*i.e.*, European non-transition countries), and the coefficients of the interaction terms are significantly different

from zero. This is done by means of Wald tests. It appears that the significant negative coefficients of the perception of administrative complexities in Table 3.4 can be entirely attributed to the European countries. That is, this perception does not have a significant impact other than in European countries across the four regressions. It has significant negative coefficients for the first three moves for European non-transition countries and for the first two moves for European transition countries. In addition, the coefficients for the European transition countries at the first two moves are significantly larger in absolute terms than those for the European non-transition countries, indicating that the perception of administrative complexities has a larger impeding effect in European transition countries.

Second, the differential impact of the perception of insufficient information on starting one's own business is analyzed. Regarding the first move, this perception has a significant negative coefficient for European transition and Asian non-transition countries; these two coefficients are not significantly different from each other. Concerning the second move, in European transition countries, this perception again has an impeding influence, whereas any significant influence is absent in all other geographical locations. The final significant negative result is found for the US at the third move (*i.e.*, the "taking steps" stage versus higher stages).

Third, the insignificant impact of the perception of lack of financial support in Table 3.4 is supported by our analysis that includes interaction terms; no significant impacts are found for any group of countries.

3.6 Concluding remarks

This study uses recent data from 36 countries to compare entrepreneurial progress and the impact of perceived environmental barriers on this progress between economies in different stages of market reform. Entrepreneurial progress is measured using five sequential levels of increasing entrepreneurial involvement. We note that (former) transition economies in Europe and Asia (*i.e.*, China) perform well with respect to the entrepreneurial spirit as compared to their non-transition counterparts in the same region. That is, China ranks high with respect to the early stages of entrepreneurial progress (*i.e.*, the first two moves on the ladder), which sharply contrasts with the performance of Japan and South Korea. In addition, European transition countries have an advantage over European non-transition economies with respect to initial considerations of an entrepreneurial career (*i.e.*, the first move on the ladder). This finding seems to correspond to societal movements in transition countries toward the development of an entrepreneurial culture with shared values in a society increasingly embracing entrepreneurship. The weak performance of the Asian non-transition economies of Japan and South Korea across the board seems to be in line with the claim in Van Stel *et al.* (2007b) regarding the Japanese economy that "*the speed of adjustment from a managed to an entrepre-*

neurial economy is slow". Also, Van Stel *et al.* (2007b) "*feel that establishing an entrepreneurial culture in Japan will be a prerequisite for persistent 'revival' in the near future*". This lagged position in entrepreneurial progress may also be related to underdeveloped levels of risk tolerance and, to a lesser extent, of optimism, which are discussed in the descriptive results part of this chapter. Although these numbers are aggregated at the national level, a culture in which there is a tendency to embrace risk-seeking activities will pay its dividends in terms of shaping an entrepreneurial climate. Another noteworthy observation at the country level is that although China is on par with the US regarding start-up considerations, it is the worst performer when it comes to converting nascent entrepreneurial activities into a real start-up and a young business into a mature business. That is, although economic reform in China has certainly created entrepreneurial opportunities, improvements could and should be made concerning obstacles that hold back entrepreneurial initiatives.

Although formal (*i.e.*, rules and regulations) and informal (*i.e.*, norms and values) institutional frameworks may be behind the varying ability to achieve entrepreneurial progress across transition and non-transition economies, the present study concludes that perceived environmental impediments also play significant roles. That is, we find that the perception of administrative complexities has a significant negative influence on climbing the entrepreneurial ladder. Regarding the differential impacts of this perception across transition and non-transition economies, an analysis including interaction terms reveals that it especially hinders entrepreneurial progress in Europe. Specifically, the impact is more severe in European transition countries than in European non-transition countries. Thus, subjective perceptions are important, as earlier addressed, for example, by Arenius and Minniti (2005), but the importance differs by region. More specifically, individuals in European transition countries (and in European non-transition countries to a lesser extent) are most sensitive to modifications in their perceptions of environmental impediments. The importance of perceptions in European transition countries is further supported by the fact that the perception of a lack of sufficient start-up information has a negative influence on entrepreneurial progress in these countries but is of less or no importance in all other areas. Thus, primarily in European countries with a short history of a market-based economy, there is much opportunity for stimulating entrepreneurial progress by better coordinating environmental perceptions with objective barrier conditions (Van Stel and Stunnenberg, 2006). Given the period of economic downturn, this finding is especially important. Further research should bring out whether the current results are particularly pronounced for some specific countries and whether a further refinement of our country classification would be more appropriate.

Chapter 4

Entrepreneurial progress: climbing the entrepreneurial ladder in Europe and the United States

This study investigates which countries have the highest potential to achieve entrepreneurial progress. This progress is an important determinant of a region's competitiveness and is defined as an entrepreneurial ladder with five successive steps: "never thought about starting a business", "thinking about starting a business", "taking steps to start a business", "running a business for less than three years", and "running a business for more than three years". The influences of individual-level and country-level variables on the progression through these stages are analyzed. Data are used from the 2007 Flash Eurobarometer Survey on Entrepreneurship, covering 27 European countries and the United States. Findings show that countries display large variation in the ease with which businesses come into existence and survive. In the US, many people think about setting up a business, whereas Europeans are better at achieving higher levels of engagement. Furthermore, country differences can be explained mainly by levels of risk tolerance and economic development. A country's level of administrative complexity does not play a role in achieving entrepreneurial progress, but individual perceptions of this complexity are a hindering factor.

This chapter is based on Van der Zwan *et al.* (2009).

4.1 Introduction

The link between entrepreneurship and economic performance has been the subject of animated debates in academic and policy circles. Considering that new and small firms are the backbone of innovative activity, creating and maintaining an environment conducive to a dynamic business fabric with ample market opportunities will pay its dividends in terms of job creation and economic growth (Audretsch and Keilbach, 2004; Baptista *et al.*, 2008; European Commission, 2008, Chapter 3; Carree and Thurik, 2010). The potential to create, perceive, act upon, and commercialize these market opportunities can be seen as an important contribution of entrepreneurship to a region's level of competitiveness.[27] The role of entrepreneurship in enhancing the competitiveness of regions is emphasized by Kitson *et al.* (2004, p. 997) who argue that "(…) *competitive regions and cities are places where both companies and people want to locate and invest in*". Hence, competitive regions tend to be characterized by a well-developed infrastructure that supports business activity. This is also underlined by the European Commission (2009, p. 17): "*At the roots of competitiveness we find the institutional and microeconomic policy arrangements that create conditions under which businesses can merge and thrive and individual creativity and effort are rewarded*". Each region has its own regulations and laws imposed by the government, as well as certain levels of competition and munificence of resources, that will determine the available market opportunities for entrepreneurs. More favorable regional conditions will enhance the ease with which (potential) firms come into existence, which in turn may positively affect a region's competitiveness. Alternatively, unfavorable economic circumstances, such as high unemployment rates, may push people to start up their own businesses (Evans and Leighton, 1990). However, empirical research is inconclusive about the direction of causality in the relationship between unemployment and the business ownership rate (Reynolds *et al.*, 1994; Thurik *et al.*, 2008; Santarelli *et al.*, 2009).

Not only is the creation of new ventures important for regional performance, but so is their growth and survival. Entrepreneurship (*i.e.*, starting up and managing a business) is often considered a process that consists of several stages (Reynolds, 1997; Rotefoss and Kolvereid, 2005; Grilo and Thurik, 2008). This study defines entrepreneurial progress as an entrepreneurial ladder, where higher steps on this ladder refer to a higher level of entrepreneurial engagement (Chapter 2 of this thesis). Individuals can move through five sequential stages: "never thought about starting a business", "thinking about starting a business", "taking steps to start a business", "running a business for less than three years", and "running a business for more than three years" (Grilo and Thurik, 2008). Through climbing this proverbial ladder and

[27] Note that the concept of competitiveness is surrounded by complexity and elusiveness (Kitson *et al.*, 2004; Krugman, 1991), where some see productivity (growth) as an indicator of competitiveness (Porter, 1990) and others refer to measures such as (un)employment rates.

stepping from one level to the next, individuals achieve entrepreneurial progress and contribute to the competitiveness of regions and nations.

This study empirically examines how and why entrepreneurial progress differs across 27 European countries and the United States. Specifically, it is investigated which countries' individuals have the highest likelihood of transitioning to higher levels of entrepreneurial engagement. The progress through the five stages of entrepreneurial engagement is related to several factors, including the level of economic development, a country's attitude towards risk and three country-level measures of business start-up impediments, including limited access to finance, administrative complexity and insufficient information. In addition, this study examines what the effects of individual-level factors (*i.e.*, gender, age, education level, parental role models, risk attitude, perceived barriers to setting up a business, and residential area as a regional factor) are on the likelihood of advancement in the entrepreneurial process.

The contribution of this study to the existing knowledge base is threefold. *First*, the data set (the 2007 Flash Eurobarometer Survey on Entrepreneurship) allows for comparison of the conditions for entrepreneurial progress across 28 countries. For example, to what extent do individuals in the United States decide to become entrepreneurs and develop companies, compared to individuals in Europe? Which engagement levels are more difficult or easier to reach in the US, compared to other countries, and how can this be explained? We should mention here that our data were assembled in January 2007. This implies that our conclusions do not necessarily extend to periods of economic downturn that were experienced afterwards. For example, the relationship between individual-level factors such as perceived barriers to business start-up and entrepreneurial progress is likely to be influenced by the economic situation. *Second*, whereas most studies on the determinants of entrepreneurship focus on one level of analysis only (*e.g.*, the individual or country level), the present multi-level analysis uses both individual- and country-level factors to explain entrepreneurial progress. In this way, the effects of individual perceptions and the objective state of environmental barriers are systematically disentangled. In fact, it has been argued that perceptions and the objective state of the entrepreneurial environment do not necessarily coincide (Arenius and Minniti, 2005; Van Stel and Stunnenberg, 2006). Distinguishing between perceived and objective obstacles is also important from a policy perspective. Obviously, policy will have a different focus when obstacles are perceived than when they are real. Perception barriers can be dealt with by creating or improving awareness through providing (potential) entrepreneurs with more or better information, whereas the existence of a real obstacle requires efforts to reduce this barrier by directly intervening in the process. The *third* contribution is that, instead of explaining only one single stage of the entrepreneurial process (*e.g.*, start-up) or the transition between two stages (*e.g.*, from start-up to incumbent entrepreneurship), as is done in most studies, the focus here is on five different stages of the entrepreneurial process. The analysis takes into account the determinants of consideration for setting up a business (*i.e.*, the likeli-

hood of moving from "never considered" to "thinking"), the determinants of nascent entrepreneurship ("thinking" to "taking steps") and the success of these nascent activities ("taking steps" to "young business"), and the determinants of new firm development and survival ("young business" to "mature business"). The varying importance of the individual- and country-level factors across these transitions is assessed, which again may be vital for policy makers and important to take into account in follow-up studies.

The remainder of this study is structured as follows. After a detailed examination and discussion of the empirical literature, the data are introduced and discussed. Subsequently, the model is presented, followed by a discussion of the results. The chapter ends with some concluding remarks, in which policy implications are addressed.

4.2 Determinants of entrepreneurial progress

First, the importance of a range of important individual-level factors is discussed, including socio-demographic characteristics (gender, age, education level), role models (self-employed parents), personality aspects (risk tolerance and stigma of failure), and perceived barriers to entrepreneurship (administrative complexity, insufficient information on starting a business, lack of financial support). Subsequently, attention is paid to an individual's residential area, arguing that metropolitan and urban areas accommodate agglomeration effects that affect entrepreneurial activity. Finally, the focus is on differences in country characteristics that can affect the ease with which individuals advance in the entrepreneurial process.

4.2.1 Individual-level factors

The empirical literature on individual-level determinants of entrepreneurship can be classified according to the different stages of entrepreneurial engagement. First, there are studies examining factors influencing the preference for self-employment vis-à-vis wage-employment (Blanchflower *et al.*, 2001; Grilo and Irigoyen, 2006) and the intention to start a business (Davidsson, 1995; Krueger *et al.*, 2000; Wilson *et al.*, 2007; Zhao *et al.*, 2010; Lee *et al.*, 2011). Second, there is the research on the determinants of nascent entrepreneurship (Reynolds, 1997; Delmar and Davidsson, 2000; Kim *et al.*, 2003) and the success of nascent activities, *i.e.*, whether these activities lead to the start-up of a new venture (Davidsson and Honig, 2003; Parker and Belghitar, 2006; Lichtenstein *et al.*, 2007; Dimov, 2010; Townsend *et al.*, 2010; Van Gelderen *et al.*, 2006, 2011). Subsequently, there are a large number of studies investigating the decision to become an entrepreneur, of which an overview is given in Parker (2009, Chapter 4). Finally, there is an entire literature on the drivers of start-up or entrepreneurial success, measured, for example, in terms of survival or firm growth (Davidsson, 1991; Brüderl *et al.*, 1992; Cooper *et al.*, 1994; Van Praag, 2003; Zhao *et al.*, 2010; Unger *et al.*, 2011). For each individual factor that is taken into account in this study, the rationale behind,

and empirical evidence of, the importance at the various levels of entrepreneurial engagement is elaborated on.

Gender

There are different perspectives on the existence of gender differences. According to the *liberal* feminist perspective, women and men behave differently because they are confronted with unequal access to resources and opportunities. The *social* feminist perspective, on the other hand, assumes that women and men are inherently different because of differences in early and ongoing socialization (Fischer *et al.*, 1993). In entrepreneurship research, evidence of gender differences is mixed. Nevertheless, gender has been found to influence entrepreneurial behavior at different stages of the process. For example, women tend to have a lower preference for entrepreneurship (Blanchflower *et al.*, 2001; Grilo and Irigoyen, 2006) and are more reluctant to start up a business (Davidsson, 2006; Allen *et al.*, 2008) than men. In terms of engagement in entrepreneurship there is evidence that women are less likely to run young or mature firms (Reynolds *et al.*, 2002; Langowitz and Minniti, 2007; Minniti, 2010; Verheul *et al.*, 2011). Several scholars have argued that, when controlled for relevant factors, the "direct" effect of gender on new venture creation and performance is non-existent or limited (Kalleberg and Leicht, 1991; Watson, 2002; Collins-Dodd *et al.*, 2004; Parker and Belghitar, 2006; Fairlie and Robb, 2009).

Age

A positive effect of age on self-employment may be expected for a variety of reasons. Older people may have accumulated more knowledge and financial capital, they have had more time than young people to build up a network, and they may decide to switch to self-employment to avoid compulsory retirement provisions (Parker, 2009). On the other hand, older people may be more risk averse (Miller, 1984), may attach less value to future earnings out of the firm, and are subject to increasing opportunity costs of self-employment because income from wage-employment increases with age (*e.g.*, seniority) (Lévesque and Minniti, 2006). In line with these different theoretical arguments, empirical evidence of the relationship between age and entrepreneurship is mixed. The significance and direction of the relationship also depends upon the stage in the entrepreneurial process. For example, for entrepreneurial preferences a U-shaped relationship has been found (Blanchflower *et al.*, 2001; Grilo and Thurik, 2005a). Regarding nascent entrepreneurship, some scholars argue that there is a negative relationship with age (Reynolds, 1997; Delmar and Davidsson, 2000; Davidsson and Honig, 2003), whereas others find a positive or inverse U-shaped relationship (Crosa *et al.*, 2002; Kim *et al.*, 2003). For start-up success, several studies show that there is no significant relationship with age (Davidsson and Honig, 2003; Parker and Belghitar, 2006; Van Gelderen *et al.*, 2006). For actual involvement in self-employment there is evidence of a positive (Cowling, 2000; Grilo and Irigoyen, 2006) or an inverse U-shaped relationship with age (Rees and Shah, 1986; Borjas and

Bronars, 1989; Beugelsdijk and Noorderhaven, 2005; Georgellis *et al.*, 2005; Blanchflower and Shadforth, 2007). Finally, several studies find a positive relationship between age and firm survival (Bates, 1990; Van Praag, 1996, 2003; Gimeno *et al.*, 1997; Taylor, 1999).

Education

Education may stimulate opportunity recognition and improve the ability to successfully start and manage a new firm and grow an established business. Alternatively, higher educated people may have other (more lucrative) employment options that compel them to pursue a career in wage-employment. Empirical findings confirm this indeterminate effect of education level on advancement in the entrepreneurial process. Education level does not appear to have an effect on the preference for self-employment (Blanchflower *et al.*, 2001; Grilo and Thurik, 2005a; Rotefoss and Kolvereid, 2005). For nascent entrepreneurship several studies report a positive relationship with education (Delmar and Davidsson, 2000; Davidsson and Honig, 2003; Rotefoss and Kolvereid, 2005; Arenius and Minniti, 2005), although Reynolds (1997) does not find a significant relationship. Results are mixed for the self-employment decision and firm success. For self-employment, there is evidence of positive (Bates, 1995), negative (Burke *et al.*, 2002), nonlinear (Rees and Shah, 1986), and insignificant (Van der Sluis *et al.*, 2005) relationships. Similarly, for success, findings point at positive (Cooper *et al.*, 1994; Gimeno *et al.*, 1997; Bosma *et al.*, 2004; Van der Sluis *et al.*, 2007), negative (Lussier, 1995; Brüderl and Preisendörfer, 1998) and insignificant (Schutjens and Wever, 2000) effects.

In addition to the *level* of education, the *type* of education may influence entrepreneurial activity. Specifically, education can stimulate individuals to develop their entrepreneurial skills and attitudes (Kuratko, 2005).[28] Empirical evidence of the effects of entrepreneurship education on entrepreneurial involvement is scarce (Gorman *et al.*, 1997). Several empirical studies find that participation in entrepreneurship education increases intention to start a business (Clark *et al.*, 1984; Kolvereid and Moen, 1997; Peterman and Kennedy, 2003),[29] although Oosterbeek *et al.* (2007) report a negative effect. Unfortunately, existing studies do not provide insight into the quality of the firms started and run by individuals with entrepreneurship education. The present study investigates whether an entrepreneurial attitude, fostered by education, enhances entrepreneurial progress.

[28] There is an ongoing debate about the question of whether or not entrepreneurship can be taught. Some authors suggest that business and management skills can be taught, while creativity and innovation are not "teachable" (Jack and Anderson, 1998; Miller, 1987). Others stress that "entrepreneurial qualities" (*e.g.*, need for autonomy, creativity, risk taking) can be developed in primary and early secondary education (Kourilsky and Walstad, 1998; Van der Kuip and Verheul, 2004).

[29] There is the risk of a selection effect because students who choose to follow an entrepreneurship major may already be interested in entrepreneurship, or have decided to start a business prior to following an entrepreneurship program (Westhead *et al.*, 2001). In addition, many studies only investigate one school and are not able to generalize the results to other educational institutions.

Role models

Role models, and in particular self-employed family members, appear important for predicting involvement in entrepreneurial activity. The opinion of significant others often plays a decisive role in individual decision making (Ajzen, 1991). Parents may not only shape the entrepreneurial preferences (Boyd and Vozikis, 1994) and intentions of their children (Davidsson, 1995), but they may also provide financial support and advice in the period after start-up. Empirical evidence shows that parental role models are important for explaining entry into self-employment (De Wit and Van Winden, 1989; Taylor, 1996; Matthews and Moser, 1996; Dunn and Holtz-Eakin, 2000; Hout and Rosen, 2000; Georgellis *et al.*, 2005; Caliendo *et al.*, 2009) and success (Cooper *et al.*, 1994; Gimeno *et al.*, 1997), although there is also evidence of less straightforward relationships, mainly at later stages of entrepreneurial engagement. Several studies find insignificant relationships between the availability of parental role models and firm success or survival (Bates, 1990; Brüderl *et al.*, 1992; Cooper *et al.*, 1994; Gimeno *et al.*, 1997; Taylor, 1999).

Risk tolerance and stigma of failure

Entrepreneurs are often portrayed as risk-tolerant individuals (Kihlstrom and Laffont, 1979). High failure rates of new ventures and high-income volatilities contribute to this "risky" image of entrepreneurship. Empirical evidence suggests that risk-tolerant people are more likely to have a preference for self-employment, vis-à-vis wage-employment, than risk-averse individuals (Grilo and Thurik, 2005a; Grilo and Irigoyen, 2006). Positive effects of risk tolerance are also found for self-employment intentions (Lüthje and Franke, 2003; Segal *et al.*, 2005) and the probability of being self-employed (Cramer *et al.*, 2002; Caliendo *et al.*, 2009). Nevertheless, studies by Rosen and Willen (2002) and Norton and Moore (2006) conclude that risk attitude is not an important consideration in the decision to start a business. Van Gelderen *et al.* (2006) conclude that a higher perceived market risk implies a higher chance of failure of nascent activities. Finally, Caliendo *et al.* (2010) investigate the relationship between risk attitudes and entrepreneurial survival and find that persons whose risk attitudes are in the medium range have higher chances of survival than those who have particularly low or high risk attitudes.

In addition to risk tolerance (*i.e.*, whether the possibility of business failure deters entrance) a proxy is included for the extent to which an individual stigmatizes failure. A tendency to accept failure may signal that an individual is willing to search for new possibilities and learn through experimentation, whereas an anti-failure attitude can obstruct entrepreneurial endeavors, as it makes individuals reluctant to experiment and does not allow them to learn from mistakes (Shepherd, 2003; Politis, 2005).

Perceived barriers to entrepreneurship

Perception variables are important factors in the explanation of potential entrepreneurship (Krueger and Brazeal, 1994), nascent entrepreneurship (Arenius and Minniti, 2005), and young and established business ownership (Koellinger *et al.*, 2007). Although specific regions may be more or less favorable for new venture creation and development, ultimately individuals make the decision to engage in entrepreneurial activity based on their perceptions of the environment. Hence, subjective perceptions of the (objective) environmental conditions are essential in explaining individual differences in start-up inclinations and higher levels of entrepreneurial engagement. This means that the objective and subjective measures of the entrepreneurial environment do not necessarily coincide (Van Stel and Stunnenberg, 2006).

The present study examines three perceived impediments to entrepreneurship: the perception of administrative complexity, lack of start-up information, and lack of financial support. Coping with administrative regulations is often cited as an important constraint to entrepreneurship. Initially, entrepreneurs have to cope with registration procedures, and in later stages, they are confronted with hiring and firing legislation. Several studies find that perceived administrative complexity has a negative impact on entrepreneurial preferences, intentions and behavior (Grilo and Irigoyen, 2006; Grilo and Thurik, 2005a, 2008; Lüthje and Franke, 2003; Van Stel and Stunnenberg, 2006).

Although access to financing has been reported as an important barrier for self-employment (Evans and Jovanovic, 1989; Evans and Leighton, 1989; Blanchflower and Oswald, 1998) and the performance of nascent entrepreneurs and start-ups (Brüderl *et al.*, 1992; Cooper *et al.*, 1994; Carter *et al.*, 1996; Parker and Belghitar, 2006), evidence of the effect of an individual's *perceived* lack of finance is scarce. Grilo and Irigoyen (2006) find no significant effect of a perceived lack of financial support on the preference for, and involvement in, self-employment. Lüthje and Franke (2003) find that the belief that banks are reluctant to give credit to start-up companies negatively affects entrepreneurial intentions.

4.2.2 Regional factor: urban versus rural areas

Regional characteristics play an important role in explaining firm start-up (Guesnier, 1994; Johnson and Parker, 1996; Armington and Acs, 2002) and survival (Fritsch *et al.*, 2006; Falck, 2007). Urban areas are often characterized by economies of specialization, many market opportunities, and access to a large pool of resources. In addition, the large concentration of entrepreneurs in these areas lowers the ambiguity attached to entrepreneurship (Minniti, 2005). The availability of resources and social networks that provide access to these resources (Sørenson and Sorenson, 2003; Stuart and Sorenson, 2003) makes it less likely that entrepreneurial intentions and efforts are constrained in urban areas. Based on Marshall (1920), Armington and Acs (2002) give three reasons for the existence of agglomeration effects in urban areas. First, firm birth rates in these areas are higher because of a pooled labor market.

Second, the lower cost and greater variety of non-pecuniary transactions in such regions boosts start-up rates. Third, densely populated areas with a high level of business activity are characterized by positive effects of knowledge spill-over.[30]

The positive effect of knowledge spill-over on firm birth rates (Armington and Acs, 2002; Acs and Armington, 2004), firm growth (Audretsch and Dohse, 2007; Raspe and Van Oort, 2008), and firm survival (Acs *et al.*, 2007; Raspe and Van Oort, 2008) has been widely investigated and supported. Audretsch and Dohse (2007) suggest that the agglomeration effect can be attributed to knowledge intensity rather than to population and industry intensity. Acs and Armington (2004) find that population growth, not size, has a positive relationship with birth rates. There is also evidence of negative agglomeration effects on firm survival (Sorenson and Audia, 2000). This might be due to the more fierce competition in urban areas (Fritsch and Mueller, 2008; Van Stel and Suddle, 2008). Chapter 7 of this thesis finds that, relative to rural areas, individuals in urban areas are less likely to give up their intentions and efforts to start their own businesses, but at the same time are more likely to fail than their rural counterparts.

In the Flash Eurobarometer Survey respondents report whether they live in a metropolitan, urban or rural area. As these are self-reports, interpretation differences may be present. For example, a region with a certain size or density may be assigned to different categories by individuals across countries. To lower the risk of bias, metropolitan and urban areas are combined into one variable. It is to be expected that the metropolitan/urban versus rural variable would show high correlation with other measures of agglomeration patterns (such as population density or city size) across countries.[31]

4.2.3 Country-level factors

In addition to individual and location factors, country-level factors play a role in explaining entrepreneurial engagement. There is evidence of cross-country and cross-regional variations in preferences for entrepreneurship (Grilo and Irigoyen, 2006; Masuda, 2006), levels of nascent entrepreneurship (Wennekers *et al.*, 2005; Reynolds *et al.*, 2005) and established entrepreneurship (Blanchflower, 2000; Van Stel, 2005). Empirical studies have explained this variation in terms of a wide range of factors, including economic, cultural, institutional and demographic factors (*e.g.*, Blau, 1987; Carree *et al.*, 2002; Wennekers *et al.*, 2005; Parker and Robson, 2004; Noorderhaven *et al.*, 2004; Freytag and Thurik, 2007; Bowen and De Clercq, 2008).

This study investigates country-level effects on the likelihood of belonging to, and switching between, different stages in the entrepreneurial process. The focus is on the role of a

[30] See Rosenthal and Strange (2004) for a summary of empirical evidence of the existence of all three of these factors, and for a description of several additional sources of agglomeration effects.

[31] Because country differences are controlled for (by including country dummies), it is believed that the self-perceived location variable is a proper measurement of location density.

country's regulatory environment (in terms of administrative burden, information provision, and financial support), a country's attitude towards risk, the level of economic development, and competitiveness.[32] These are all important factors in the explanation of cross-country variations in entrepreneurship (Verheul *et al.*, 2002).

Countries differ in the way they regulate and stimulate entry and firm development. Empirical evidence shows that the regulatory environment can have an important effect on entrepreneurial activity at the macro level. For example, Klapper *et al.* (2006) show that entry regulations are an important determinant of new firm entry and the growth of incumbent firms, in particular in sectors traditionally characterized by high entry. In addition, they find that firm entry is dependent on access to capital. More specifically, entry is higher in financially dependent industries when there is availability of both private (bank) credit and trade credit. Comparing the highly regulated economy of Spain with the less regulated British economy, Capelleras *et al.* (2008) find that firms in Spain start larger, but that they grow slower.[33] According to Baumol (1990), the degree of regulation does not influence the number of firms, but it does influence the distribution of registered and unregistered firms. Van Stel *et al.* (2007a) find that labor market regulations lead to lower rates of entrepreneurship, but that the impact of entry regulations is limited. That is, only the minimum capital required to register a new business has an effect, while the time, cost and number of procedures required to legally operate a firm appear insignificant in explaining rates of nascent and young business ownership.

An entrepreneurial culture is crucial for achieving entrepreneurial progress. There are several indicators of an entrepreneurial culture, including media attention for successful entrepreneurs who can serve as role models and respect for people who start up and run new businesses (Reynolds *et al.*, 1999). Furthermore, country levels of individualism and uncertainty avoidance may affect start-up rates and levels of entrepreneurship. Countries with high levels of individualism often provide individuals with room to pursue the career of their choice, and value individual achievements of successful entrepreneurs. Countries characterized by high levels of uncertainty avoidance (or a risk-averse attitude) often have strict, formal rules and procedures, and residents are inclined to seek the security of wage-employment (Hofstede, 1985). However, the relationship between culture and entrepreneurship at the country level does not always follow intuition. Baum *et al.* (1993) find a negative impact of individualism on entrepreneurship, and Wennekers *et al.* (2007) show a positive relationship between Hofstede's Uncertainty Avoidance Index and business ownership. These counterintuitive findings may be explained in terms of dissatisfaction. For example, in countries with higher uncertainty avoid-

[32] Competitiveness is measured as labor productivity growth per person employed. Section 4.5.4 devotes more attention to this variable.

[33] However, these differences vanish when unregistered firms are included in the analysis (Capelleras *et al.*, 2008). Djankov *et al.* (2002) find that countries with stricter entry regulation are characterized by more corruption and larger unofficial economies.

ance, individuals may leave large organizations because they cannot satisfy their "entrepreneurial needs" (Noorderhaven *et al.*, 2004).

In addition to the regulatory and cultural environment, a country's economic environment is important in determining entrepreneurial engagement and progress. At the macro level, an important link is found between (nascent) entrepreneurship and the level of economic development. There is evidence of a U-shaped or L-shaped relationship between entrepreneurship and economic growth (Carree *et al.*, 2002; Carree *et al.*, 2007; Wennekers *et al.*, 2010). The rationale behind the U-shape is that a higher level of economic development is accompanied by rising real wages, thereby increasing the opportunity costs of entrepreneurship. After a certain level of economic development, technological development and the size of the service sector increase, while the employment share of manufacturing decreases. From this perspective it is important to distinguish between low- and high-income countries. In the present data set low-income countries are mainly transition economies that until recently were characterized by a centrally planned economy instead of a market economy. Business environments in transition economies are less favorable than in non-transition economies (Smallbone and Welter, 2001a, 2001b; Mugler, 2000). Still, there is some evidence that in transition economies there are more growth opportunities for newly created firms (Bowen and De Clercq, 2008). Finally, we should note that the range of countries in the present study is limited because countries in the lowest stage of economic development such as Latin American or African countries are not included. Such low-income countries are characterized by relatively high early-stage entrepreneurial activity (Kelley *et al.*, 2011; Thurik, 2011). Hence, the relationship between per capita income and entrepreneurial progress is determined conditional upon the presence of middle- to high-income countries in our study.

4.3 Data and descriptive statistics

To investigate the ease with which entrepreneurs climb the entrepreneurial ladder, and to identify the factors that may facilitate or slow down their progress, the 2007 Flash Eurobarometer Survey on Entrepreneurship, No.192, of the European Commission is used. The survey consists of 20,674 observations for 25 Member States of the European Union as well as Norway, Iceland, and the United States. In January 2007, in each country randomized telephone interviews were conducted with respondents aged 15 years and over.[34] Respondents were asked the following question: "*Have you ever started a business or are you taking steps to start one?*" Answer categories include:

[34] These interviews were conducted by the Gallup Organization Hungary/Europe January 9-16, 2007. In many countries (including the US) the target sample size amounted to 1,000 respondents. In Austria, Cyprus, Denmark, Estonia, Finland, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Norway, Slovakia, Slovenia and Sweden the target size was 500. For background information on this data set, see: http://ec.europa.eu/public_opinion/flash/fl_192_en.pdf.

1) No, it never came to my mind ("never considered");
2) No, but I am thinking about it ("thinking");
3) Yes, I am currently taking steps to start a new business ("taking steps");
4) Yes, I have started or taken over a business in the last three years and it is still active ("young business");
5) Yes, I started or took over a business more than three years ago and it is still active ("mature business").

The question contains three additional answer categories:[35]

2a) No, I thought of it or had already taken steps to start a business but gave up ("gave up");
5a) Yes, I once started a business, but currently am no longer an entrepreneur since the business has failed ("failure");
5b) Yes, I once started a business, but currently I am no longer an entrepreneur since the business was sold, transferred or closed ("sell-off").

The Flash Eurobarometer data emphasize the pre-start-up phase of a company. This pre-birth phase consists of three sub-stages ("never considered", "thinking", "taking steps"). The "taking steps" stage refers to nascent entrepreneurship. The firm birth itself takes place between the third ("taking steps") and the fourth stage ("young business"). The distinction between a young and a mature business is based on a period of 36 months.[36] This period does not take into account the fact that firms in fast-growing industries probably climb the entrepreneurial ladder more rapidly than firms in less dynamic industries, where it may take longer to transform a young business into a mature one.

A description of the explanatory variables is given in Table 4.1. The individual-level variables include five variables for which the initial individual values have been subtracted from the calculated country averages for these variables. These variables are risk tolerance, stigma of failure, and the three perception variables (perceived administrative complexity, perceived lack

[35] In the original survey, respondents first had to answer "yes" or "no" to the question "*Have you ever started a business or are you taking steps to start one?*" Subsequently, they had to select either one of the five "yes statements" or one of the three "no statements". As a consequence, entrepreneurs who have "completed" a cycle by terminating a given business and are presently thinking about a new one will be classified under the "ex-entrepreneur" category, rather than under "thinking". For the same reason, those involved in more than one business that may be at different stages of development will only be counted for one of the stages (the respondent choice). In other words, this survey may create a bias in the case of serial or simultaneous entrepreneurs. Despite this possibility the authors believe that such cases are rare based on information from a similar survey, wherein multiple entrepreneurship is recorded, see Chapter 8 of this thesis. Therefore, this shortcoming of the survey is unlikely to significantly distort the results.

[36] This three-year period corresponds with the GEM (Global Entrepreneurship Monitor) research program that defines the level of involvement in early-stage entrepreneurial activity as anyone who is either actively engaged in the process of starting a new business or in owning/managing a business that is less than 42 months old. Reynolds *et al.* (2004) explain that this choice of 3.5 years is mainly based on operational, not theoretical, issues, whereas they also notice that the first 4-5 years of a firm are essential for its survival.

of relevant information, perceived lack of finance). Individual deviations from the country averages (*i.e.*, how much the perception of the individual respondents deviates from the country average) can be seen as "cleaned" perceptions. The country averages of the three perception variables represent objective approximations of three dimensions of the regulatory environment. Specifically, the country averages reflect the strictness of the administrative regulatory environment, the difficulty of obtaining information on how to start and run a business, and the difficulty of obtaining credit. In addition, a proxy for the general attitude towards risk in a country is included by averaging values of the risk tolerance variable across all respondents in a country. Deviations from this average risk tolerance are included as an individual-level determinant.[37]

The perception questions can be interpreted in (at least) two different ways by the respondents: they may think of their own situation or they may think of the general environment for, or attitude towards, entrepreneurship in their country or region. With respect to the stigma of failure variable, a respondent's agreement with the question "*Do people who have started a business and failed deserve a second chance?*" can be interpreted in two slightly different ways. A direct reading implies that agreement with this statement means that the respondent does not attach a stigma to those who fail. A more audacious reading could be that those who agree might themselves be more likely to take a second chance in the event of a failure of their own venture. Clearly, the first and more obvious interpretation of this question makes this variable a cultural variable representing a respondent's attitude towards failure in general, rather than one that addresses the respondent's own failure. If, however, this attitude is related to consideration for "trying again", following an adverse business outcome, then this variable could also be seen as a primitive measure of the propensity to take risk. Moreover, under the first reading (linked to the attitude towards failure), even though the question clearly refers to the attitude of the respondent, it could be argued that it may also partially reflect the way the respondent perceives these attitudes in his or her environment. Clearly, the expected influence of this variable on the probability of climbing the ladder depends on its interpretation.

Values for the country-specific variables are presented in the first five columns of Table 4.2. There is substantial cross-country variation. The United States is generally characterized by low values for the factors that hinder the start-up process. More specifically, US citizens are on average more risk tolerant than Europeans, and it appears that there are fewer problems with administrative complexity, insufficient information and financial support. Apart from the US, other risk-tolerant nations include Norway, Denmark, Ireland, and Iceland. Risk aversion is strongest in Slovenia, Portugal, Estonia, Lithuania, and Malta. Inhabitants in France, Greece, Italy, and Portugal are confronted with a relatively unfavorable entrepreneurial climate, as they have the highest scores on administrative complexity, insufficient information and lack of financial support.

[37] Note that for stigma of failure, deviations from the country averages are included as an individual-level factor in our model, but country averages are not included.

Table 4.1: Description of all variables (individual-, regional- and country-level).

Variable name	Variable description
Gender	Male (=1) or female (=0).
Age	Age of the respondent in years.
Education level[a]	Age when finished full time education.
Entrepreneurship education	Statement: "*My school education helped me to develop my sense of initiative (entrepreneurial attitude)*." Value 1 if "strongly agree" or "agree" is answered and value 0 if "disagree" or "strongly disagree" is answered.
Self-employed parents	Dummy variable with value 1 if the mother, father or both are self-employed and value 0 if neither of the parents is self-employed.
Individual risk tolerance	Statement: "*One should not start a business if there is a risk it might fail.*" Value 1 if "strongly disagree" or "disagree" is answered and value 0 if "agree" or "strongly agree" is answered. Individual values are subtracted from the specific country average.
Individual stigma of failure	Statement: "*People who started their own business and have failed should be given a second chance.*" Value 1 if "strongly disagree" or "disagree" is answered and value 0 if "agree" or "strongly agree" is answered. Individual values are subtracted from the specific country average.
Individual perception administrative complexity	Statement: "*It is difficult to start one's own business due to the complex administrative procedures.*" Value 1 if "strongly agree" or "agree" is answered and value 0 if "disagree" or "strongly disagree" is answered. Individual values are subtracted from the specific country average.
Individual perception insufficient information	Statement: "*It is difficult to obtain sufficient information on how to start a business.*" Value 1 if "strongly agree" or "agree" is answered and value 0 if "disagree" or "strongly disagree" is answered. Individual values are subtracted from the specific country average.
Individual perception lack of financial support	Statement: "*It is difficult to start one's own business due to a lack of available financial support.*" Value 1 if "strongly agree" or "agree" is answered and value 0 if "disagree" or "strongly disagree" is answered. Individual values are subtracted from the specific country average.
Urban	Dummy variable with value 1 if an individual indicates to live in a metropolitan or an urban area and value 0 if this individual lives in a rural area.
Country's risk tolerance	Country average of "Individual risk tolerance".
Country level administrative complexity	Country average of "Individual perception administrative complexity".
Country level insufficient information	Country average of "Individual perception insufficient information".
Country level lack of financial support	Country average of "Individual perception lack of financial support".
Per capita income	Gross national income per capita 2006, in purchasing power parity per US$ (Source: World Development Indicators 2008, World Bank).
Labor productivity growth	Labor productivity growth per person employed in 2006 (source: European Commission; numbers not available for Norway and Iceland).

[a] A small fraction of 319 individuals in the original sample responded that they never attended full time education. These observations have value 12 for the education level to reflect possible entry to the labor market. Also, all values between 1 and 11 have been recoded into 12 (493 observations in the original sample).

Table 4.2: Values of country-level variables.

	Country's risk tolerance	Country level administr. complexity	Country level insufficient info	Country level lack of financial support	Per capita income	Labor productivity growth
Austria	0.47	0.63	0.36	0.71	36,040	1.9
Belgium	0.41	0.78	0.56	0.78	33,860	1.9
Cyprus	0.48	0.68	0.64	0.86	25,060	2.3
Czech Republic	0.52	0.76	0.39	0.63	22,920	4.7
Denmark	0.67	0.77	0.34	0.66	36,190	1.3
Estonia	0.29	0.74	0.41	0.73	18,090	5.5
Finland	0.55	0.69	0.38	0.59	33,170	5.8
France	0.57	0.81	0.60	0.89	32,240	1.1
Germany	0.44	0.81	0.45	0.77	32,680	2.3
Greece	0.59	0.81	0.73	0.92	30,870	2.7
Hungary	0.35	0.76	0.57	0.90	16,970	3.0
Iceland	0.61	0.54	0.42	0.55	33,740	.
Ireland	0.67	0.67	0.39	0.69	34,730	1.7
Italy	0.43	0.85	0.65	0.89	28,970	0.2
Latvia	0.48	0.78	0.38	0.93	14,840	7.0
Lithuania	0.31	0.87	0.47	0.85	14,550	5.7
Luxembourg	0.49	0.75	0.61	0.80	60,870	2.4
Malta	0.31	0.68	0.49	0.80	20,990	2.0
Netherlands	0.57	0.73	0.25	0.61	37,940	1.8
Norway	0.67	0.75	0.39	0.64	50,070	.
Poland	0.40	0.78	0.54	0.86	14,250	2.4
Portugal	0.28	0.84	0.78	0.91	19,960	0.5
Slovakia	0.47	0.76	0.41	0.89	17,060	4.0
Slovenia	0.27	0.80	0.47	0.87	23,970	4.7
Spain	0.54	0.77	0.62	0.83	28,200	0.8
Sweden	0.53	0.73	0.41	0.77	34,310	4.0
UK	0.56	0.63	0.42	0.73	33,650	2.6
US	0.79	0.60	0.36	0.71	44,070	1.4
Aggregate	0.49	0.74	0.48	0.78	29,652	2.8

In terms of the level of economic development, several transition (post-communist) countries (*i.e.*, Poland, Lithuania, Latvia, Hungary, Slovakia, and Estonia) have the lowest per capita income in 2006.[38] These countries are also characterized by above-average values for administrative complexity, suggesting relatively high levels of red tape. Except for Estonia and the Czech Republic, transition countries perform poorly in terms of access to financial resources. This difficulty of obtaining credit also applies to countries in Southern Europe. Aside from a lack of financial support, the latter group of countries also experiences a lack of information regarding firm start-up. Scandinavian countries score relatively low on the administrative complexity variable.

[38] Note that the Czech Republic and Slovenia are not performing well either: they occupy positions 9 and 10 with respect to the level of GNI per capita.

Table 4.3: Correlation matrix of individual-level variables and regional variable ("urban").

	1	2	3	4	5	6	7	8	9	10
1. Gender	1									
2. Age	0.01	1								
3. Education level	0.05	-0.00	1							
4. Entrepreneurship education	0.01	-0.03	0.09	1						
5. Self-employed parents	0.02	0.03	0.02	0.03	1					
6. Indiv. risk tolerance	0.05	-0.15	0.09	-0.02	-0.03	1				
7. Indiv. stigma of failure	0.04	0.04	-0.01	0.01	0.09	-0.04	1			
8. Indiv. perc. admin. complex.	0.01	0.06	-0.04	0.01	-0.01	-0.14	0.01	1		
9. Indiv. perc. insufficient info	-0.03	0.07	-0.04	-0.01	-0.00	-0.14	-0.02	0.30	1	
10. Indiv. perc. lack fin. support	-0.03	0.01	-0.04	0.03	-0.04	-0.13	-0.06	0.31	0.23	1
11. Urban	0.02	-0.03	0.11	-0.02	-0.04	0.05	0.04	-0.02	-0.02	-0.04

Notes: Spearman correlations are calculated between each pair of binary variables (ranging between -1 and 1). All other values are calculated using Pearson correlation coefficient (also between -1 and 1). The numbers are based on 13,956 observations.

Correlations are presented in Table 4.3. Although the perception variables show some correlation, problems for further analyses are not expected, given that these values are not excessively high. Note that the risk attitude and stigma of failure variables are not correlated with each other, indicating that they represent two independent constructs.

For all countries, the percentage of individuals within each of the entrepreneurial engagement levels is given in Table 4.4. Interesting differences emerge when comparing Europe to the United States. For example, in the United States 30 percent of the respondents indicated that they had never considered setting up a business, while the European average amounts to 51 percent. In addition, the percentages of individuals in the "thinking" and "taking steps" stages in Europe are considerably lower than those in the United States (11 and 4 percent versus 21 and 9 percent, respectively).

4.4 Model

To capture the entrepreneurial decision as a process consisting of five engagement levels (*i.e.*, "never considered", "thinking", "taking steps", "young business" and "mature business"), Chapter 2 of this thesis uses a cumulative logit model. This model assesses the influence of the explanatory variables on the odds (ratio of two probabilities) of being at or beyond a particular engagement level relative to being below this engagement level. Hence, all individuals who failed to make it to a certain engagement level are compared with all individuals who achieved at least this engagement level. The present study instead uses the continuation ratio logit model (Agresti, 1984, Tutz, 1991), in which the categories can only be reached successively because it makes use of conditional probabilities (Fahrmeir and Tutz, 1994). According to Rabe-Hesketh and Skrondal (2008, p. 323) the continuation ratio logit model is appropriate especially in situations where "categories represent stages in some progression".

Table 4.4: Proportion of engagement levels for each country.

	(1) never consid.	**(2)** thinking	**(3)** taking steps	**(4)** young business	**(5)** mature business	**(2a)** gave up	**(5a)** failure	**(5b)** sell-off	number of observ.
Austria	0.57	0.07	0.02	0.02	0.05	0.21	0.01	0.05	475
Belgium	0.63	0.06	0.03	0.02	0.07	0.09	0.02	0.07	897
Cyprus	0.40	0.15	0.03	0.05	0.11	0.12	0.04	0.11	493
Czech Republic	0.49	0.13	0.04	0.03	0.08	0.18	0.03	0.03	910
Denmark	0.47	0.20	0.03	0.02	0.05	0.12	0.03	0.08	495
Estonia	0.59	0.09	0.06	0.04	0.08	0.09	0.03	0.03	451
Finland	0.56	0.06	0.02	0.03	0.09	0.10	0.02	0.12	419
France	0.57	0.10	0.03	0.02	0.04	0.17	0.01	0.07	983
Germany	0.48	0.12	0.04	0.04	0.06	0.20	0.02	0.05	966
Greece	0.36	0.15	0.02	0.08	0.11	0.14	0.04	0.10	989
Hungary	0.53	0.14	0.03	0.02	0.10	0.06	0.04	0.07	983
Iceland	0.41	0.14	0.05	0.04	0.14	0.09	0.02	0.12	442
Ireland	0.49	0.13	0.04	0.04	0.07	0.12	0.04	0.06	477
Italy	0.56	0.07	0.04	0.03	0.05	0.15	0.02	0.08	941
Latvia	0.50	0.25	0.06	0.03	0.06	0.01	0.03	0.06	451
Lithuania	0.61	0.14	0.06	0.02	0.05	0.04	0.03	0.04	471
Luxembourg	0.55	0.08	0.03	0.03	0.04	0.20	0.02	0.06	462
Malta	0.63	0.08	0.01	0.01	0.02	0.24	0.00	0.01	434
Netherlands	0.52	0.08	0.04	0.04	0.05	0.18	0.02	0.08	937
Norway	0.58	0.11	0.02	0.03	0.09	0.08	0.01	0.08	461
Poland	0.45	0.14	0.06	0.02	0.08	0.15	0.04	0.06	963
Portugal	0.58	0.04	0.03	0.05	0.05	0.15	0.03	0.07	969
Slovakia	0.43	0.27	0.05	0.02	0.05	0.12	0.03	0.04	479
Slovenia	0.55	0.13	0.01	0.02	0.03	0.18	0.02	0.05	492
Spain	0.57	0.08	0.03	0.03	0.06	0.14	0.03	0.06	964
Sweden	0.45	0.15	0.06	0.03	0.05	0.12	0.02	0.11	478
UK	0.47	0.08	0.05	0.03	0.05	0.20	0.02	0.09	971
US	0.30	0.21	0.09	0.04	0.08	0.09	0.04	0.14	947
Number of obs. (proportion)	9,812 (0.51)	2,298 (0.12)	770 (0.04)	629 (0.03)	1,299 (0.07)	2,687 (0.14)	505 (0.03)	1,400 (0.07)	19,400

The continuation ratiol logit model assesses the influence of the explanatory variables on the odds of being beyond a particular engagement level relative to being at this engagement level, with both probabilities conditional upon being at or beyond this engagement level. All individuals at a particular engagement level are compared with all individuals who advanced to a higher engagement level. Climbing the entrepreneurial ladder can be considered a sequence of binary transitions: given that one belongs to a certain engagement level, an individual moves either on to the next engagement level, or (un)voluntarily stops at the present level.

Assume an ordered, observed variable, Y_i, for each individual, *i.e.*, the engagement level of individual *i* with outcomes $j = 1,\ldots,J$. Note that $j = 1$ and $j = J$ denote "never considered" and "mature business", respectively. The continuation ratio logit model assumes a conditional model-

ing of transitions: $\Pr(Y_i = j \mid Y_i \geq j) = F(\alpha_j - X_i'\beta)$ for each j with $\Pr(Y_i = 0 \mid Y_i \geq 0) = 0$ and $\Pr(Y_i = J \mid Y_i \geq J) = 1$. *F(·)* is a cumulative logistic distribution function with a mean of zero and a variance of $\pi^2/3$. A transition takes place if the underlying latent variable that determines the transition exceeds a transition-specific threshold value (these are denoted by $\alpha_1, \ldots, \alpha_{J-1}$ in the formula above; see Tutz, 1991). This conditional view implies that individuals in "never considered" will only be incorporated in the transition from "never considered" to "thinking", whereas in Chapter 2 this group of individuals is included in each comparison.

Note that the coefficient vector β is the same across all observations and engagement levels. This may be an unrealistic assumption in practice. The coefficients can be made category-specific essentially by performing binary logit regressions and zooming in on four specific positions on the entrepreneurial ladder. For example, the first engagement level ("never considered") can be compared with the four remaining engagement levels, *i.e.*, a logit regression of $\Pr(Y_i>1)$ versus $\Pr(Y_i=1)$. Similarly, three other binary logit regressions can be conducted: $\Pr(Y_i>2)$ versus $\Pr(Y_i=2)$, $\Pr(Y_i>3)$ versus $\Pr(Y_i=3)$ and $\Pr(Y_i=5)$ versus $\Pr(Y_i=4)$.

The results obtained by the continuation ratio logit regression can be interpreted by using log odds ratios that are linear functions of the explanatory variables. These ratios can be expressed as follows: $\log(\Pr(Y_i > j \mid Y_i \geq j) / \Pr(Y_i = j \mid Y_i \geq j)) = X_i'\beta + \alpha_j$. Given a positive coefficient and holding all other variables constant, an increase in this particular variable raises the likelihood of belonging to a higher engagement level relative to the likelihood of belonging to the present engagement level, conditional on being at or beyond the present engagement level. One can interpret the results from the four binary logit regressions in the same way.

In fact, we compare the entrepreneurial engagement of randomly selected individuals at the time of the survey (January 2007). For some individuals their current engagement level will also be their final engagement level; others, however, will at some moment advance to a higher level of entrepreneurial engagement (censored observations). One may also take into account individuals who are in "gave up", "failure", or "sell-off". Unfortunately, there is no information on whether individuals in the "gave up" stage ultimately reached "thinking" or "taking steps". The same holds true for the "failure" and "sell-off" stages, as the survival times of businesses are not known. The results presented in this study are generated without individuals in the "gave up", "failure", and "sell-off" stages being assigned to one of the other stages.

4.5 Analysis and results

Table 4.5 displays the results of the continuation ratio logit regression (the parsimonious "overall" model) in the first column and the four binary logit regressions in the last four columns. Standard errors are clustered on countries. Hence, they are robust to heteroskedasticity and observations within countries are allowed to be correlated. All models include the individual-level variables, the urban region, and country dummies. Hence, country effects are investigated

by including 27 country dummies (representing the EU-25 Member States, Norway and Iceland), with the United States as the benchmark country. The outcomes are discussed below.

4.5.1 Individual-level factors

Gender

Focusing on the continuation ratio logit model, it is found that gender is an important factor for achieving entrepreneurial progress: being a man increases the odds of being beyond, rather than being at, a specific engagement level (conditional on being at or beyond this level and all other variables equal) by exp(0.629)=1.878. Apart from the coefficient of the squared age term, this makes gender the individual-level variable with the highest coefficient in absolute terms. However, the pattern is not consistent across the four binary models. The significance of gender in the "overall" model can be attributed almost entirely to an advantage for men (relative to women) in the transitions from "never considered" to "thinking" (second column of results) and from "thinking" to "taking steps" (third column of results). Given that an individual undertakes activities to start up a business, men are only exp(0.208)=1.231 times more likely than women to make transitions to a higher entrepreneurial engagement level (this coefficient is significant at the 5 percent level; see penultimate column).

Equal odds for men and women to be in the "mature business" stage relative to the "young business" stage (given that the "young business" stage has been reached; see last column) even suggest similar survival chances across gender. It could be that the much higher propensity of men to make the first two transitions is driven by other factors (that are not controlled for, but) that may be related to gender such as opportunity recognition or entrepreneurial self-efficacy. In a similar fashion, the smaller gender effect for the third transition and the absence of a gender effect for the last transition do not mean that gender does not play a role. Gender may still moderate the relationship between other factors and entrepreneurial engagement or progress.[39]

Age

Age shows an inverse U-shaped relationship with entrepreneurial progress. The turning point of age is at 43 years. Above this age, the likelihood of advancing beyond a given engagement level decreases, *i.e.*, individuals are less likely to belong to a higher level of entrepreneurial engagement. This effect of age on the transition probability is primarily influenced by the first transition: the turning point at which the transition to the "thinking" stage becomes less likely is at the age of 31 years, whereas the turning points for other transitions are much higher.

[39] Non-reported investigation of moderation effects by means of interaction terms between all individual-level variables and gender reveals that there are three coefficients with significant differential impacts on female and male entrepreneurial progress in the "overall" model: self-employed parents, risk tolerance, and perception of lack of financial support. Results can be obtained from the authors upon request. See also Verheul *et al.* (2011) for a discussion of gender and moderation effects.

Table 4.5: Estimation results continuation ratio logit model and four binary logit models (individual-level, regional-level, and country dummies; benchmark country: US).

	continuation ratio	"never considered" vs. higher	"thinking" vs. higher	"taking steps" vs. higher	"young" vs. "mature business"
Gender	0.629***	0.776***	0.809***	0.208**	0.099
Age	0.115***	0.085***	0.187***	0.124***	0.160***
$(Age/100)^2$	-13.461***	-13.574***	-16.461***	-6.436**	-11.729***
Education level	0.016***	0.033***	-0.009	-0.020**	-0.025**
Entrepreneurship education	0.213***	0.334***	0.032	-0.021	-0.098
Self-employed parents	0.282***	0.360***	0.344***	0.144	0.160
Indiv. risk tolerance	0.213***	0.316***	0.033	0.273**	-0.041
Indiv. stigma of failure	-0.040	-0.156**	-0.015	0.183	0.332
Indiv. perception admin. compl.	-0.160***	-0.214***	-0.249**	-0.149	0.084
Indiv. perception insuff. info	-0.044	-0.051	0.042	-0.019	0.030
Indiv. perception lack fin. support	-0.076*	0.016	-0.190**	-0.175	-0.012
Urban	-0.092*	-0.052	-0.136*	-0.261**	-0.099
Austria	-0.564***	-1.425***	0.181***	0.584***	0.570***
Belgium	-0.596***	-1.655***	0.777***	1.106***	0.700***
Cyprus	-0.138***	-0.756***	0.238***	1.472***	0.046
Czech Republic	0.026	-0.568***	0.567***	1.091***	0.517***
Denmark	-0.411***	-0.966***	-0.383***	0.780***	0.253***
Estonia	-0.043**	-0.688***	1.010***	0.949***	0.499***
Finland	-0.405***	-1.472***	0.600***	0.841***	0.301***
France	-0.763***	-1.648***	0.204***	0.456***	0.086
Germany	-0.305***	-1.106***	0.632***	1.040***	0.088
Greece	0.000	-0.653***	0.385***	2.259***	-0.139*
Hungary	0.103***	-0.410***	0.455***	1.109***	0.694***
Iceland	0.065***	-0.805***	0.688***	1.157***	0.902***
Ireland	-0.355***	-1.114***	0.191***	1.070***	-0.014
Italy	-0.419***	-1.353***	1.018***	0.703***	-0.057
Latvia	-0.050***	-0.167***	-0.106**	0.430***	0.581***
Lithuania	-0.409***	-1.056***	0.442***	-0.076**	0.214***
Luxembourg	-0.563***	-1.420***	0.196***	0.615***	0.007
Malta	-1.182***	-1.950***	-1.120***	0.915***	1.455***
Netherlands	-0.469***	-1.328***	0.697***	0.836***	-0.251***
Norway	-0.239***	-1.124***	0.449***	1.532***	0.519***
Poland	-0.106***	-0.641***	0.413***	0.681***	0.770***
Portugal	-0.417***	-1.441***	1.691***	1.313***	-0.910***
Slovakia	-0.150***	-0.233***	-0.420***	0.092	0.173***
Slovenia	-0.707***	-1.292***	-0.743***	1.257***	-0.177**
Spain	-0.556***	-1.599***	0.606***	1.225***	0.085
Sweden	-0.307***	-0.903***	0.181***	0.513***	-0.217***
United Kingdom	-0.461***	-1.317***	0.722***	0.479***	-0.273***
Number of observations	9,823	9,823	3,863	2,155	1,523
Pseudo R^2 (McFadden)	0.06	0.15	0.15	0.16	0.10

Notes: ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively. Estimates of thresholds (in case of the continuation ratio logit model) and intercepts (binary logit models) are not shown. If LL_m denotes the log likelihood of the full model and LL_0 the log likelihood with thresholds/intercept only, then McFadden's R^2 equals $1-(LL_m/LL_0)$.

Education

The results in the first column of Table 4.5 reveal that there is an overall positive effect of education level on entrepreneurial progress, indicating that stepping up the entrepreneurial ladder is enhanced by a higher level of education. Again, there are differences across the four binary logit regressions. The impact of education level is significantly positive for the first transition ("never considered" to "thinking"), insignificant for the next transition ("thinking" to "taking steps") and significantly negative for the final two switches on the entrepreneurial ladder ("taking steps" to "young business" and "young business" to "mature business"). This means that a higher level of education is important mainly in becoming aware of entrepreneurship as a possible career option, but appears detrimental for advancing to later stages of entrepreneurial engagement, where relevant experience and skills may become more important. Similarly, entrepreneurship education is important for forming entrepreneurial intentions; it does not have an effect on subsequent transitions.

Role models

Table 4.5 shows that, overall, self-employed parents positively contribute to advancement in the entrepreneurial process. Investigating the differential impacts of this variable across the engagement levels, it turns out that self-employed parents are of help during the early phase of setting up a business. More precisely, they are important in the entrepreneurial intention and taking steps stages, but are no longer of influence for the start-up and development of the business. This is in line with Davidsson and Honig (2003), who find that while strong ties are particularly important for shaping children's preferences, in later stages weak ties are more influential.

Risk tolerance and stigma of failure

The significant impact of risk tolerance in the continuation ratio logit model can be attributed to the significant coefficients of risk tolerance in the transitions from "never considered" to "thinking" and from "taking steps" to "young business". Stigma of failure does have an impact on overall advancement in the entrepreneurial process, although to some extent it holds back individual's intentions to start up a business (at the 5 percent significance level).

Perceived barriers to entrepreneurship

In the "overall" model, the perception of administrative complexities negatively influences the probability of being beyond a given engagement level, whereas there is a small negative impact for the perception of lack of financial support (at the 10 percent level) and no discriminating effect for the perception of insufficient information. Focusing on the four binary regressions, it appears that the perceived administrative burden is a real barrier for developing entrepreneurial intentions and taking steps to start a business. The perception of a lack of financial support hinders individuals in taking steps to start a business, but is insignificant in

all other comparisons. This could be an experience effect, where people only learn about the existence of a barrier after having experienced it themselves. To conclude, none of the perceived barriers play a hindering role in transforming nascent activities into established businesses (from "taking steps" to "young business") and in the continuation and development of businesses (from "young business" to "mature business").

4.5.2 Regional factor: urban versus rural areas

Living in a metropolitan or urban area decreases the "overall" probability of making entrepreneurial progress, albeit at the 10 percent significance level. Hence, living in a metropolitan or urban region puts a brake on overall entrepreneurial progress to some extent. Glancing at the results for the transitions between the separate stages, the urban dummy variable has a significant negative coefficient for the transition from "thinking" to "taking steps" (at the 10 percent level) and from "taking steps" to "young business" (at the 5 percent level). These findings may point to the strength of negative competition effects cancelling out positive agglomeration effects.

4.5.3 Country dummies

The first column of Table 4.5 shows that there are only two countries (Hungary and Iceland) that have higher odds of climbing the entrepreneurial ladder than the United States and two countries that are on par with the US (Czech Republic and Greece). Furthermore, individuals in Cyprus, Estonia, Latvia, Poland, and Slovakia are able to keep up with the entrepreneurial progress of US citizens, given the corresponding log odds of at most –0.150. On the other hand, individuals from Austria, Belgium, France, Luxembourg, Malta, Slovenia, and Spain have a relatively low likelihood of moving beyond a given engagement level (the log odds of these countries are below –0.500). Hence, it seems that low-income countries perform relatively well in shaping conditions for entrepreneurial progress, as seven out of the nine aforementioned countries have a lower per capita income than the average value, as displayed in Table 4.2 (exceptions are Greece and Iceland). Welfare states such as Austria, Belgium, France, and Luxembourg, characterized by stringent regulatory environments, discourage individuals from advancing in the entrepreneurial process, thereby missing out on opportunities to enhance the competitiveness of these regions. In welfare states economic incentives for opportunity-based and necessity-based entrepreneurship are often reduced (Henrekson, 2005) and entry regulation tends to be relatively strict.

The overall effects, as described above, do not adequately capture the unique effects across the transitions between specific engagement levels. For example, in the United States relatively many individuals switch from "never considered" to "thinking about" starting a business. In fact, all countries show significant lower odds of a transition between these stages. This is particularly the case for Austria, Belgium, Finland, France, Luxembourg, Malta, Portugal, and

Spain (with log odds below –1.400). Hence, these countries should pay more attention to creating awareness of entrepreneurship as a possible career option. The position of the United States weakens for the transition between "thinking" and "taking steps": there are only five countries (Denmark, Latvia, Malta, Slovakia, and Slovenia) with significant negative log odds. This indicates that individuals in these countries have a hard time acting upon and materializing their entrepreneurial dreams.

Regarding the switch from "taking steps" to "young business", almost all countries have higher odds than, or are on par with, the United States. In particular, individuals from Belgium, Cyprus, Czech Republic, Germany, Greece, Hungary, Iceland, Ireland, Norway, Portugal, Slovenia, and Spain have a high likelihood (log odds above 1.000) of advancement beyond the "taking steps" stage. It seems that there are few impediments that deter individuals from taking their start-up a step further and developing it into a young established firm in these countries. Lithuania and Slovakia have lower and equal odds, respectively, as compared to the United States and, hence, are weak performers.

Finally, regarding the transition from "young business" to "mature business", survival chances seem to be highest in Belgium, Iceland, Malta, and Poland (log odds at least 0.700), whereas they are lowest in Portugal.

To conclude, in the relatively weakly regulated United States, individuals have a high likelihood of thinking about starting a business, but have difficulties moving to higher levels of entrepreneurial engagement. Particularly, transforming nascent and start-up activity into viable young firms appears relatively difficult in the United States. Overall, there is substantial heterogeneity between countries. The subsequent section aims to explain this heterogeneity.

4.5.4 Country-level factors

Table 4.6 shows the results of the continuation ratio logit regression and four binary logit regressions, including country-level variables instead of country dummies.[40] More country-specific variables could have been included in the model, but with only 28 countries, a parsimonious model is preferred to an over-fitted model with a surplus of variables.[41]

[40] For the binary dependent variables, a random intercept logistic regression is used. This two-level model is similar to the regular binary logit model with an additional country-specific random intercept. That is, each country has its own intercept that depends on the country-specific variables in Table 4.1, an intercept, and an error term that captures country-specific influences that are not included in the model. Thus, observed and unobserved heterogeneity across countries is controlled for. For estimation of the random-intercept logit model, numerical approximation of integrals is needed. The Stata command *xtlogit* is used with adaptive Gauss-Hermite quadrature and 50 quadrature points.

For the continuation ratio logit regression (first column in Table 4.6) a simpler, but similar, approach is used. The estimated coefficients of the country dummies in Table 4.5 (but then excluding observations from Iceland and Norway) are regressed on the country-specific variables in Table 4.1 to obtain the coefficients of the country-level variables. A drawback of this simplified approach is that the coefficients of the country dummies are treated as given, whereas actually they are included in a certain confidence interval.

[41] Extending the set of country-level variables with stigma of failure does not lead to different results, as this variable does not have a significant impact across all regressions. In addition, replacing risk tolerance with stigma of

Table 4.6: Estimation results continuation ratio logit model and four binary logit models (individual-level, regional-level, and country-level).

	continuation ratio	"never considered" vs. higher	"thinking" vs. higher	"taking steps" vs. higher	"young" vs. "mature business"
Gender	0.641***	0.791***	0.789***	0.211*	0.094
Age	0.114***	0.083***	0.183***	0.126***	0.156***
$(Age/100)^2$	-13.508***	-13.438***	-16.088***	-6.653**	-11.834***
Education level	0.017***	0.035***	-0.009	-0.026***	-0.019**
Entrepreneurship education	0.217***	0.333***	0.034	-0.038	-0.142
Self-employed parents	0.285***	0.365***	0.327***	0.196	0.162
Indiv. risk tolerance	0.216***	0.330***	0.024	0.280**	-0.071
Indiv. stigma of failure	-0.052	-0.152**	-0.033	0.137	0.286
Indiv. perception admin. complex.	-0.167***	-0.229***	-0.250***	-0.151	0.074
Indiv. perception insuff. info	-0.033	-0.025	0.032	-0.009	0.036
Indiv. perception lack fin. support	-0.086**	0.001	-0.170*	-0.173	-0.044
Urban	-0.073	-0.034	-0.076	-0.288**	-0.086
Country's risk tolerance	1.795***	3.038***	-0.422	0.010	0.231
Country level admin. complexity	0.111	-0.833	1.520	0.219	-0.113
Country level insufficient info	0.811	-0.590	3.111***	4.053***	-0.831
Country level lack of fin. support	-0.605	1.445	-4.447***	-2.649**	0.026
Per capita income/1,000	-0.049*	-0.100***	-0.011	0.072*	-0.049
$(\text{Per capita income}/1{,}000)^2$	0.000	0.001**	0.000	-0.001**	0.001
Labor productivity growth	0.055	0.064	-0.026	0.100*	0.037
Number of observations	9,421	9,421	3,674	2,034	1,427

Notes: ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively. Estimates of intercepts are not shown. Observations of Iceland and Norway are not included in these regressions.

In the "overall" model the continuation ratio coefficients show that risk tolerance has a significant positive effect on a country's entrepreneurial progress (at the 1 percent significance level), while per capita income has a negative effect (albeit at the 10 percent significance level). The three environmental variables do not have a significant impact on the overall process.

Investigating the binary logit regressions, there is a negative effect of the level of economic development (measured by per capita income) on the likelihood of switching from "never considered" to "thinking" (the trough of the U-shape is at an irrelevant per capita income of $US 46,098) and a positive effect on the likelihood of making the transition from "taking steps" to "young business" (the trough of the inverse U-shape is at $US 32,049). This means that individuals in more developed countries are less likely to consider entrepreneurship as a viable career option, but that once they are nascent entrepreneurs there is a relatively high likelihood of transforming these nascent activities into a young business. When replacing the income variable with a transition dummy in our model specification, a more nuanced picture

failure leads to insignificant results for stigma of failure. In both situations, the significances of the other country-level variables only marginally change.

emerges regarding country differences. That is, the transition dummy has a significant positive continuation ratio coefficient of 0.538 at the 1 percent significance level. In addition, significant positive coefficients of this dummy variable are found for the first transition from "never considered" to "thinking" (0.905 at the 1 percent level) and for the last transition from "young business" to "mature business" (0.577 at the 10 percent level). Hence, these findings support the claim of Bowen and De Clercq (2008) that there is potential for growth opportunities in transition economies.

It is interesting to see whether making progress through the engagement levels (that may be seen as the entrepreneurial contribution to competitiveness) is related to a specific indicator of competitiveness, here: labor productivity growth per person employed in 2006, of which the values are displayed in the last column of Table 4.2. Labor productivity growth does not influence overall progress, but it has a positive significant coefficient (at the 10 percent level) for the transition from "taking steps" to "young business". In other words, individuals in countries characterized by higher labor productivity growth are more likely to develop their start-up into a viable young business.[42]

Remarkable is that a country's level of administrative complexity does not play a role in achieving entrepreneurial progress, which is in sharp contrast to the impact of the individual *perception* of administrative complexity, as shown in Table 4.5. This suggests that it is not the actual level of administrative complexity that forms a barrier, but rather the subjective perception of this complexity. Furthermore, the access to finance appears to have a negative effect on the likelihood of making a transition from "thinking" to "taking steps" and from "young business" to "mature business". Indeed, these are the stages in which generally there is a high need for financial resources. Unexpectedly, a country's level of insufficient information positively affects the transition from "thinking" to "taking steps" and from "taking steps" to "young business". This may be an experience effect, as people will probably only find out about a lack of information when they are themselves actively involved in entrepreneurial activity.

We perform a few additional checks. First, we examine the influence of an institutional indicator, *i.e.*, the size of the government. More precisely, we investigate the impact of total government expenses as a fraction of total GDP on entrepreneurial progress. We retrieve these data from the World Bank (World Development Indicators 2008). Although more government expenses may imply fewer entry barriers, it has also been argued that welfare economies tend to reduce incentives for opportunity-based and necessity-based entrepreneurship (Henrekson, 2005). For example, Aidis *et al.* (2010) find a significant negative relationship between the size of the government and nascent entrepreneurship. In addition, Koellinger and Minniti (2009) find that higher unemployment benefits negatively influence opportunity-based and necessity-based nascent entrepreneurship. In our case, it turns out that government expenses as

[42] Note that, given the data set, it is not possible to test for the direction of causality in this relationship. It could be that labor productivity growth results from start-up and young business activity, rather than vice-versa.

fraction of GDP do not have an impact in the continuation ratio logit regression and the four binary logit regressions at the 10 percent significance level. Results are available from the authors upon request.

In a next exercise, we investigate how sensitive our results are to the inclusion of the US. Whereas the results without the US are not reported in the present chapter, we note a few changes as compared to Tables 5 and 6. In general, these changes only involve coefficients that are significant at the 10 percent level in Tables 5 and 6. Specifically, a few coefficients lose their significance in Table 4.5 (education in the third transition from "taking steps" to "young business", the urban dummy in the "overall" model and the second transition from "thinking" to "taking steps", and perceived financial barriers in the "overall" model). In Table 4.6, it is per capita income that loses its significance in the "overall" model and in the third transition from "taking steps" to "young business" (both the single and quadratic term).

4.6 Conclusion

Using data from the 2007 Flash Eurobarometer Survey on Entrepreneurship, this study investigates entrepreneurial progress through five stages of entrepreneurial engagement and finds evidence for both individual and cross-country differences. With respect to individual-level factors, women have a lower probability of achieving entrepreneurial progress than men, but this slower progress is only visible in the early stages of entrepreneurial involvement. That is, the transitions from "never considered" to "thinking" and from "thinking" to "taking steps" are much more difficult to take for women than for men, but there is hardly a gender difference at higher stages of entrepreneurial involvement. Self-employed parents are valuable for creating entrepreneurial intentions and stimulating start-up activity, but no longer have an influence at later stages. Regarding the influence of individual perceptions of barriers to entrepreneurship (in terms of administrative complexity, lack of relevant information and lack of financial support) on entrepreneurial progress, we see that an individual's perceived administrative complexity lowers the likelihood of making a transition to the "thinking" and "taking steps" stages. A perceived lack of financial support lowers nascent entrepreneurial activity. Interestingly, living in an urban area lowers the likelihood of entrepreneurial progress. This may point to competition effects that reduce the lifespan of new ventures or possibly discourage potential entrepreneurs.

These results prompt some tentative thoughts in terms of policy. First, the results for gender suggest that if policies aimed at encouraging women to pursue an entrepreneurial career are to be envisaged, these measures should concentrate on the possible bottlenecks holding back women at the very early stages. Although concrete policy recommendations would require further investigation and are beyond the scope of this study, current results hint at the possible positive impact for women of role models and initiatives aimed at bringing to their attention

the possibility of an entrepreneurial career. In other words, "soft" measures with a strong informational and inspirational orientation, rather than harder measures with a "positive discrimination" content, seem in order. Second, the hindering role of perceptions of administrative complexity (here seen as deviation from the average) for undertaking nascent activities, which is in sharp contrast to the role of administrative complexity as a country-level variable, points to "perception" as a central concept. For this reason, if perceptions deviate from the actual environmental setting to a considerable extent, this may be a consideration for policy intervention in the form, again, of actions aimed at making information more transparent and readily available to potential entrepreneurs. However, these policy implications should be taken with care because they do not necessarily extrapolate to periods that are characterized by less economic growth than was experienced in 2007.

In addition, evidence is found for country effects on entrepreneurial progress. In the United States, for example, there is a high inclination to think about starting up a business, but a different picture emerges in the case of the materialization of these thoughts (actually starting up a business). This is illustrated by the fact that, relative to the United States, it is just as easy or easier in all European countries in our data set to make the transition from nascent entrepreneurial activity to a young business. Aside from including country dummies, the effect of country-level factors on entrepreneurial progress is also investigated. One of the main findings is that a country's attitude toward risk plays an important role in explaining entrepreneurial progress across countries. In risk-tolerant countries, it is generally easier to make entrepreneurial progress than in countries with a risk-averse attitude. Indeed, Lithuania, a country that scores low in terms of entrepreneurial progress, is also characterized by a relatively low level of risk tolerance. Furthermore, Portugal, a country where it is difficult to develop a company beyond the young business stage, is characterized by the lowest level of risk tolerance. This is in line with Hofstede (1985), who finds that Portugal has the highest score on the Uncertainty Avoidance Index. Risk tolerance may also play a role in explaining the position of the United States in this study. Although US citizens have an advantage over Europeans in the early stage of entrepreneurship, in which people start to think about entrepreneurship as an interesting career alternative, in later stages they are not more advanced. Indeed, although the American people have the highest level of risk tolerance, this risk tolerance only benefits them in the first stages of entrepreneurship (see Table 4.6). The negative impact of risk aversion is difficult to discuss from a policy perspective without further insights into the real source of risk aversion and its variation across countries. Given the way risk tolerance is proxied here,[43] it most likely captures at least two dimensions: the intrinsic or cultural nature of such attitude, and another dimension more closely linked with the legal or social consequences of bankruptcy. While changing the first dimension is at best a long-term endeavor, bankruptcy law and

[43] The country-level risk tolerance variable results from the country average of the agreement with the statement "*One should not start a business if there is a risk it might fail*".

procedures may play a role in the second dimension. Again, an investigation of this issue and of its policy implications is beyond the information and analysis in the present study.

Furthermore, a country's lack of financial support negatively affects the transitions from thinking about setting up a business to nascent entrepreneurship and from nascent entrepreneurship to having a young business. This could indicate that a high number of firms are not actually started up because there is inadequate financial support for aspiring entrepreneurs. This could in part explain the low levels of entrepreneurial progress in France and Portugal, countries having the highest scores for lack of financial support (see Table 4.2). On the other hand, the success of Iceland across the stages could (aside from an above-average level of risk tolerance) partly be attributed to the good financial support in that country. In fact, Iceland scores lowest for lack of financial support (see Table 4.2).

The present study investigated the influence of a range of important factors at different aggregation levels on entrepreneurial progress. Nevertheless, there may be other variables that play a role in explaining entrepreneurial progress that could be taken into account in future research on this topic, including individual-level factors (*e.g.*, entrepreneurial self-efficacy, opportunity recognition, entrepreneurial and industry experience), firm-level factors (*e.g.*, type of industry, innovation level, firm size and age), regional-level factors (*e.g.*, regional laws, population density, industrial district), and country-level factors (*e.g.*, industry composition, labor regulation, social security, level of individualism). For example, to explain transitions at later stages (*e.g.*, from "young business" to "mature business") it can be expected that firm-specific factors play an important role, factors that were not taken into account in the present study. Finally, more research is needed to create better insight into the influence of country-specific factors on backward or forward steps on the entrepreneurial ladder, identifying the specific factors promoting and hindering the achievement of entrepreneurial progress, which is again important for the competitiveness of regions and nations.

Chapter 5

Investigating the perceptions of credit constraints in the European Union

The promotion and support of small and medium-sized enterprises (SMEs) forms an essential ingredient in policies to help improve Europe's economic performance. A key issue in this context is whether SMEs face undue difficulty when trying to access credit. Using survey data from 2005 and 2006 covering almost 5,000 SMEs in the European Union, we investigate the determinants of firms' perceived financing constraints, focusing on bank loans. It turns out that a firm's age plays an important role in that older firms perceive external financing as being less difficult. Also, relationship banking helps to perceive an increased availability to credit. On the other hand, the ownership structure of a firm is not systematically related to perceived credit constraints, while turnover relaxes firms' perceptions in the "new" EU 10 countries, but not in the "old" Member States. There exist significant country differences and this cross-country variation can be partly explained by the degree of competition in the banking sector. It has to be stressed that these survey data have been collected well before the present economic crisis; the results here do not describe the present situation but rather the more structural elements of the relationship between perceived access to credit and the determinants studied in a normal economic situation.

This chapter is based on Canton *et al.* (2010).

5.1 Introduction

One recurrent topic in economics is the performance of capital markets. It has been an area of much debate, and is of relevance for many different fields, notably studies on small business activity. For many years, the European Union (EU) has identified the promotion of small and medium sized enterprises (SMEs) as being of vital importance, not least because of the contribution of entrepreneurship to economic performance (Carree and Thurik, 2007; Van Praag and Versloot, 2007). SME promotion is a significant part of the strategy to improve European competitiveness initiated in Lisbon at the European Council of March 2000, further strengthened in 2005 with the re-launch of the Lisbon Strategy, and recently brought to the fore by the Small Business Act. In this context the question of whether SMEs face undue difficulty when trying to obtain external finance comes to the fore, *i.e.*, the question of credit rationing. The credit market for smaller firms is thought to be an example of market failure, where the amount of credit provided and taken is less than the socially optimal level. This is primarily caused by asymmetric information between lender and borrower: the unobservability by creditors of the quality of projects undertaken by the borrowing firms. This problem of unobservable quality is believed to be more significant when looking at SMEs because of the higher perceived opacity of smaller firms and because monitoring costs, having a strong fixed cost component, weight more heavily on smaller scale projects (Beck *et al.*, 2006). This is not to say that the evidence for credit rationing is beyond question. From many of the empirical investigations on this phenomenon, the results are inconclusive.

According to a 2005/2006 Eurobarometer dataset covering almost 5,000 firms in the European Union with 250 employees or less,[44] 15 percent of these European SMEs list easy access to credit as the one thing that could best aid them in their development. When considering only the 10 "new" EU Member States this amounts to 20 percent. Using this dataset we aim to supplement the body of empirical knowledge on financially constrained firms. We note that there has been considerable work, more theoretical than empirical, on whether there is underinvestment relative to socially optimal levels (De Meza and Webb, 1987; De Meza, 2002), which is vital to the policy questions associated with credit constraints. We also observe that there has been a fair amount of work on the effect of different types and sizes of banks on lending (Berger *et al.*, 2001), not to mention a strong section of literature looking at whether cash flow has a positive impact on firm growth, indicating credit constraints (Wagenvoort, 2003a). However, there has not been much work on what affects the actual perceptions of firms, which could be vital if we want to encourage their creation and growth.

[44] In fact, it concerns a combination of the "Flash Eurobarometer 174: SME Access to Finance" survey, conducted in 2005 in the 15 "old" EU Member States, and the "Flash Eurobarometer 184: SME Access to Finance in the New Member States" survey, conducted in 2006. Countries that are included in the latter survey are Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovenia and Slovakia. For an elaborate discussion of these data, see Section 5.3.

The aim of the current chapter is thus to shed more light on what affects perceptions of credit constraints by European SMEs, thereby making a comparison between the 15 "old" EU Member States and 10 "new" ones. Of all the external financing possibilities, we concentrate on bank loans and examine what affects firms' perceptions concerning access to bank loans. These determining factors are age, which may proxy reputation; firm size, which may be a proxy for the ability to provide collateral; the strength of the banking relationship; and the ownership structure of a firm. We argue that these four factors could diminish the degree of asymmetric information between lender and borrower in the credit market. Besides, we use several control variables (for example, sector dummies) as well as economy-specific covariates for the 25 EU Member States (for example, the degree of competition in the banking sector). It has to be stressed that these survey data have been collected well before the present economic crisis; the results here do not describe the present situation but rather the more structural elements of the relationship between perceived access to credit and the determinants studied in a normal economic situation.

Although the Eurobarometer survey contains general questions covering different financing alternatives (banks, public institutions, venture capital and private investors), detailed questions refer to firms' perceptions of the relationship with their banks. It is common wisdom that SMEs heavily rely on banks as a mean to secure financing. In fact, the Eurobarometer data show that banks are by far the most used financial institution when SMEs need financing (80% in the "old" EU 15 and 69% in the "new" EU 10).[45] Concentrating on bank loans further removes the problem of the need to distinguish differences in attitudes and requirements of firms seeking debt or equity. We can define credit constraints in the context of debt, where firms may find their ability to obtain finance limited, and their credit is rationed (Stiglitz and Weiss, 1981). This is opposed to the definition with equity finance, where firms may be unable to receive small amounts of equity financing due to the actual fixed costs of issuing equity. By focusing on bank financing, we choose not to look at the relatively small number of firms – typically with a high growth potential, often in high-tech sectors – which obtain finance on the private equity market.

Briefly, we find evidence that age plays an important role, which we interpret as evidence that the track record of a firm is a major contributory factor in its perceptions of credit difficulties. Also, firms having low levels of turnover find it more difficult to access loans. Regarding the quality of the relationship between bank and borrower, we find that the degree to which the banker is perceived to understand the specifics of the sector of activity plays a role in perceiving external financing as being less difficult. There exist significant country differences and this cross-country variation can be partly explained by the degree of competition in the banking sector.

[45] To illustrate the important role of banks, the percentages of other institutions SMEs went to when they needed financing are (combined sample): 29% (leasing or renting companies), 11% (public institutions), 8% (private investors), 5% (private financing companies other than banks), and 2% (venture capital companies).

In the current chapter, we also address a second dimension of credit constraints. Interviewed firms identified factors that would most encourage them to resort to a loan of less than 25,000 euro. We investigate what determines the importance of price related factors (lower interest rates) relative to non-price related factors (simpler procedures, less demanding on requirements, shorter delays for granting loans). It for example turns out that younger firms find non-price related factors more relevant than price related factors implying that non-price burdens associated with a bank loan might decrease as a firm grows old.

The outline of this chapter is as follows. Section 5.2 presents a summary of the literature, both theoretical and empirical, on financial constraints and presents the main conjectures to be tested. In Section 5.3 the data are discussed, essentially a questionnaire asking almost 5,000 SMEs in the European Union about their perceived financing constraints and other firm-specific characteristics. The results are presented and discussed in Section 5.4 while Section 5.5 concludes.

5.2 Associated literature

From the seminal paper of Stiglitz and Weiss (1981) (hereafter SW), who gave the concept of credit constraints a rigorous theoretical underpinning, economists have sought to explain (and debunk) the prevailing wisdom that a firm will often, for a variety of reasons, find finance more difficult to obtain than they should in the ideal perfect capital market. Indeed SW showed that credit would be rationed due to adverse selection. In other words, because of asymmetric information lenders are unable to distinguish between the relative quality of the borrowers. This means that the price charged for the loan would be around the pooling equilibrium, deterring "good" borrowers and attracting "bad" borrowers. This lowers the general quality of the borrowers, leading to increased deterrence of the "good" borrowers, which results in a "market for lemons" (Akerlof, 1970). According to SW, increasing the interest rate leads to a riskier pool of borrowers, implying lower expected bank returns. Banks may instead choose to deny credit to a random set of borrowers (*i.e.*, credit rationing), whose perceived quality is identical to those having received funds.

Possible ways in which the information asymmetry arises include the assumption that the firm, as an "insider" (Williamson, 1975), is better informed than "outsiders" (the market), and this effect is accentuated with smaller firms. One reason for this small firm accentuation could be that often, as a rule, larger firms have better accounting records, and have to obey strict regulation required to publicly list one's company. For example, firms with certified audited financial statements are generally larger and more transparent. Also, smaller firms may be more reluctant to be fully open about their ownership structure and strategic goals. This leads to greater transparency with larger than smaller firms. Further, entrepreneurs are assumed to vary in honesty and ability, which can be assumed to be two non-observable characteristics,

leading to a further asymmetry. Asymmetric information could also cause moral hazard behavior creating a principal-agent problem. In this case, the agent (firm) may have an incentive to act inappropriately from the view of the principal (lender). For example, the borrowing firm may not act prudently enough and spend funds recklessly (Jensen and Meckling, 1976). Or borrowers may be induced to invest in riskier projects as discussed in SW. The task of the principal is to make sure that a contract is drawn up that will create an incentive for the firm to act in such a way to satisfy the principal's interest.[46]

Theory tells us that there are different ways to deal with asymmetric information in credit markets: 1) the provision of collateral; 2) the pursuit of a long-term relationship with clients.[47] Another possibility consists in limiting the agency costs by redesigning contracts but in this chapter we mainly deal with the role of factors under 1) and 2) in explaining firms' financial constraints perceptions. Theorists have historically put forward collateral as a method of reducing both adverse selection and moral hazard effects. Collateral in theory moderates the agency costs associated with moral hazard, as it limits the downside loss to the bank and provides a signal to the bank that the entrepreneur is confident about the project. Indeed, many empirical studies show that collateral provides an incentive and a means for good lenders to identify themselves (Besanko and Thakor, 1987; Chan and Kanatas, 1985; Bruns and Fletcher, 2008). One might then conclude that the increased ability to supply collateral would lead to a weaker perception of credit constraints. Therefore, a supply side market failure would emerge with firms who are refused credit not on the basis of their project, but on the basis of their inability to provide collateral. However, this view is dependent on the assumption that the quality of borrowers is unobservable. Berger and Udell (1990) argue that banks only require collateral with high-risk projects, as they assume the bank to be able to assess the relative risk of the project. In other words, the bank has enough information to evaluate a range of projects. Therefore, the ability to provide collateral should not, ceteris paribus, mean that obtaining credit should be easier or harder. Rather, collateral is only useful with a high-risk project.

A firm's reputation or track record could also play an important role in diminishing the effects of asymmetric information in the credit market. It could be argued that younger firms are likely to suffer more from credit constraints because of their limited credit history (Gertler, 1988; Devereux and Schiantarelli, 1990; Wagenvoort, 2003a, 2003b, Beck *et al.*, 2006).[48] Because of this restricted credit history it is difficult for banks to predict the future probabilities of repayment of a loan. Similarly, a good "relationship banking" could be a way of reducing information asymmetries between lender and borrower (Petersen and Rajan, 1994, 1995; Berger and Udell, 1995; Harhoff and Körting, 1998; Wagenvoort, 2003b). These studies

[46] It should be noted that information asymmetries can also lead to overprovision of credit, for instance in case of irrational optimism from entrepreneurs (De Meza and Webb, 1987).

[47] Providing finance to firms with a good reputation would also fall under this second category.

[48] In addition, Cabral and Mata (2003) confirm the hypothesis that financing constraints are binding for young firms but not for mature ones.

advocate that relationship banking generates easier access to credit and goes hand in hand with lower interest rates.

Whilst the theoretical discourse on the existence of credit constraints has become vigorous and lively after SW, the relatively contradictory nature of the empirical work in this field becomes more apparent. The contradictory findings of many empirical studies on the existence of credit rationing reflect in part the difficulty of implementing and measuring such a concept. Cressy (2002), in his informal taxonomy, lists some main ways in which economists have identified credit market problems in practice. They include 1) the labor market state switching criterion, where a credit market failure can be indicated by a positive relationship between individual assets and self-employment decisions (Evans and Jovanovic, 1989); 2) net worth-investment criterion where a positive relationship between companies' cash flow and their investment decision is taken to indicate that there is a large difference between the cost of internal finance and the cost of external finance (Fazzari *et al.*, 1988); 3) self-assessment criterion which involves firms answering questionnaires on their views about their company (Aston Business School, 1990).

When relating credit rationing to self-employment, one may observe that if credit rationing is the case in a financial market, it may be difficult to start an own business because of the lack of supplied credit. Blanchflower and Oswald (1998) found that the probability of self-employment is positively dependent on whether the individual ever received an inheritance or gift. Earlier, Evans and Leighton (1989) and Evans and Jovanovic (1989) have drawn the conclusion that individuals with more family assets are more likely to switch from paid employment into self-employment, claiming that potential entrepreneurs face liquidity constraints. On the contrary, evidence has been found that the perception of available financial support is no significant determinant of latent entrepreneurship (Grilo and Irigoyen, 2006) and that this perception does not have a discriminative effect across various levels of engagement in the entrepreneurial process that are distinguished in Grilo and Thurik (2005b).

Concerning the literature on the second criterion – the relationship between cash holdings and firm growth or investment decisions – Fazarri *et al.* (1988) argue that a pattern of financing hierarchy emerges, with investment being dependent on cash flow suggesting that there are significant cost advantages associated with internal financing compared to external financing. Cash flow has the strongest positive association with investments for manufacturing firms in sectors with low dividend-income ratios. A similar approach is followed in Carpenter and Petersen (2002). They investigate whether growth of small firms is constrained by the quantity of internal finance, using a panel of US manufacturing small firms. Dependent variable is the growth rate of the firm, and the main explanatory variable is the firm's cash flow scaled by total assets while also Tobin's Q is included as a control for investment demand. The point estimates for cash flow are slightly above one, suggesting that the growth of small firms is constrained by internal finance, together with a small leverage effect (when cash is used as

collateral to access debt). Several authors have criticized this approach in which financing constraints are evaluated on the basis of the estimated relationship between investment or firm growth and internal resources. Pál and Ferrando (2010) investigate the correlation between corporate cash flow and cash savings within a dynamic framework, using a sample of non-financial corporations for the period 1994-2003. They find that even for firms which are unconstrained the internal cash flow is used for the inter-temporal allocation of capital. This brings them to conclude that "… the significance of cash flow sensitivity of cash savings does not provide reliable evidence to distinguish firms experiencing different financing conditions" (Pál and Ferrando, 2010, p. 169). Another interesting finding is that the distribution of financially constrained firms does not depend on firm size or its listing at a stock exchange.

Using the self-assessment criterion, Aston Business School (1990) identifies supply and demand side constraints on finance leading to market failure. A supply side market failure in the credit market could occur when a project is turned down due to reasons not associated with the viability of the actual project itself (*e.g.*, because of firms' inability to provide collateral, lack of track record/reputation), or when an offer is turned down by the firm due to the unfavorable terms of the proposal (*e.g.*, high interest rates). A demand side market failure could arise in the area of information and advice when firms do not demand the optimal amount of credit due to lack of knowledge, inadequate presentation of proposals, or poor management (Cressy, 2002, 2003; De Meza and Webb, 1987; De Meza, 2002). In theory this could be exacerbated by low product market competition which means that inefficient firms can survive. It can serve as a convenient way to demarcate two groups of market failures which may affect firms' views on credit constraints. In this chapter, we will concentrate on using the self-assessment criterion and will look at whether the perceptions of difficulty in obtaining credit are related in any way to a variety of factors that might suggest credit constraints. Our analysis focuses mainly on supply side market failures as we explore the importance of a firm's ability to provide collateral, the reputation of a firm and the flexibility of the terms and conditions on the loan. In principle we could look for evidence of demand side constraints through the effect of ownership structure on firms' perceptions; but to the extent that ownership plays a role in the perceived transparency of firms (perceived by lenders), it could also be associated with a supply side market failure.

Based on these theoretical foundations we empirically investigate the importance of four underlying determinants of perceived credit constraints. *First*, imperfect information can be related to the age of the firm as age could be a proxy for reputation or track record. The testable conjecture here is that younger firms are likely to suffer more from credit constraints because of their limited credit history. In other words, the history of a firm can be a good signal of the relative quality of the borrower. We can therefore look at whether age of a firm is a determinant of perceptions of credit constraints. *Second*, financial institutions can ask for collateral in order to mitigate information asymmetries. Firms with better opportunities to offer collateral should therefore have easier access to external capital markets. In the empirical

literature, collateral has been proxied by for instance real estate, land, machinery, intangible assets and personal assets (see *e.g.*, Gelos and Werner, 2002; Kumar and Francisco, 2005). Here we use firm size, measured by both turnover and the number of employees, as a proxy as the dataset does not provide information on other forms of collateral. We are, however, aware that this may be a rather imperfect proxy and that results have to be interpreted with caution. The *third* mechanism behind information problems that we will investigate refers to the type of contact between firm and bank, as "relationship banking" could be a way of reducing information asymmetries between lender and borrower. *Finally*, the ownership structure and the corresponding reporting requirements can influence the degree of information asymmetry. Evidence has been found that quoted firms face lesser financing constraints and that foreign-owned firms have easier access to external financing, relative to nationally owned firms (Schiantarelli and Sembenelli, 2000; Harrison and McMillan, 2003; Beck *et al.*, 2006).

A second type of factors behind perceptions of credit constraints pertain to characteristics of financial products rather than to firms' characteristics. In this context, it is useful to make a distinction between price and non-price factors. Non-price factors include simpler procedures for granting loans, less demanding on guarantee requirements or information, and shorter delays for granting loans. This chapter will also look at the relative importance of price versus non-price factors. One could argue that as the age of the firm increases, it becomes less of a risk to its lender (reputation factor), thus high interest rates may become less of a problem compared to other factors. On the other hand, non-price factors might decrease as a firm grows old (banks are less demanding and/or the firm has accumulated experience in dealing with non-price factors). Non-price factors are usually not proportional to the size of the loan, making small loans relatively more costly than large loans. This may especially affect perceptions of small firms.

5.3 Data and methodology

Data are used from the "Flash Eurobarometer 174: SME Access to Finance" survey and the "Flash Eurobarometer 184: SME Access to Finance in the New Member States" survey of the European Commission. Together, these datasets cover 4,583 firms in 25 EU countries of which 3,047 firms belong to the "old" EU 15 and the remaining 1,536 firms to the "new" EU 10 countries.[49] The combined dataset allows a good study of businesses' perceptions of the credit market and the differences between countries. It also enables us to look closely at which firm-, sector- or economy-wide issues could cause variability in the perceptions of credit constraints.

[49] Randomized telephone interviews were conducted by The Gallup Organization in September 2005 for EU 15 and in May 2006 for EU 10. Each company – excluding agriculture, public administration and non-profit sectors – employing 1 to 249 persons was eligible for such an interview. The person interviewed of each firm is a top-level executive, *i.e.*, working in the general management, as a financial director or chief accountant. The target sample sizes range from 100 to 300 businesses in each country.

As mentioned, the focus in this chapter is on perceptions of credit constraints by European SMEs. As the dataset only includes SMEs we cannot make any inferences on perceptions of credit constraints of SMEs vis-à-vis large companies. Instead we focus on variations on perceived credit constraints within the group of SMEs, where it should be noted that micro, small and medium-sized enterprises represent 99% of all enterprises in the EU.

5.3.1 Information asymmetries

To explain perceived credit constraints from four dimensions of asymmetric information we use the following question from both Flash Eurobarometer surveys:

"*Would you say that today, access to loans granted by banks is very easy, fairly easy, fairly difficult or very difficult?*"

Table 5.1 shows the distribution of responses across countries. Note that for each country the number of observations for this question is slightly less (in total, 429) than the total number of interviews because of some missing values. On average, views about the ease of access to loans granted by banks are mixed as 40% of SMEs feel it is difficult while 60% perceive it as easy. Note that average percentages of EU 15 and EU 10 countries are similar. However, the data show large variation across countries: in Finland 95% of respondents think that access to loans is easy while 82% of the German respondents find it difficult.

We construct a dependent variable that takes value 1 if the answer to the above-mentioned question is either "very difficult" or "fairly difficult" and takes value 0 if the answer is either "very easy" or "fairly easy". We name the resulting variable "difficulty of access to loans".

As discussed above we investigate the importance of information asymmetries by exploring four different channels. The relevant explanatory variables are described below and are summarized in Table 5.2. For all determinants, the relative contribution of each category is displayed for the entire sample, the EU 15 sample and the EU 10 sample (for determinant 3, averages are shown).

The first channel works through the age of the firm, which is argued to proxy firm reputation. We construct a series of dummies to include this variable in our model formulation: less than 10 years in the market; between 10 and 20 years; between 20 and 30 years; and more than 30 years. The second channel is the ability to provide collateral, which is approximated by turnover and the number of employees. Again, a set of dummies is introduced for the different turnover intervals: less than €500,000; between €500,000 and €2.5 million; between €2.5 million and €5 million; more than €5 million. Furthermore, there are three size classes available that indicate the total number of employees: micro firms have 1 to 9 employees, small firms employ 10 to 49 persons and medium firms have 50 to 249 persons employed.

Table 5.1: Perceived easiness or difficulty of getting access to loans.

Country	Observ.	% Easy	% Difficult
Austria	179	0.53	0.47
Belgium	178	0.59	0.41
Denmark	178	0.88	0.12
Finland	99	0.95	0.05
France	294	0.63	0.37
Germany	286	0.18	0.82
Greece	99	0.70	0.30
Ireland	92	0.84	0.16
Italy	280	0.42	0.58
Luxembourg	90	0.43	0.57
Netherlands	176	0.49	0.51
Portugal	90	0.59	0.41
Spain	278	0.73	0.27
Sweden	220	0.64	0.36
United Kingdom	266	0.82	0.18
EU 15	2,805	0.60	0.40
Cyprus	96	0.76	0.24
Czech Republic	191	0.59	0.41
Estonia	93	0.80	0.20
Hungary	184	0.48	0.52
Latvia	107	0.76	0.24
Lithuania	92	0.66	0.34
Malta	95	0.67	0.33
Poland	283	0.45	0.55
Slovakia	98	0.64	0.36
Slovenia	110	0.72	0.28
EU 10	1,349	0.61	0.39
EU 25	4,154	0.60	0.40

Note: "% Easy" is the percentage of firms responding either "very easy" or "fairly easy"; "% Difficult" is the percentage of firms responding either "very difficult" or "fairly difficult".

The third channel refers to relationship banking. To test the relevance of this factor we use information on whether firms "*totally agree, tend to agree, tend to disagree or totally disagree with the following statements*":

- "Your banker understands the specifics of your sector of activity" (named "Understanding sector");
- "The offers from the banks are not suited to your needs" (named "Loans not suited").

The final channel refers to reporting requirements, as these will differ depending on ownership structure. The questionnaire asks the respondent whether the capital of his/her firm is:

1) exclusively family held;
2) family held, but also partly held by other individuals;
3) family held, but also partly held by other companies;
4) exclusively held by one or several national companies;
5) exclusively held by one or several international companies;
6) held by one or several national and international companies;
7) other ownership structures.

5.3.2 Price versus non-price factors

To test for the relative importance of price versus non-price factors in explaining perceived credit constrains, we construct a second dependent variable using the question:

"*Which of the following elements would most encourage you to resort to a loan of less than €25,000?*"

The answer possibilities are the following:

1) lower interest rates;
2) simpler procedures for granting loans;
3) less demanding on guarantee requirements;
4) shorter delays for granting loans.

Clearly, 1) is a price related answer, while the other possibilities are not price related. Table 5.3 shows the distribution of responses across countries. The EU 10 averages are consistently higher vis-à-vis the averages of each answer possibility of the EU 15 Member States.

We construct a dependent variable that takes value 1 if lower interest rate is answered without mentioning any of the three non-price related answers; and 0 if at least one of the options 2, 3 or 4 is answered, without having chosen 1. We thus make a strict separation between price and non-price related answer possibilities. Firms that answer option 1 plus a non-price factor are not taken into account in the analysis that follows. We are aware of the fact that the used question merely pertains to small loans, *i.e.*, less than €25,000. Repayment of such small loans could have a significant impact on the financial situation of a low-turnover firm, but not necessarily of a firm with a turnover of more than €5 million.[50]

[50] To alleviate this problem, we investigated also the firms' answers to the following question: "*For which of the following reasons would you consider that it is not as easy to obtain a bank loan today compared to a few years ago?*" The answer possibilities here could also be grouped into price (interest rates) and non-price factors (too much information requested, procedures too long, administrative side too demanding). Coding of these answer possibilities into a binary variable is done along the same line of reasoning as with the previous question. Note that this question is independent of the amount of the loan, but that it is only asked to those firms that find it more difficult to obtain a bank loan as compared to previous years. It turns out that the number of observations for some variables (especially for the ownership structure dummies and for some countries) is too low to draw reliable conclusions from the corresponding regressions.

Table 5.2: Four determinants to study information asymmetries; dependent variable is "difficulty of access to loans".

Determinant 1: Age as a reputation factor		**EU 25**	**EU 15**	**EU 10**
Age dummy variables	• < 10 years in the market	0.34	0.30	0.42
(reference group used in estimation:	• between 10 and 20 years	0.28	0.19	0.46
> 30 years)	• between 20 and 30 years	0.09	0.10	0.05
	• > 30 years	0.29	0.40	0.07
Determinant 2: Firm size as ability to provide collateral				
1)Turnover dummy variables	• < €500,000	0.47	0.43	0.56
(reference group used in estimation:	• between €500,000 and €2.5 million	0.28	0.30	0.26
> €5 million)	• between €2.5 and €5 million	0.09	0.10	0.07
	• > €5 million	0.16	0.18	0.12
2)Number of employees dummy	• micro firms: 1-9 employees	0.55	0.58	0.48
variables	• small firms: 10-49 employees	0.29	0.27	0.33
(reference group used in estimation:	• medium firms: 50-249 employees	0.16	0.15	0.19
10-49 employees)				
Determinant 3: Relationship banking				
Two dummy variables	• loans not suited	0.41	0.40	0.43
"totally agree" or "tend to agree"=1;	• understanding sector	0.74	0.75	0.71
"totally disagree" or "tend to disagree"=0				
Determinant 4: Ownership structure				
Ownership structure dummy variables	• family owned	0.64	0.69	0.53
(reference group used in estimation:	• family owned + other individuals	0.11	0.10	0.15
international companies)	• family owned + other companies	0.02	0.02	0.02
	• held by national companies	0.10	0.09	0.12
	• held by international companies	0.04	0.03	0.05
	• held by national + international companies	0.02	0.02	0.02
	• other ownership structures	0.08	0.06	0.12

5.3.3 Control variables

The analysis includes additional firm-specific characteristics provided by the survey: 1) dynamics of the firm measured by employment change; 2) whether the firm's situation has improved in terms of level of debt, cash flow, and investments; 3) whether or not the firm has already used a bank loan; 4) and whether access to finance is the main element assuring the development of the company. Table 5.4 presents all control variables and how they are constructed.

Dynamic firms in terms of a growing number of employees and an improved performance are also expected to be more optimistic in their perception of credit constraints. This can also be due to the fact that they might actually not feel constrained by the lack of external financing (because for example they could use increasing cash flows or reinvest profits). On the other hand, it could also be argued that growing firms are probably the ones more in need of financial inflows.

Table 5.3: Price and non-price factors that encourage respondents most to resort to a loan of less than €25,000.

	% of yes answers to each of the four answer possibilities			
	(1) interest rates	(2) procedures	(3) guarantees	(4) delays
Austria	0.49	0.17	0.18	0.07
Belgium	0.50	0.32	0.29	0.17
Denmark	0.36	0.06	0.11	0.02
Finland	0.26	0.10	0.14	0.04
France	0.61	0.22	0.31	0.14
Germany	0.65	0.58	0.52	0.39
Greece	0.47	0.18	0.22	0.13
Ireland	0.42	0.15	0.17	0.07
Italy	0.62	0.32	0.27	0.17
Luxembourg	0.45	0.47	0.48	0.31
Netherlands	0.31	0.17	0.20	0.12
Portugal	0.38	0.17	0.17	0.05
Spain	0.55	0.13	0.16	0.09
Sweden	0.28	0.17	0.24	0.08
United Kingdom	0.63	0.24	0.46	0.14
EU 15	0.50	0.43	0.28	0.38
Cyprus	0.89	0.76	0.85	0.76
Czech Republic	0.73	0.63	0.50	0.43
Estonia	0.64	0.42	0.48	0.39
Hungary	0.55	0.49	0.46	0.33
Latvia	0.70	0.53	0.58	0.39
Lithuania	0.72	0.66	0.70	0.44
Malta	0.75	0.77	0.64	0.64
Poland	0.78	0.75	0.63	0.50
Slovakia	0.63	0.57	0.51	0.54
Slovenia	0.77	0.54	0.55	0.36
EU 10	0.71	0.59	0.58	0.45
EU 25	0.56	0.37	0.37	0.25

Notes: Answer possibilities relate to: 1) lower interest rates; 2) simpler procedures for granting loans; 3) less demanding on guarantee requirements; 4) shorter delays for granting loans. Several answers are possible.

Using as control variable whether or not firms have made use of bank loans allows us to test how different perceptions are from reality. Finding access to finance a key factor in ensuring a firm's development might affect a firm's credit constraint perceptions in different ways. Of course, those firms constrained by difficult access to finance will see this as a crucial element, but not necessarily as the most crucial one.[51] At the same time access to finance could

[51] Other elements are "Better qualified people available on the market"; "Social and fiscal regulations more suited to your sector of activity"; "Greater production capacity"; "Stricter regulation regarding competition from outside the EU"; "An advice and support service for the development of your company". In fact looking at EU 15 data, 31% of

be considered the main factor behind a firm's plans for development even though getting bank credits are not seen to be especially difficult.

We control for sector-specific characteristics by using sector dummies. We also assess whether variation in firms' financing constraints perceptions can be explained by cross-country variation in economic circumstances, the degree of competition in the banking sector as well as other characteristics of the banking sector. To control for business cycles we use 2004 unemployment rates[52] as it is standard practice that lending institutions tighten credit conditions in economic downturns and relax them in economic upturns. Thus perceptions might be just reflecting cyclical rather than structural problems. Lack of competition among lenders enables them to make credit conditions more strict. To control for this, the Herfindahl index for 2004 is used.[53] The higher this number, the more concentrated the market is. We have recoded this continuous measure into a binary variable with values higher than 1,800 indicating a concentrated banking industry.[54] The number of employees at credit institutions (banks, saving banks, and cooperative banks) and the number of branches of credit institutions capture the banking sector specific characteristics in each country.[55] In some sense these variables can also be seen as a proxy for the ability of lenders in establishing close contacts with borrowers.

In the case of our specification to test for the importance of price versus non-price factors, we also control for firm-specific characteristics as well as sector and country-specific characteristics.

5.3.4 Implementation of the econometric model

The binary dependent variables are modeled using a random intercept logistic regression. This two-level model comes down to the regular binary logit model with an additional country-specific random intercept. That is, each country has an own intercept that depends on the economy-specific variables and an error term, the latter capturing country-specific influences that are not included in the model. In this way, one controls for observed and unobserved heterogeneity across countries.

respondents found social and fiscal regulations as the main element hindering their development. Around 21% of the firms selected better qualified people and 13% choose access to finance. For EU 10, these percentages are 25, 22, and 20, respectively.

[52] Data source: Eurostat, yearbook 2006-2007.

[53] Measured by the sum of the squares of the market shares of all credit institutions, according to total assets (European Central Bank, 2005).

[54] This threshold for distinguishing between high- and low-concentrated banking markets is used for US bank merger guidelines (Federal Reserve Bank, 1998).

[55] As a fraction of a country's total population.

Table 5.4: Construction of control variables.

Variable	Based on question	Value of variable
Employment change	"*Has the number of employees in your company increased, decreased or remained the same since last year?*"	1 if decreased, 2 if remained the same, 3 if increased
Debt improved, Cash flow improved, Investments improved	"*For each of the following would you say that your company's situation has improved, deteriorated or remains unchanged since last year?*"	Each of the variables takes value 0, 1, and 2 in case of deterioration, no change, and improvement, respectively.
Request for loan	"*For each of the following types of financing, please tell me whether or not your company has already made use of it for its activities?*" Relevant types are: "a loan shorter than a 3-year term" and "a loan longer than a 3-year term".	1 if one of the two types is answered, 0 otherwise
Easy access to financing	"*Which of the following elements would best assure the development of your company?*"	1 if "Easy access to means of financing" is answered; 0 otherwise
Sector dummies (reference group used in estimation: construction or civil engineering)	1) extraction or production of raw materials; 2) construction or civil engineering; 3) production and manufacturing of goods; 4) trade and distribution (wholesale and retail); 5) transport, 6) financial services; 7) other services to businesses; 8) other services to consumers	
Economic-specific variables (included as random intercept variables)	1) number of branches of credit institutions; 2) number of employees at credit institutions; 3) unemployment rate; 4) Herfindahl index.	All for the year 2004

The random intercept logit model is given by $\Pr(Y_{ij}=1) = \Pr(Y^*_{ij}>0) = \Lambda(Y^*_{ij})$, where Y_{ij} is a binary (0/1) dependent variable for firm i in country j, Y^*_{ij} is an unobservable response and Λ is the cumulative logistic distribution function. We now define $Y^*_{ij} = \alpha_j + \beta_1 x_{1ij} + \ldots + \beta_k x_{kij} + \varepsilon_{ij}$ with $\alpha_j = \gamma_0 + \gamma_1 z_{1j} + \ldots + \gamma_m z_{mj} + u_j$, where ε_{ij} has a logistic distribution with zero mean and variance $\pi^2/3$ and u_j is normally distributed with zero mean and variance φ^2; ε_{ij} and u_j are uncorrelated.[56]

5.4 Results

5.4.1 Information asymmetries

To investigate the four determinants of perceived credit constraints listed above we estimate a random intercept binary logit model. Estimated coefficients are displayed in Table 5.5. Note

[56] Note that the usual exogeneity assumptions (disturbance terms (ε_{ij} and u_j) and independent variables (x_{ij} and z_j) are uncorrelated) should also hold. For estimation of the random-intercept logit model, numerical approximation of integrals is needed. We use the Stata program *xtlogit* with adaptive Gauss-Hermite quadrature and 50 quadrature points.

that Table 5.5 consists of three regressions: one contains the results for all 25 countries, one the results for EU 15 and the final one displays the results of the regression where only the EU 10 countries are included.[57]

For each case, we first estimate a random intercept model without any country-specific variables.[58] In these null models it is possible to assess whether there is a significant variability of the average credit constraints perception across countries. That is, whether the estimated variance of the error term in the "country equation" (*i.e.*, the random intercept variance) differs from zero. After including the country-specific variables, we are able to assess the proportion of variance explained by these variables, that is, what the explanatory power of the known factors is.[59] As Table 5.5 reports, the inclusion of the known factors explains 21% of the variance of the average credit constraint perception across countries in the EU 25 sample. It explains 19% in the EU 15 sample and a high 63% in the EU 10 sample. Note that the intra-class correlations are also given in Table 5.5. They indicate how much of the total residual variance is due to cross-country variability.[60] The results of the model with country-specific characteristics show that unknown country factors are still responsible for almost 20% of the total residual variance in the EU 15 sample, although they only represent 10% of the residual variance in the EU 10 sample.

It is possible to assign values to the random intercepts of all countries, and, subsequently, to obtain a ranking concerning the average impact of each country on credit perceptions. Focusing on the regression containing all 25 EU countries we calculate these intercepts.[61] Countries are ranked in Table 5.6. Clearly, German firms are very pessimistic concerning their access to credit, whereas firms in Estonia and Finland seem to have much less difficulties with obtaining bank loans. Though a direct inspection of the data already suggested this, these results confirm the fact after correcting for a series of firms-specific and economy-specific characteristics.

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[57] When interpreting the results from the separate regressions for EU 15 and EU 10, one should be aware of the "ecological fallacy". This is an erroneous interpretation of statistical data, where inferences about individual countries are drawn from statistics for groups of countries. The fallacy is based on the assumption that individual members have the average characteristics of the group these members belong to (see *e.g.*, Robinson, 1950). So in our analyses of EU 15 and EU 10 one should be careful in drawing conclusions for individual countries.

[58] This null model is given by $Y^*_{ij}=\alpha_j+\beta_1 x_{1ij}+\ldots+\beta_k x_{kij}+\varepsilon_{ij}$ with $\alpha_j=\gamma_0+u_j$.

[59] This explanatory power is calculated as the decrease in percentage terms of the random intercept variance φ^2 after adding the country-specific variables to the null model.

[60] To be more specific, it is the random intercept variance as a proportion of the total residual variance: $\varphi^2/(\varphi^2+\pi^2/3)$. Naturally, the intra-class correlations of the null models are higher than those of the models including country-specific variables.

[61] First, we obtain values of the random intercept error terms (u_j for all j) by performing a logit regression for each country with only one independent variable of which the coefficient is restricted to 1. This single independent variable is a linear combination of all individual- and country-specific explanatory variables: $\beta_1 x_{1ij}+\ldots+\beta_k x_{kij}+\gamma_0+\gamma_1 z_{1j}+\ldots+\gamma_m z_{mj}$. The parameter values are imputed from the estimation results in Table 5.5. The estimated intercepts of these logit regressions are estimates of the u_js. Second, the country-specific intercepts can now be obtained by calculating $\alpha_j=\gamma_0+\gamma_1 z_{1j}+\ldots+\gamma_m z_{mj}+u_j$ with again replacing the coefficients by their estimated counterparts.

Table 5.5: Estimated random intercept logit model for perceived access to credit; dependent variable takes value 1 (access to loans is perceived as difficult) or 0 (access to loans is perceived as easy).

	EU 25	EU 15	EU 10
Determinant 1: age			
Age <10	0.326**	0.504***	-0.399
Age 10-20	0.144	0.158	-0.338
Age 20-30	-0.333*	-0.246	-0.748
Determinant 2: size			
Turnover <500	0.404**	0.225	0.941**
Turnover 500-2500	0.358**	0.258	0.644*
Turnover 2500-5000	0.235	0.181	0.425
Employees 1-9 (micro)	-0.184	-0.171	-0.150
Employees 50-249 (medium)	0.075	0.050	0.155
Determinant 3: relationship banking			
Loans not suited	0.749***	0.762***	0.765***
Understanding sector	-0.977***	-1.027***	-0.916***
Determinant 4: ownership structure			
Family	-0.261	-0.028	-0.566
Partly individuals	-0.300	0.058	-0.841**
Partly company	-0.473	-0.646	-0.108
National companies	-0.219	-0.008	-0.464
National and international	-0.404	-0.481	-0.122
Other companies	-0.380	-0.303	-0.549
Control variables			
Employment change	-0.153**	-0.238**	0.059
Debt improved	-0.081	-0.080	-0.033
Cash flow improved	-0.124*	-0.073	-0.291**
Investments improved	-0.147*	-0.164*	-0.060
Request for loan	-0.118	-0.132	-0.115
Easy access to financing	0.831***	0.949***	0.654***
Raw materials	-0.080	-0.241	0.372
Production	0.166	0.150	0.133
Trade	0.324**	0.341*	0.283
Transport	0.118	0.289	-0.187
Finance	-0.022	0.324	-0.708
Service business	0.034	0.067	-0.092
Service consumers	0.360**	0.409*	0.159
Random intercept variables			
Number of branches	0.383	0.586	-3.718**
Number of employees at CI's	0.029	0.029	0.089
Unemployment rate	0.029	0.075	-0.023
Herfindahl index	-0.939**	-1.289**	-1.171**
Interaction terms			
Micro × Herfindahl index	0.697**	1.128**	0.210
Medium × Herfindahl index	-0.237	0.373	-1.159

Table 5.5 (continued)

Diagnostics			
Number of observations	2,636	1,844	792
Max. log likelihood	-1,466	-997	-452
Variance random intercept	0.526***	0.663***	0.127***
Intraclass correlation	0.138***	0.168***	0.037
Max. log likelihood null model	-1,472	-1,002	-458
Variance random int. null model	0.663***	0.813***	0.348***
Variance explained (by country-specific variables)	21%	19%	63%
Intraclass correlation null model	0.168***	0.198***	0.096***

Notes: ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively. Reference groups: "Age > 30 years"; "Turnover > €5 million"; "International companies"; "Employees 10-49 (small)"; "Construction or civil engineering sector".

Table 5.5 reveals that young firms (existing less than ten years) perceive more problems with obtaining credit than their older counterparts. This finding suggests that reputation/track record (with "enough" reputation reached after ten years) relaxes perceived credit constraints.[62] An older firm apparently increases a bank's confidence that the firm will meet its debt obligations; this can be simply the result that having survived for ten years is a sign of performance or that an older firm is more likely to have a successful credit history. Note that support for this determinant can also be given for the "old" 15 EU countries as the dummy for youngest firms is highly significant in this regression. This finding can however not be extended to the EU 10 where no reputation (age) effect is found at all. The finding that a firm's track record is not of importance in relaxing its perceived financing constraints in the EU 10 might be understood in the context of soft budget constraints. That is, government or other supporting organizations offer support to budget constrained firms to cover their deficits, mostly in the form of "preferential" supply of credit ("soft credit") or tax concessions (Kornai, 1986; Kornai *et al.*, 2003). Soft budget constraint problems have been especially prevalent in Eastern European countries during their transition from centrally planned to market economies. Lízal and Svejnar (2002) and Konings *et al.* (2003) empirically investigate the presence of soft budget constraints by analyzing the influence of cash flows on the investment behavior of firms. In the transition context, a zero coefficient of the cash flow variable indicates access to bank credit for investments irrespective of the profitability of firms, providing evidence for the presence of soft budget constraints for poorly performing firms. Konings *et al.* (2003) find that firms in Bulgaria and Romania experience a stronger persistence of soft budget constraints than firms in Poland and the Czech Republic and, hence, are not credit rationed. Lízal and Svejnar (2002) focus their analysis on firms in the Czech Republic and find that throughout the 1990s soft budget constraints prevailed in many large firms.

[62] Note however that firms over 30 years old appear to perceive more credit constraints than those aged 20-30 years old though this effect is only borderline significant (10% significance level).

Table 5.6: Country-specific intercepts.

Finland	-1.102	Czech Republic	0.600
Estonia	-0.887	Malta	0.633
Lithuania	-0.623	Sweden	0.688
Denmark	-0.495	France	0.703
Ireland	-0.362	Belgium	0.911
Latvia	-0.181	Austria	0.930
United Kingdom	-0.171	Netherlands	1.050
Cyprus	-0.097	Hungary	1.143
Slovenia	-0.050	Poland	1.204
Spain	-0.018	Italy	1.288
Greece	0.016	Luxembourg	1.643
Slovakia	0.021	Germany	2.799
Portugal	0.376		

Furthermore, the estimation results reveal that turnover is an important factor in relaxing perceived financing constraints for the entire sample and for the EU 10 countries. However, high turnover does not help to improve perceived access to credit for the old EU Member States. It appears that size of a firm, as measured by the number of employees, does not have a significant influence on a firm's perception of constraints. This does not necessarily go against the findings in previous papers that small firms face higher financing obstacles, since their definition of small firms differs from ours (a commonly used upper bound for defining a small firm is 500 employees (*cf.* Carpenter and Petersen, 2002)). Note that the number of persons employed is heavily related to the size of the loans (three categories: < €25,000; €25,000-€100,000; > €100,000). The Spearman correlation between the number of employees and loan size is 0.46 and statistically significant at 1%. To illustrate this, 43% of micro firms applied for a last loan of less than €25.000, and 81% of micro firms applied for a loan of less than €100.000. These figures amount to 6% and 25%, respectively, in case of medium-sized firms.[63] It should also be noted that growing firms (measured as an increase in the number of employees) are more positive regarding access to credit.

Relationship banking apparently does help SMEs to get easier access to finance. The variables "understanding sector" and "loans not suited" are significant at 1% in all regressions, thereby providing support for the presence of this third dimension of asymmetric information. However, the significance of this variable across the board might be a consequence of reversed

[63] Adding the loan size variable reduces the sample by about one third. The coefficient of this variable is statistically insignificant at all conventional significance levels. These results are not reported but are available upon request. When regressions are run for split samples (by loan size, for all EU countries) we find that micro and small firms are in the same league when it comes to perceived difficulty, independently of the size of the loan. However, the way micro and small firms compare to *medium* firms depends on the size of the loan and the results from the subsample regressions suggest that for large enough loans (above €100,000) medium firms find access to credit easier than small (and micro) firms. For loans below €25,000 it holds that for medium firms external financing is more difficult relative to small (and micro) firms.

causality: respondents having difficulties with obtaining bank loans will probably also argue that their bank is not sufficiently supportive.

We find no support for the fourth determinant that ownership structure of a firm has an impact on firm's perceptions of credit constraints. In earlier literature it was found that domestic firms face more financing barriers than foreign owned firms. In our case, the degree to which a firm is nationally held does not appear to have an impact on the perception of financing constraints.

Sector of activity does not seem to play a very important role in describing firm's financial constraints perceptions, although our results reveal that firms operating in the "service to consumers" and "trade" business perceive it more difficult to obtain credit relative to firms operating in the other sectors.[64] These relationships do not hold for the EU 10 sample.

Interestingly, the number of employees in a firm seems to play an important role with respect to the Herfindahl index. It could be argued that small firms have fewer options than large firms when finding external financing and thus are more vulnerable to the lack of competition in the lending market.[65] To capture this we look at the coefficients of the interaction terms between our competition variable (Herfindahl index) and the dummy variables associated with the number of employees. The regressions in Table 5.5 contain these interaction terms.

Clearly, the effect of the Herfindahl index on perceived financing constraints is different for each size class. In the EU 25 it holds that for small (10-49 employees) and medium (50-249 employees) firms a more concentrated banking industry is related to easier access to credit. This is somewhat surprising, though some other studies have shown that a more concentrated banking system (explained by economies of scale and scope) could also be compatible with a more efficient structure.[66] Additionally, a Wald test shows that micro firms seem to be immune to the concentration effect as the coefficient is not significantly different from zero in this case. The same pattern can be observed for EU 15. For EU 10, however, no significant different effects are found for the three size classes, implying that the Herfindahl index has an equal impact for micro, small and medium-sized firms with a higher concentration decreasing perception of credit constraints for each size class.

[64] This result holds particularly in the case of micro firms as confirmed by the estimated coefficients of interaction terms (not reported).

[65] See Berger *et al.* (1998) and Wagenvoort (2003a).

[66] See European Central Bank (2005) for a review.

Table 5.7: Estimated random intercept logit model for price versus non-price factors; dependent variable takes value 1 (price factors are important) or 0 (non-price factors are important).

	EU 25	EU 15
Determinant 1: age		
Age <10	-0.605***	-0.677***
Age 10-20	-0.403**	-0.557**
Age 20-30	-0.092	0.012
Determinant 2: size		
Turnover <500	0.245	0.337
Turnover 500-2500	0.276	0.292
Turnover 2500-5000	0.520*	0.581*
Employees 1-9 (micro)	0.224	0.255
Employees 50-249 (medium)	0.006	0.127
Determinant 3: relationship banking		
Loans not suited	-0.321**	-0.365**
Understanding sector	0.600***	0.588***
Determinant 4: ownership structure		
Family	0.060	-0.476
Partly individuals	0.014	-0.638
Partly company	0.638	0.061
National companies	-0.001	-0.437
National and international	0.972	0.409
Other companies	0.019	-0.500
Control variables		
Employment change	0.223**	0.213*
Debt improved	0.044	-0.053
Cash flow improved	0.021	0.033
Investments improved	-0.036	-0.001
Request for loan	-0.137	-0.183
Easy access to financing	-0.812***	-0.748***
Raw materials	0.124	-0.104
Production	-0.262	-0.466*
Trade	-0.185	-0.236
Transport	-0.352	-0.526
Finance	-0.225	-0.414
Service business	-0.323	-0.508*
Service consumers	-0.030	-0.145
Random intercept variables		
Number of branches	1.293***	0.996**
Number of employees at CI's	-0.039***	-0.043***
Unemployment rate	-0.024	-0.041
Herfindahl index	-0.0002	-0.0003*

Table 5.7 (continued)

Diagnostics		
Number of observations	1,113	927
Max. log likelihood	-704	-584
Variance random intercept	0.059*	0.011
Intraclass correlation	0.018*	0.003
Max. log likelihood null model	-711	-591
Variance random int. null model	0.232***	0.158***
Variance explained	75%	93%
Intraclass correlation null model	0.066***	0.046***

Notes: ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively. For the EU 10 sample, there is non-variability of dependent variable. Reference groups: "Age > 30 years"; "Turnover > €5 million"; "International companies"; "Employees 10-49 (small)"; "Construction or civil engineering sector".

Regarding other banking sector-specific characteristics, we find that – although they explain a reasonable amount of the cross-country heterogeneity – they do not play a significant role in EU 25 and EU 15. Interesting results are found for EU 10 as credit constraint perceptions ameliorate with the number of branches. Concerning the number of branches, it seems that proximity (measured as bank branches density) induces relationship-based lending, making credit perceptions less binding. This result can be seen as additional support for the third determinant of perceived access to credit, namely the bank-firm relationship.[67] The number of bank branches could also be related to competition in the banking market. Some studies have indeed examined the link between increases in bank branches and increases in competition, finding a positive and significant impact from the removal of branches restrictions on competition.[68] Cyclical conditions as represented by the unemployment rate do not affect perceived access to credit.

5.4.2 Price versus non-price factors

We now turn to the results concerning the relative importance that firms assign to price versus non-price factors when thinking about asking for a bank loan. Table 5.7 reports the estimated marginal impact of the independent variables on the probability of price factors being important when considering a loan.

[67] An interesting analysis on the organization of firms, information production and the allocation of capital is Stein (2002). His analysis is motivated by the concern that consolidation in the banking industry will lead to less lending to small businesses. Lending to small businesses often heavily relies on "soft" information, for instance on the personality and competences of the president of the SME. Decentralized small banks are more suitable for SME lending as the banker is rewarded to develop expertise by ensuring that he/she will have access to some capital which he/she can use to lever that expertise.

[68] See, among others, Carlson and Mitchener (2006) and Bonaccorsi di Patti and Gobbi (2001).

We do not report estimation results for EU 10 since for 99% of firms non-price factors are the main reason behind finding it difficult getting a loan.

Concerning age, we find that younger firms find non-price factors more relevant thereby supporting our hypothesis that non-price burdens associated with a bank loan (*e.g.*, information and administrative requirements) might decrease as a firm grows old and has gained more experience in attracting credit from financial institutions. In fact, this result may describe either an objective change in the stringency of non-price factors as firms grow older or a perceived easiness in these factors due to a learning (by firms) effect. Further note that the number of bank employees increases the weight that firms give to non-price factors.

Among the control variables used in these specifications, no effect has been found for the state of the overall economy. Concentration in the banking system increases the importance that non-price elements have in firms' decisions; this could be the case when banks working in a competitive environment compete for clients via prices. These results are further supported by the finding that the number of bank branches (linked to a more competitive environment; Carbó-Valverde *et al.*, 2009) has a positive effect on the relative importance of price factors.

5.5 Conclusion

Determinants of perceived financing constraints of SMEs play a central role in this chapter. Concentrating on bank loans, we investigate whether and how four determining factors of asymmetric information between bank and firm influence perceptions of credit constraints in the European Union. These determinants are firm age, firm turnover, the number of employees, the strength of the banking relationship between lender and borrower, and the ownership structure of a firm, thereby arguing that firm age might be a proxy for the reputation or track record of a firm and that the two size measures proxy the ability to provide collateral. We use a firm-level dataset containing firm-specific and sector-specific information of almost 5,000 firms in the European Union. In addition, we analyze how economy-specific variables may alleviate or deteriorate perceived financing constraints.

Results indicate that the age of a firm has a significant influence on the perception of credit constraints: younger firms perceive it more difficult to obtain bank loans than older firms. This relationship does not hold for EU 10. It should be noted that reputation needs to be interpreted broadly. It can also be the case that older firms are on average of higher "quality" as lower quality firms will probably not survive.[69] In other words, when young firms perceive access to

[69] Another form of selection we have to be aware of is that, as with many studies, we are only dealing with established firms in our analysis, while it could for example be that credit rationing prevents starting up a business successfully (see for instance Aghion *et al.*, 2007). This could mean we are underestimating the importance of perceived difficulties to access credit, as potential entrepreneurs who could not obtain credit to start a business are not in the sample. These forms of unobserved heterogeneity could for instance be dealt with by choosing an instrumental variables approach or by adopting an experimental research set-up. The difficulty is of course to find suitable instru-

credit as difficult this may be due to a negative risk assessment of the firm by the bank, and not necessarily because of information problems. Also, the results on the ability to provide collateral should be taken with care. This ability is proxied by both the turnover of a firm and the number of employees. To the extent that turnover is a good approximation of the ability to provide collateral we find that firms who are less able to provide collateral to their credit supplier perceive it more difficult to obtain a loan. Finally, the results show that the ownership structure of a firm does not play any role in this context.

A question which is not addressed in this chapter, but which would be interesting for further work, is on the discrepancy between private and social returns to innovation, and how these spillovers vary by company size. Is there an argument for intensified government intervention for SMEs, because R&D spillovers are more intense? Unfortunately, the dataset does not include information on the firm's productivity level or innovation performance. An interesting project for future research would be to link the Eurobarometer work on access to finance to other data collection exercises commissioned by the European Commission, such as the Innobarometer survey on innovation performance or the Community Innovation Surveys. This would help to get a more complete picture of the performance of companies, and how this performance is related to credit perceptions. Likewise, Eurobarometer surveys would substantially benefit from adopting a panel structure where individual companies can be followed over time.

ments, to recognize conditions that can be exploited in a natural experiment situation, or to convince policymakers to run controlled experiments. The interest in such evidence-based policy making is growing, and future work is likely to follow these directions.

Chapter 6

Business takeover or new venture? Individual and environmental determinants from a cross-country study

The determinants of entrepreneurial choice have been thoroughly analyzed. Little is known, however, about the preferred mode of entry into entrepreneurship, such as taking over an existing business or starting a new venture. Using a large, international dataset, this study reports considerable differences in takeover preferences across countries. It explores many individual and environmental determinants of the preferred mode of entry. Our results show that human capital is not the only influence on the preference for starting a new venture versus taking over an existing one; a person's risk attitude, inventiveness, perception of financial constraints of entrepreneurship and country of residence (after controlling for the individual determinants) also play important roles.

This chapter is based on Block *et al.* (2010b).

6.1 Introduction

There are multiple ways to become an entrepreneur (Cooper and Dunkelberg, 1986; Dennis, 1997). A clear distinction can be drawn between starting a new firm (new venture start) and taking over an existing one (business takeover). The literature to date has analyzed individual and environmental determinants of entrepreneurial choice (for a summary, see Parker, 2009, Chapter 4; Grilo and Thurik, 2008), but, with a few exceptions, researchers have largely been silent about the determinants of the mode of entry. This chapter reports on international differences in the preferred mode of entry and explains individual preferences for a takeover versus starting a firm from scratch using individual and environmental determinants.

We argue that an individual's personality characteristics influence the preferred mode of entry intro entrepreneurship. First, new venture start and business takeover differ regarding their levels of business risk, innovativeness and (administrative) complexity. Starting a firm from scratch can be considered more entrepreneurial, exciting, complex and risky than taking over an existing business with an already developed business model and an established customer base. Second, prior research shows that entrepreneurs differ in their motivations and goals in starting a venture. Besides financial aspects, a number of non-financial reasons to become an entrepreneur exist, including being independent or autonomous, the opportunity to use one's skills and abilities and the work content itself (Hundley, 2001; Benz and Frey, 2008; Block and Koellinger, 2009). Third, research has shown that there exists substantial heterogeneity within the group of entrepreneurs regarding, for example, risk attitude (Block *et al.*, 2010; Caliendo *et al.*, 2010), innovation orientation (Cliff *et al.*, 2006; Koellinger, 2008) and human capital (Shane, 2000; Bosma *et al.*, 2004). Based on these arguments, we propose that a prospective entrepreneur's personality factors, such as growth ambition, risk attitude and inventiveness, influence the preferred mode of entry into entrepreneurship.

In addition to individual factors, environmental factors, including the administrative difficulty of establishing a new venture and country-specific concerns, play an important role in the mode of entry. The administrative steps (and thus the timeline) of setting up a new business differ across countries (Grilo and Irigoyen, 2006; Nicoletti and Pryor, 2006). Therefore, in some situations, it may be a rational choice to take over an existing business rather than setting up a new one. In addition, some countries, such as Japan or South Korea, are known for their "no failure" culture (Begley and Tan, 2001), which discourages individuals from setting up a new business rather than taking over an existing one because the perceived likelihood of business failure is lower.

The fact that few studies have focused on the mode of entry into entrepreneurship is surprising given its practical relevance for policy makers. From the perspective of existing enterprises, there is a considerable demand for entrepreneurs willing to take over existing businesses. For instance, approximately one third of European enterprises will require take-

over in the next ten years (European Commission, 2006, p. 8).[70] From the perspective of potential entrepreneurs, the preference for taking over an existing business is hardly less common. In the 32 European countries of our 2009 survey, nearly 30% of the respondents prefer a takeover to starting a new firm. A similar survey of 2001 reported a share of 35% (European Commission, 2003a). Our survey finds a lower percentage in the United States (22%). This percentage was also reported by Dennis (1997) in the 1995 Wells Fargo/NFIB series on business entries and exits. If incumbent business owners do not find successors despite the manifest preference of other aspiring entrepreneurs, the economic value of these firms may be lost with negative implications for jobs, entrepreneurial experience and economic development. This welfare loss is of concern to policy makers. Research on mode of entry into entrepreneurship may guide policy makers to take targeted measures making the succession process more effective and the dynamics of business formation more efficient.

To analyze the determinants of the preferred entry mode, our study uses a large international dataset. Our estimation sample includes individuals who are thinking about setting up a business, those who are actively taking steps to set up a business (nascent entrepreneurs) and existing business owners. The inclusion of both prospective business owners and current business owners, together with the international focus, contributes to the innovative character of the present article on this underresearched, but important topic. Our focus is also distinguishing: it is on personality characteristics, such as growth ambition, risk attitude, inventiveness, and self-confidence, while we control for socioeconomic aspects, such as gender, age, education level, income and self-employed parents. In addition, the environment is taken into account in terms of perceived barriers to entrepreneurship and the location of the respondent. Our survey covers all 27 Member States of the European Union (EU), Croatia, Iceland, Norway, Switzerland, Turkey, the United States, China, Japan and South Korea.

The setup of the chapter is as follows. The next section summarizes existing literature about the determinants of the mode of entry into entrepreneurship. It observes a research gap and explains how the present chapter contributes to filling this gap. This section also presents our arguments on how individual and environmental factors influence the preferred mode of entry. Subsequently, the data are discussed, followed by an overview of some basic descriptive statistics. Then, the regression results are presented and discussed. The chapter ends with some concluding remarks.

[70] In addition to the high need for takeover candidates in general, it has been observed that many firm owners seek successors outside their family or their firm (Scholes *et al.*, 2009; Van Teeffelen, 2010).

6.2 Literature review and some concepts

6.2.1 Prior work

Whereas investigations of new ventures (de novo entrants or ex nihilo creations) are primarily found in the entrepreneurship literature, those of takeovers are mainly part of family business literature. This literature relates to firm succession in family firms (Chua *et al.*, 2003; Bennedsen *et al.*, 2007; Molly *et al.*, 2010). The successful transition of ownership and management within the family is central for family firms to survive as family firms. However, within-family succession is not without alternative. For demographic and other reasons, firm owners often consider successors outside their family or their firm. However, little is known about potential entrepreneurs willing to take over an existing firm. We found only two (single-country) studies focusing on this area: Bastié *et al.* (2009) and Parker and Van Praag (2010).

Parker and Van Praag (2010) investigate the takeover versus new venture start decision for a representative sample of 709 Dutch entrepreneurs, who have either taken over a firm (from a family or non-family member) or started a firm from scratch. They focus on human capital in terms of years of schooling and several measures of experience (managerial, labor market, industry, previous business) and on the family background (whether an individual was born into a business-owning family). Their results show that education increases the likelihood of new venture start versus business takeover, whereas a family firm background and management experience are negatively associated with this likelihood. Parker and Van Praag (2010) argue that individuals with more education are better able to recognize entrepreneurial opportunities (Shane, 2000; Ucbasaran *et al.*, 2007) and thus are more likely to choose a new venture start as a mode of entry. In addition, they can cope better with the new and complex situation of developing a business from scratch. They are also in a better position to deal with the riskiness of starting a new firm. Parker and Van Praag (2010) also point to the alternative options that more highly educated individuals have in the labor market (Nickel, 1979). Therefore, if the business fails, they have alternatives to which they can turn. Concerning the effect of the family firm background, it can be argued that individuals born into a family firm already have a high probability of taking over the family business. Within-family succession is the preferred option of many family business owners (Chua *et al.*, 2003).

Using a large, representative sample of young French firms, Bastié *et al.* (2009) show that financing by banking loans is positively associated with business takeover. In line with Parker and Van Praag (2010), they also find that managerial experience is associated with a higher likelihood of takeover versus new venture start. However, they are not able to replicate fully the results of Parker and Van Praag (2010) regarding the level of education and its effect on the entry mode. While the studies of Parker and Van Praag (2010) and Bastié *et al.* (2009) focus on the actual entry mode of firms, the present study zooms in on revealed preferences for taking over versus starting from scratch. The studies of Parker and Van Praag (2010) and

Bastié *et al.* (2009) consider the results of preferences leading to intentions and actual behavior, given all constraints, whereas our study looks at preferences leading to intentions. So, any commonalities between our results and the results of Parker and Van Praag (2010) and Bastié *et al.* (2009) may be related to the link between preferences and intentions, whereas differences may be related to the link between intentions and behavior.[71] Our approach enables the inclusion of not only existing business owners but also prospective entrepreneurs who are thinking of a start-up or are in the process of starting a business (nascent entrepreneurs). Especially in the pre-start-up phase, there is a lack of knowledge concerning the preference of individuals to take over an existing firm. Although preferences do not necessarily lead to action, they are of interest from a policy point of view in that they deliver information that can be modified. In addition to some socioeconomic characteristics that were earlier addressed in the works of Parker and Van Praag (2010) and Bastié *et al.* (2009), the present study incorporates the following new factors into the model: an individual's personality (including business goals in terms of growth ambition), perceived barriers to entrepreneurship, and country characteristics. Our dataset includes more than 4,000 observations from 36 countries. By departing from a single-country setting, the present study may generalize the results of the earlier works regarding the impact of human capital and family background variables.

6.2.2 Individual determinants

The process of starting a firm from scratch differs in two main aspects from taking over an existing firm. First, it can be considered riskier; second, it can be considered to be more rewarding in terms of non-financial aspects of entrepreneurship, such as levels of decision autonomy, creativity, innovativeness and the level of self-achievement. We will explain both aspects and how they relate to the individual determinants of the preferred mode of entry.

Starting a firm from scratch can be considered as a riskier and more uncertain affair than taking over an existing business. Hiring employees, creating an organizational structure and finding customers are all uncertain in nature. When taking over an existing firm, the uncertainty is clearly lower, as the firm has already survived the early start-up phase in which the level of uncertainty and probability of failure are highest (Geroski, 1995). Therefore, we expect that risk-averse individuals will seek business takeover as a mode of entry, whereas self-confident and risk tolerant individuals will prefer a new venture start. A similar argument can be made for individuals with a high internal locus of control (Rotter, 1966). Individuals who perceive that they have a high level of control over those things that they are capable of influencing will feel more confident than other individuals in an uncertain situation. They are also better able to cope with the high uncertainty related to new venture start as a mode of entry into entrepreneurship.

[71] See Van Praag and Van Ophem (1995) who compare the determinants of entrepreneurial intentions with the determinants of actual entrepreneurial choice.

Starting a firm from scratch can be more rewarding than taking over an existing one, particularly in terms of the non-financial aspects of entrepreneurship. By starting a new firm from scratch, entrepreneurs can shape the venture exactly as they want. For example, they can decide which markets to enter, exact product specifications and the composition of their venture teams. Also, an entrepreneur can design his or her own desired role in the venture. For example, the entrepreneur may prefer to work part-time (Folta *et al.*, 2010) or to engage in invention and product development (Åstebro, 2003). In sum, we expect the new venture option to score high in a number of non-financial aspects of entrepreneurship. Individuals who seek these non-financial rewards of entrepreneurship will thus be more likely to favor a new venture over a business takeover as an entry mode. This argument refers particularly to entrepreneurs who seek creativity, self-achievement, independence, autonomy, and innovation when starting their venture. Also, it refers to individuals who prefer working in product development rather than in the administration of the firm.

6.2.3 Environmental determinants

Next to individual determinants, cultural factors exist that may have an influence on modes of entry into entrepreneurship. Prior research has shown socio-cultural values to be an important part of the entrepreneurial environment influencing entrepreneurial activity and performance. Beugelsdijk (2007) and Shane (1993) show that a country with a more "entrepreneurial" culture that is more open to risk-taking relative to other countries will be more successful in originating innovations. Uhlaner and Thurik (2007) show that postmaterialism as a cultural factor has an impact on a country's entrepreneurial activity. Potential entrepreneurs will assess their entrepreneurial behavior and performance against the moral rules of the society in which they start their firm. This evaluation process should be more important in countries that have a collectivist culture. Drawing on research about cultural differences between countries (Hofstede, 2001; House *et al.*, 2004), we suggest that potential entrepreneurs in East Asia are particularly sensitive to the judgment of the public regarding their success as an entrepreneur. Business failure will have a far higher reputation loss in Japan and Korea relative to other countries. Given our above arguments about the higher level of uncertainty associated with a new venture versus a business takeover, we expect respondents in Japan and Korea to be stronger in favor of business takeover compared to other countries. To illustrate this point, Ray (1994) quotes from a government committee on entrepreneurship saying that business failure will mean "castigation and ruin" for the entrepreneur.

In addition to these country differences, another environmental aspect will be taken into account. Perceptions of environmental barriers to entrepreneurship (*i.e.*, whether the perceived munificence of (access to) resources is low/high) will influence an individual's assessment of succeeding in the complex and risky task of starting a firm from scratch. A negative perception may promote the preference for taking over a firm relative to starting a new one. We test the

importance of three perceptions of environmental barriers to entrepreneurship regarding the preferred mode of entry into entrepreneurship: perceived lack of financial support for entrepreneurship, perceived complexity of administrative procedures and the perception of the availability of information on entrepreneurship.

6.3 Data

To explain the preferred mode of entry, we use the European Commission's Flash Eurobarometer Survey on Entrepreneurship (No. 283). The dataset consists of 26,168 randomly[72] selected respondents aged 15 years and older of which the majority are contacted through telephone interviews. Also, face-to-face interviews were conducted in Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, and Slovakia (approximately 30% of the interviews). All interviews were carried out between December 10, 2009 and January 16, 2010.[73] The survey covers 36 countries:

- the 27 EU Member States, consisting of the
  - 15 "old" Member States, including Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the UK; and the
  - 12 "new" Member States, including Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, and Slovenia. Bulgaria and Romania joined the EU on January 1, 2007 and the other 10 countries on May 1, 2004;
- five other European countries: Croatia, Iceland, Norway, Switzerland, and Turkey;
- the United States;
- three Asian countries: China, Japan and South Korea.

6.3.1 Dependent variable: business takeover versus new venture start

An individual's preference for taking over an existing business relative to starting a new one is captured by the following question:

"*If you currently had the means to start your own business, including sufficient funding, would you rather set up a new one or take over an existing one?*"

[72] In China, interviews were conducted with randomly selected individuals from 50 urban areas.

[73] In most countries, the target sample size amounts to 500 respondents. In Belgium, China, the Czech Republic, Germany, Greece, France, Hungary, Italy, Japan, the Netherlands, Poland, Portugal, South Korea, Spain, the United Kingdom, and the United States, the target sample size is 1,000.

Our dependent variable has a value of 1 if "*take over an existing business*" is answered and has a value 0 if "*set up a new one*" is given as a response. We limit our sample to those individuals who think about setting up a business, individuals who actively take steps to start a business (nascent entrepreneurs), and business owners. Individuals who do not specify their preferred mode of entrepreneurial entry (category "*none of these, not interested*") are excluded from the analysis.

6.3.2 Individual determinants

The present study focuses on several aspects of an individual's personality. Socioeconomic characteristics are also taken into account.

Personality characteristics

Below, each aspect of the individual's personality is mentioned together with the appropriate questionnaire item. Respondents are confronted with the following question in all cases:

"*Do you strongly agree, agree, disagree or strongly disagree with the following statements?*"

- Risk tolerance: "In general, I am willing to take risks";
- Self-confidence: "Generally, when facing difficult tasks, I am certain that I will accomplish them";
- Internal locus of control: "My life is determined by my own actions, not by others or by chance";
- Proactiveness: "If I see something I do not like, I change it";
- Inventiveness: "I am an inventive person who has ideas";
- Optimism: "I am optimistic about my future";
- Desire for competition: "I like situations in which I compete with others".

For each personality aspect, we generate a variable with values 1, 2, 3 and 4, which denote strong disagreement, disagreement, agreement and strong agreement, respectively.

Also, an individual's growth ambition is known, that is, whether (s)he is willing to grow his/her (future) firm. Growth ambition is measured by the following question "*Imagine that a friend of yours just started a business. Which advice would you rather give him or her?*" There are two answer possiblities: "Try to expand the business quickly" and "Grow slowly if at all". Our variable takes a value of 1 if option 1 is answered and a value 0 if option 2 is answered.

Socioeconomic characteristics

In addition to gender (male=1; female=0) and age, we also take account of educational attainment, which is captured by "*age when finished full time education*". We create three

categories. The lowest category captures all individuals whose age when finishing full-time education was 15 years or lower. Also, those who say that they have never attended full-time education are included in this lowest category of educational attainment. The middle category includes all individuals who were between age 16 and 20 when they finished their full-time education, and the highest category contains those individuals whose age when finishing full-time education is at least 21. We also have an indication of whether entrepreneurship was explicitly implemented in courses during school education: "*My school education made me interested to become an entrepreneur*" with values 1, 2, 3 and 4 indicating strong disagreement, disagreement, agreement and strong agreement, respectively.

Furthermore, a measure of household income is used: "*Which of the following phrases describe best your feelings about your household's income these days?*" The answer categories are "Find it very hard to manage on the present income" (variable has a value of 1), "Find it difficult to manage on the present income" (value is 2), "Get by on the present income" (value is 3) and "Live comfortably on the present income" (value is 4).

To reflect occupational status, we create a dummy variable that has a value of 1 if the respondent is unemployed at the moment of the survey, and 0 otherwise.

For the mother and father of each respondent, it is known whether (s)he is/was self-employed, a white-collar employee in the private sector, a blue-collar employee in the private sector, a civil servant or without a professional activity. We create two variables, each taking a value of 1 if the father (mother) is/was self-employed and a value of 0 if any other occupation applies.

6.3.3 Environmental determinants

Environmental determinants are taken into account by means of perceived barriers to entrepreneurship and by country dummies.

Perceived barriers to entrepreneurship

Perceived environmental munificence is captured by the following question and corresponding answer categories:

"*Do you strongly agree, agree, disagree or strongly disagree with the following opinion?*"

- Perceived financial constraints: "It is difficult to start one's own business due to a lack of available financial support";
- Perceived administrative complexity: "It is difficult to start one's own business due to the complex administrative procedures";
- Perceived lack of information: "It is difficult to obtain sufficient information on how to start a business".

We create three variables with values 1, 2, 3 and 4 for strong disagreement, disagreement, agreement and strong agreement, respectively. To control for regional influences and possible knowledge spillovers, we include a measure of urbanization; the respondents indicate whether they live in a metropolitan, urban or rural area. These indicators are included in our model, where the option rural area is taken as the reference category.

Country differences

In first instance, we include 35 country dummy variables with a value of 1 if the specific observation belongs to this country and 0 otherwise (reference country: US). Second, we group all countries into the following five groups: European non-transition, European transition, US, China, and South Korea and Japan. European transition countries are all EU-12 Member States, excluding Cyprus and Malta and including Croatia. The consequences of grouping the countries for the explanatory power of our regression models will be discussed later.

6.4 Descriptive results

To start with our dependent variable (business takeover versus new business start), the data reveal that 24,730 (=95%) individuals (out of the total sample of 26,168) gave a valid response to the mode of entry question: 12,604 (=51%) prefer new venture start; 6,675 (=27%) prefer business takeover; 5,451 (=22%) answer "*none of these, not interested*". This last category will not be included in the further analysis; after excluding this category, 35% of the remaining respondents prefer to take over an existing business.

The mode of entry question is asked to each respondent, including those who have never considered setting up a business. The relevance of this question (that is, to what extent it reflects actual behavior) depends on the specific position of an individual in the entrepreneurial process. Table 6.1 gives an overview of the proportion of answers for four levels of engagement in entrepreneurial activities. We distinguish between those who think about starting a business, those who take steps to start a business (nascent entrepreneurs), those who own a business, and all other individuals.[74] Except from the analysis that underlies Table 6.1, all other analyses in this study will only consider the first three groups of individuals. Table 6.1 shows that the proportion of individuals that prefers to take over a firm is lowest within the category of nascent entrepreneurs (22%) and highest among business owners (36%).[75] Appar-

[74] Individuals are considered as thinking about entrepreneurship when they confirm the statement "*you are thinking about starting up a business*"; nascent entrepreneurs are those who verify "*you are currently taking steps to start a new business*"; business owners agree with either "*you have started or taken over a business in the last three years which is still active today*" or "*you have started or took over a business more than three years ago and it is still active*".

[75] Regular large-sample tests are conducted to identify differences in takeover percentages across the three groups of individuals. The percentage corresponding to those who think about entrepreneurship (26%) significantly differs

ently, individuals who are closest to starting a business (nascent entrepreneurs) prefer the riskier mode of entry. The substantial discrepancy between nascent entrepreneurs (and those who think about entrepreneurship) and business owners can be explained in three ways: first, nascent entrepreneurs may change their preference into the less risky entry mode once they have experienced the uncertainty of starting a firm from scratch; second, there is a selection bias in that mainly those who choose takeover as the entry mode survive in entrepreneurship; and third, the preferred mode of entry of business owners deviates from their actual mode of entry. With hindsight, they realize that the less risky option might have been the preferred option.

Note that Table 6.1 does not show the number of individuals not specifying their mode of entry (5,451). These mainly represent (*i.e.*, in 4,712 cases) individuals who are included in the "other individuals" group, that is, those who have never considered setting up a business, those who have considered it but gave up, and those who once had a business but no longer have one.

The individual and environmental determinants of the preferred mode of entry into entrepreneurship are central to our research. In addition to perceived barriers to entrepreneurship, environmental determinants are also captured by cross-country differences. Table 6.2 presents the distribution of the preferred mode of entry across countries for those who think about entrepreneurship, nascent entrepreneurs and business owners.

Table 6.2 reveals pronounced differences between Romania, Spain Denmark and Italy, where the takeover percentages are below 20 and Latvia, Austria, South Korea, Malta, Bulgaria and Japan, where they are in excess of 40. An interesting distinction is the one between Japan and South Korea on the one hand and China on the other hand. Whereas Japan and South Korea belong to the countries where starting from scratch is least attractive, Chinese respondents seem to prefer starting a new venture much more.

In sum, a consistent pattern that describes the preferred entry mode among European countries is more difficult to unravel. As we see later, these country differences remain significant even when controlling for individual characteristics. When the countries are grouped as described above, we obtain the following sequence of takeover percentages: Japan and South Korea (48%), European transition (30%), European non-transition (27%), China (26%) and the US (22%).

from the "nascent percentage" (22%) at a significance level of 5% (p-value=0.013). Furthermore, the takeover percentage of business owners (36%) is significantly different from the other two percentages (p-values<0.01). All tests are two-sided.

Table 6.1: Percentages of takeover versus new venture across groups of respondents.

Group of individuals	Takeover	New venture	Total
Thinking about entrepreneurship	582	1,658	2,240
	26%	74%	
Nascent entrepreneurs	222	791	1,013
	22%	78%	
Business owners	721	1,296	2,017
	36%	64%	
Other individuals	4,869	8,258	13,127
	27%	63%	
Total	6,394	12,003	18,397
	35%	65%	
Only the groups thinking, nascent, and business owners	1,525	3,745	5,270
	29%	71%	

Table 6.2: Percentages of takeover versus new firm ventures across countries.

	% take-over	% new venture		% take-over	% new venture
Romania	17	83	Netherlands	28	72
Spain	18	82	Greece	28	72
Denmark	18	82	Turkey	29	71
Italy	19	81	Norway	30	70
Ireland	20	80	Estonia	32	68
Cyprus	20	80	Finland	33	67
France	22	78	Belgium	33	67
Croatia	22	78	Czech Republic	35	65
United States	22	78	Lithuania	38	62
United Kingdom	22	78	Switzerland	38	62
Hungary	22	78	Germany	38	62
Iceland	24	76	Latvia	41	59
Slovakia	24	76	Austria	41	59
Slovenia	25	75	South Korea	44	56
China	26	74	Malta	44	56
Portugal	26	74	Bulgaria	50	50
Poland	26	74	Japan	53	47
Luxembourg	26	74			
Sweden	28	72	**Total**	**29**	**71**

Note: Austria (82), Belgium (61), Croatia (69), Estonia (97), Luxembourg (68), Malta (50) and Slovenia (79) are the only countries for which these percentages are based on less than 100 observations.

6.5 Regression results

We perform binary logit regressions with the takeover variable as dependent variable. This variable takes a value of 1 if the preferred mode of entry is a business takeover, whereas it takes a value of 0 if the preferred mode of entry is new venture start. The estimation sample consists of all individuals who are thinking about setting up a business, who are nascent entrepreneurs, and who own a business. To control for these different levels of entrepreneurial engagement, we include dummy variables for those thinking about setting up a business and for those being nascent entrepreneurs; current business owners comprise the reference category.

Table 6.3 shows four different regressions. Model 1 includes the engagement levels and the socioeconomic characteristics; Model 2 includes the engagement levels and the personality characteristics; Model 3 includes the engagement levels and the environmental determinants, which comprise perceived barriers to entrepreneurship and the country dummy variables; and Model 4 includes all variables. Table 6.3 shows average marginal effects; their standard errors are robust to heteroskedasticity. Across all model formulations our earlier observed relationship between the level of engagement and preferred mode of entry is confirmed: business owners as a group prefer a takeover more strongly than the other two groups do.[76]

Model 1 shows that age, reflecting labor market experience to some extent, positively influences the preference for business takeover. Level of education, on the other hand, has a significant negative impact; the highly educated individuals prefer to start from scratch. This is in accordance with the findings of Parker and Van Praag (2010), who argue that formal education is more useful in new venture starts versus business takeover. Note that the size of the effect of education is substantial; being in a higher category of educational attainment decreases the probability of taking over by 3.9 percentage points, relative to a baseline percentage of 29.0. The impacts of age and education remain significant in Model 4, where all variables are included. The negative marginal effect of education becomes even stronger: it decreases from -0.039 to -0.045.

We also include an age squared term in Model 4. This, however, does not improve the explanatory power of the model. The marginal effects of both the linear and quadratic term are insignificant (p-values of 0.303 and 0.133, respectively).

[76] Two-sided Wald tests are employed to test whether the marginal effects corresponding to the two engagement levels are equal. The resulting p-values are 0.137, 0.101, 0.026, and 0.878 for Models 1 through 4, respectively. Therefore, any regression that includes individual determinants reveals similar effects of the two engagement levels as compared to the group of business owners.

Table 6.3: Regression results takeover (value 1) versus starting a new firm (value 0); marginal effects and robust standard errors (between parentheses) are shown.

Variable	Model 1		Model 2		Model 3		Model 4	
Levels of engagement[#]								
Thinking about entrepreneurship	-0.083***	(0.016)	-0.099***	(0.014)	-0.089***	(0.014)	-0.090***	0.018
Nascent entrepreneurs	-0.114***	(0.020)	-0.130***	(0.019)	-0.132***	(0.018)	-0.093***	0.021
Socio-economic characteristics								
Male	-0.005	(0.014)					0.003	(0.015)
Age/10	0.018***	(0.005)					0.014**	(0.001)
Education level	-0.039***	(0.011)					-0.045***	(0.012)
Entrepr. educ. during school	-0.011	(0.008)					-0.010	(0.009)
Income	-0.001	(0.008)					0.011	(0.009)
Unemployed	-0.059*	(0.031)					-0.041	(0.033)
Self-employed mother	0.026	(0.021)					-0.003	(0.023)
Self-employed father	0.036**	(0.016)					0.033*	(0.018)
Personality characteristics								
Risk tolerance			-0.024**	(0.009)			-0.024**	(0.010)
Self-confidence			-0.006	(0.011)			-0.007	(0.013)
Internal locus of control			-0.002	(0.010)			0.004	(0.011)
Proactiveness			-0.002	(0.011)			-0.002	(0.012)
Inventiveness			-0.056***	(0.011)			-0.052***	(0.012)
Optimism			-0.014	(0.009)			-0.021*	(0.011)
Desire for competition			0.002	(0.008)			0.006	(0.010)
Growth ambition			0.021	(0.016)			0.031	(0.019)
Perceived barriers to entrepreneurship								
Perceived financial constraints					0.018*	(0.009)	0.029***	(0.011)
Perceived administrative complex.					0.011	(0.008)	0.007	(0.010)
Perceived lack of information					0.004	(0.008)	0.001	(0.009)
Metropolitan area[#]					-0.037**	(0.018)	-0.029	(0.020)
Urban area[#]					0.003	(0.016)	0.012	(0.018)
Countries[#]								
Austria					0.189***	(0.055)	0.215***	(0.060)
Belgium					0.134**	(0.064)	0.137*	(0.073)
Bulgaria					0.239***	(0.046)	0.255***	(0.051)
China					0.078**	(0.037)	0.027	(0.046)
Croatia					0.005	(0.066)	0.002	(0.078)
Cyprus					-0.048	(0.057)	-0.111*	(0.066)
Czech Republic					0.118***	(0.042)	0.090*	(0.051)
Denmark					-0.051	(0.061)	-0.053	(0.064)
Estonia					0.101*	(0.056)	0.121*	(0.065)
Finland					0.106**	(0.051)	0.138**	(0.056)
France					-0.013	(0.049)	-0.032	(0.055)
Germany					0.167***	(0.042)	0.152***	(0.047)
Greece					0.027	(0.040)	0.022	(0.046)
Hungary					-0.020	(0.046)	-0.057	(0.054)
Iceland					0.011	(0.054)	0.011	(0.065)
Ireland					-0.032	(0.055)	-0.085	(0.066)
Italy					-0.043	(0.053)	-0.036	(0.060)
Japan					0.252***	(0.043)	0.190***	(0.049)
Latvia					0.185***	(0.047)	0.184***	(0.055)
Lithuania					0.150***	(0.051)	0.199***	(0.059)

Table 6.3 (continued)

Luxembourg			0.055	(0.061)	0.091	(0.065)
Malta			0.235***	(0.066)	0.170**	(0.080)
Netherlands			0.066	(0.045)	0.003	(0.052)
Norway			0.063	(0.055)	0.071	(0.060)
Poland			0.047	(0.041)	0.059	(0.048)
Portugal			0.015	(0.054)	-0.002	(0.059)
Romania			-0.060	(0.056)	-0.079	(0.068)
Slovakia			0.010	(0.058)	-0.015	(0.065)
Slovenia			0.046	(0.059)	0.089	(0.065)
South Korea			0.202***	(0.041)	0.214***	(0.048)
Spain			-0.061	(0.049)	-0.070	(0.055)
Sweden			0.102*	(0.053)	0.060	(0.062)
Switzerland			0.164***	(0.051)	0.197***	(0.055)
Turkey			0.085*	(0.046)	0.047	(0.054)
United Kingdom			-0.004	(0.049)	-0.019	(0.053)
Predicted probability of takeover	0.290	0.294	0.293		0.296	
Total number of observations	4,386	4,731	4,857		3,702	
Group: Thinking about entrepreneurship	1,652	2,016	2,016		1,355	
Group: Nascent entrepreneurs	840	931	961		742	
Group: Business owners	1,894	1,784	1,880		1,605	
Log pseudolikelihood ($\ln(LL_{full})$)	-2,579	-2,799	-2,803		-2,075	
Pseudo R^2 (McFadden)	0.020	0.019	0.032		0.052	
Akaike Information Criterion (AIC)	5,178	5,620	5,692		4,268	

Notes: ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively. # Reference categories: Business owner, Rural area, US.

To assess the robustness of our result for education, we replace the categorical education variable with a continuous formulation that runs from 15 to 25. All school-leaving ages below 15 (including those who indicate never having attended school) have been recoded into 15, and all ages above 25 are transformed into 25. After dividing this variable by 10, we obtain marginal effects of -0.073 in Model 1 and -0.078 in Model 4; these marginal effects are both significant at 1%. Hence, each additional year of schooling increases the probability of starting from scratch by at least 0.73 percentage points, relative to a baseline percentage of 29.0.

Other noteworthy results from Model 1 are the following. We do not find a significant impact of gender. That is, women and men do not differ in their preference for taking over a business versus starting a venture from scratch. This result is very robust; for example, omitting all other socioeconomic characteristics from Model 1 results in an impact of gender that is even further away from significance (p-value of 0.885 versus p-value of 0.669 in Model 1, Table 6.3). Furthermore, the entrepreneurial background of the father has a significant positive influence. The marginal effect is large (0.036), although it becomes somewhat smaller (and its p-value becomes larger: p=0.066) in Model 4. The impact of having a self-employed father also runs through the education level (as suggested by Parker and Van Praag, 2010). That is, when the variable education is omitted from Model 1, the marginal effect of having a self-

employed father increases to 0.044. When this is done in Model 4, the marginal effect of having a self-employed father becomes 0.040 (p<0.05).

Regarding an individual's personality (Model 2), we find that two aspects have significant impacts; risk-tolerant individuals and individuals who have a higher (perceived) level of inventiveness prefer to start from scratch. This is in line with our earlier expectation that starting from scratch can be considered more entrepreneurial, risky, exciting and creative. The marginal effects of risk tolerance (p<0.05) and inventiveness (p<0.01) hardly change in Model 4. Model 4 additionally reveals that optimistic individuals prefer a new venture start as well, although this impact is only marginally significant (p=0.060). We do not find any significant impact of growth orientation (p=0.115), self-confidence (p=0.554), internal locus of control (p=0.760), proactiveness (p=0.846), or desire for competition (p=0.520) regarding the preferred mode of entry in Model 4.

Including the environmental determinants in Model 3 shows that perceived financial constraints positively impact the preference for taking over versus starting a new venture; higher perceived financial constraints make the entrepreneur more likely to prefer a business takeover. The impact of this variable becomes even stronger in Model 4, where all variables are included. The non-availability of start-up finance often goes together with a malfunctioning venture capital market, which leads potential entrepreneurs to turn to banks to obtain credit. Banks, however, favor business takeovers over new venture starts (Bastié *et al.*, 2009). The reason is that business takeovers are associated with less uncertainty relative to new ventures. Moreover, the bank can use the assets of the existing business to secure its loan. Interestingly, the perceived administrative complexities and the perceived lack of information do not play a role here. The degree of urbanization has a significant influence in Model 3, but its significance disappears in Model 4 (p-values of 0.154 and 0.492 for metropolitan and urban areas, respectively). Furthermore, taking all significant marginal effects (at 10%) of the country dummy variables exceeding 0.150 in Model 3, we find that taking over is the preferred mode of entry, especially in Austria, Bulgaria, Germany, Japan, Latvia, Lithuania, Malta, South Korea and Switzerland (in alphabetical order). [77] Note that the multivariate analysis does lead to similar results as the descriptive analysis; it is exactly these countries showing the highest takeover percentages in Table 6.2.

To improve the understanding of the country differences, we group the countries into five categories: 1) all European countries without a transition past, 2) (former) European transition economies, 3) the US, 4) China, 5) Japan and South Korea. Table 6.4 presents the corresponding marginal effects.[78]

[77] We retrieve the same set of countries in Model 4 when we select all significant marginal effects (at 10%) larger than 0.150.

[78] The marginal effects of the two engagement levels do not significantly differ from each other (p-value=0.651), similar to Models 1, 2, and 4 in Table 6.3.

Table 6.4: Regression results takeover (value 1) versus starting a new firm (value 0) including country grouping; marginal effects and robust standard errors (between parentheses) are shown.

Levels of engagement[#]		
Thinking about entrepreneurship	-0.087***	(0.017)
Nascent entrepreneurs	-0.097***	(0.021)
Socio-economic characteristics		
Male	0.004	(0.015)
Age/10	0.014**	(0.001)
Education level	-0.040***	(0.012)
Entrepr. educ. during school	-0.012	(0.008)
Income	0.012	(0.009)
Unemployed	-0.054	(0.033)
Self-employed mother	0.005	(0.023)
Self-employed father	0.029	(0.018)
Personality characteristics		
Risk tolerance	-0.022**	(0.010)
Self-confidence	-0.001	(0.013)
Internal locus of control	0.000	(0.012)
Proactiveness	0.003	(0.013)
Inventiveness	-0.056***	(0.012)
Optimism	-0.017	(0.011)
Desire for competition	0.003	(0.010)
Growth ambition	0.028	(0.019)
Perceived barriers to entrepreneurship		
Perceived financial constraints	0.022**	(0.011)
Perceived administrative complexity	0.011	(0.010)
Perceived lack of information	-0.004	(0.009)
Metropolitan area[#]	-0.030	(0.020)
Urban area[#]	0.006	(0.017)
Groups of countries[#]		
European non-transition	0.038	(0.032)
European transition	0.088***	(0.034)
China	0.034	(0.044)
Japan and South Korea	0.232***	(0.044)
Predicted probability of takeover	0.296	
Total number of observations	3,702	
Group: Thinking about entrepreneurship	1,355	
Group: Nascent entrepreneurs	742	
Group: Business owners	1,605	
Log pseudolikelihood ($\ln(LL_{full})$)	-2,141	
Pseudo R^2 (McFadden)	0.036	
Akaike Information Criterion (AIC)	4,338	

Notes: ***, **, and * denote significance at the 1%, 5%, and 10% level, respectively. [#] Reference categories: Business owner, Rural area, US.

Whereas the impacts of the explanatory variables remain largely unaffected by the country grouping (only optimism loses its significance and perceived financial constraints becomes significant at 5% instead of 1%), we see some striking country differences. Japan and South Korea as a group show a higher probability of taking over by 23.2 percentage points relative to the US, our reference country. In European transition countries, the inclination to take over an existing business versus starting a new venture is more prevalent than in non-transition European countries and the US. Therefore, takeover seems to be a popular mode of entry, particularly in Japan, South Korea, and European transition economies.

Comparing the fits of our various models,[79] we observe that socioeconomic characteristics in Model 1 explain more than the personality aspects in Model 2 (slightly higher pseudo-R^2 and much lower AIC-value). In addition, individual determinants explain more than environmental determinants (Model 3) in terms of AIC, although the pseudo-R^2 is somewhat lower. The information loss that results from grouping the countries (compare Model 4 in Table 6.3 and the regression in Table 6.4) is almost negligible in terms of AIC (AIC increases from 4,268 to 4,338, whereas the pseudo-R^2 value drops from 0.052 to 0.036).

A final robustness check entails the re-estimation of Model 1 to Model 3 in Table 6.3 for the smallest estimation sample that is used in Table 6.3, that is, 3,702 observations. In general, the results in Model 1 to Model 3 only slightly change when this restricted sample is being used. However, a few exceptions are worth mentioning. Concerning Model 1, entrepreneurship education during school becomes significant at 5% with an effect of -0.018 (see also Von Graevenitz *et al.*, 2010). Having a self-employed father becomes insignificant (p-value=0.115). Regarding Model 2, the impacts of risk tolerance, inventiveness and optimism become stronger (effects of -0.027, -0.068, and -0.018, which are significant at 1%, 1%, and 10%, respectively). In Model 3, the impact of perceived financial constraints also becomes stronger (effect is 0.026 with $p<0.05$). The pattern across countries remains similar.

6.6 Discussion and conclusions

The question of whether (prospective) entrepreneurs prefer taking over an existing firm or starting a new venture is surprisingly under-researched. The two studies we found (Bastié *et al.*, 2009; Parker and Van Praag, 2010) deal with a single country only and do not relate personality and environmental aspects with the mode of entry. Earlier studies (Cooper and Dunkelberg, 1986, Dennis, 1997) are of a descriptive nature. The present study is the first to

[79] We make use of two fit measures: the adjusted McFadden R^2 (pseudo-R^2) which compares the likelihood of the model with the likelihood of the null model, and the Akaike Information Criterion (AIC), which makes a tradeoff between the fit in terms of the likelihood and the parsimony in terms of the number of parameters. More precisely, AIC = $-2*\ln(LL_{full}) + 2*k$, and McFadden $R^2 = 1-(\ln(LL_{full})-k)/(\ln(LL_{null}))$, where k denotes the number of explanatory variables including intercept and LL_{full} and LL_{null} are the (pseudo)likelihoods of the model including all explanatory variables and the intercept-only model, respectively.

empirically analyze the mode of entry into entrepreneurship from an international perspective using data from 36 countries. Descriptive analyses show that there are considerable cross-country differences concerning the preferred mode of entry: 17% of the Romanian individuals prefer a takeover, whereas this share is 53% in Japan. Our binary logit regressions reveal not only that age and education predict the preferred mode of entry but also that a person's risk attitude and inventiveness are distinguishing factors. Therefore, the present study replicates the positive impact of education on a new venture start as found by Parker and Van Praag (2010). This result was found for only some sectors in Bastié *et al.* (2009). Our replication helps to further interpret the results of Parker and Van Praag's (2010) and Bastié *et al.* (2009): it seems that the positive impact of education on (actual) new venture start can be explained by the link between preferences and mode of entry intentions and not by the link between intentions and actual behavior.

Furthermore, existing business owners report a higher preference for taking over than nascent entrepreneurs or those just thinking about setting up a business. Whereas the two above-mentioned studies focus on the actual mode of entry of existing business owners, we take into account the preference for the entry mode among these three groups of individuals who differ in their level of entrepreneurial engagement. Next to individual determinants, we also observe that environmental determinants in terms of perceived financial constraints and cross-country differences play important roles. That is, taking over is preferred to starting from scratch, especially in Japan and South Korea and in some European transition countries. These cross-country differences in the proportion of takeover candidates hold after controlling for more than twenty individual-level variables. A country's culture in terms of risk-taking propensity and stigmatization of failure is likely to play a dominant role in this context. About 75% of all individuals in the dataset consider themselves as risk-takers, that is, they answer "agree" or "strongly agree" to the statement "*In general, I am willing to take risks*". Indeed, Japan – characterized by a very high inclination to take over a business versus starting from scratch – scores lowest regarding risk-taking (49%). In addition, Austria (72%), Latvia (72%), Lithuania (70%), South Korea (71%) and Switzerland (73%) have below-average percentages which may partly explain the high takeover preferences in these countries. Furthermore, Romania, Spain, Denmark, Italy, Ireland and Cyprus are the countries that have the lowest takeover percentages (see Table 6.2 and Model 4, Table 6.3). The fractions of individuals that are willing to take risks are above-average in all these countries (81%, 79%, 76%, 91%, 87%, and 82%, respectively).

Policy documents stress the importance of the takeover option. For example, according to European Commission (2003a, p. 7), it should be given the same degree of importance as new venture starts in policy circles. Several proposals have been made to improve the business transfer environment, such as the reduction of taxes, measures to encourage timely preparation of those who want to sell their business and financial support for those who want to take over (European Commission, 2003a, 2003b, 2006). The degree of implementation of these measures

differs heavily among the EU Member States (European Commission, 2003a). We discuss some policy recommendations based on our results below.

Our finding that personal characteristics associated with entrepreneurial entry in general (risk tolerance, inventiveness) also correlate positively with the preference for starting from scratch may imply that policy programs targeted at fostering entrepreneurship will mainly guide these individuals toward new venture starts. This calls for explicitly raising awareness of the takeover possibility in such programs. In addition, we find that especially individuals who are more experienced in the entrepreneurial process (*i.e.*, business owners) prefer the takeover option. Also, older individuals are more likely to be takeover candidates compared to their younger counterparts. These effects also hint at widespread opportunities for governments to draw attention to takeover possibilities among potential takeover candidates at an early stage in their entrepreneurial process and life. A natural further step is to point these individuals at attempts that have been made to match potential buyers and sellers in marketplaces for business transfers (European Commission, 2006). An overview of the existence of these transfer markets in various EU Member States, the importance of such support for the transfer of SME ownership, and an overview of desirable features for these marketplaces is provided in European Commission (2006).

Earlier studies show the importance of discriminating between entrepreneurial engagement levels (Grilo and Thurik, 2008; Chapter 2 of this thesis) because this approach allows for factors having different influences at transitions between engagement levels like "never thought about starting a business", "thinking about starting a business", "taking steps to start a business", "running a business for less than three years" and "running a business for more than three years". This ordering of engagement levels is referred to as the "entrepreneurial ladder" (Chapter 2) and corresponds to the view that entrepreneurship is not a binary choice but a process (Low and MacMillan, 1988; Bull and Willard, 1993) and that, consequently, different levels can be discerned (Reynolds, 1997). Entrepreneurial progress is achieved by moving through the sequential levels of increasing entrepreneurial involvement (Chapter 4). On the ladder of entrepreneurial engagement levels, there are two essential steps: starting and exiting (Chapter 7). Research on the exit side is limited (DeTienne, 2010, Wennberg *et al.*, 2010; Chapter 7). Our present results also add to this exit literature, as what is a takeover for one individual is an exit for another. The inclination of taking over depends on the specific level of engagement of an individual; those who have already started a business have a higher preference for taking over than those who have not started yet (nascent entrepreneurs or those just thinking about setting up a business). Also, we find that takeover preferences differ considerably across countries.

The research theme of determinants of the (preferred) mode of entry is clearly in its infancy and deserves more research attention. One possible avenue relates to a clear identification of venture survival and performance across both modes of entry. Our result that takeover

candidates can especially be found among the group of existing business owners is a clear hint for developing this avenue. The exact dynamics between preferences, intentions and actual behavior regarding the mode of entry plays an important role and needs to be explored further. Furthermore, although we find clear country differences, the exact explanation behind these differences is not and cannot be properly investigated using the present data set. For example, why is it the case that among European non-transition economies takeover preferences are low in Denmark, Italy, and Spain and high in Austria, Germany and Malta? The degree to which governments have made progress in implementing measures to facilitate business transfers might play a role (European Commission, 2003a). For example, Austria and Germany are countries that have responded well regarding the European Commission's suggestions to improve the business transfer environment (European Commission, 2003a). Another related aspect refers to the classification of countries. Further research may explore categorizations that take into account the overlapping area of law and finance, for example the way in which investors are legally protected (La Porta *et al.*, 1998). Also, a country grouping based on the regulatory environment (Djankov *et al.*, 2002) may explain international differences in mode of entry preferences.

Part II

Determinants of entrepreneurial exit and re-entry

Chapter 7

Entrepreneurial exit in real and imagined markets

Entrepreneurs exit their businesses due to selection pressures they experience in the market place. In addition to this well-known ex-post decision to exit, entrepreneurs select ex-ante whether they are willing to pursue an entrepreneurial career at all or they plan to give up their entrepreneurial intentions. Hardly anything is known about the latter selection process in imagined markets that precedes the creation of variation and selection process in real markets. This chapter explores these two selection processes using survey data on 20,000 individuals in 27 European countries and the US in 2007. We distinguish business failure from exit by sell-off. Individuals in the US are less likely to exit imagined markets and are more likely to exit the real market than are Europeans. Individuals in a corporatist welfare state regime have relatively high chances to exit imagined markets but low chances to exit real markets (due to failure). Business owners in metropolitan and urban environments are more likely to fail than their rural counterparts, while individuals with a high risk tolerance and individuals with a self-employed parent are less likely to exit imagined or real markets (via business failure). In short, this study shows that exit in real and in imagined markets is differently affected by individual characteristics as well as by the competitive and institutional environment.

This chapter is based on Stam *et al*. (2010).

7.1 Introduction

Entrepreneurs are important drivers of variation in the economy (Metcalfe, 1997; Baumol, 2002). Without variation, there is no selection or learning and hence no economic progress (Audretsch *et al.*, 2004). Economic progress hinges on the essential mechanisms of the creation of variation and the operation of selection. Creation of variation is often analyzed by investigating the entry of new firms, whereas selection is analyzed by investigating the exit of incumbent firms (*ex-post* selection). In the evolutionary approach, the creation of new organizations does not only involve new variation but also includes *ex-ante* selection, as the persons involved evaluate whether an opportunity can be turned into a business which is sufficiently profitable in the sense that its foundation offsets the (opportunity) costs involved. However, pre-entry market selection (*ex-ante* selection) has hardly received any attention (Barnett *et al.*, 2003). Two environmental characteristics drive the entry decision: the munificence of opportunities and the availability of resources. The combination of these two characteristics and the individual's evaluation of the potential business make the nascent entrepreneur decide to start a firm. Without opportunities, persons will not be triggered to take any action to start a new firm, and without resources, nascent entrepreneurs are likely to be frustrated in the pursuit of the opportunities.

Post-entry market selection is a much better researched phenomenon (Mata and Portugal, 1994; Mata *et al.*, 1995) than pre-entry market selection. An important reason for the lack of empirical research on ex-ante selection processes resides in the difficulty of obtaining data about nascent entrepreneurs (Reynolds, 1997; Van Gelderen *et al.*, 2005) or pre-producer firms (Jovanovic, 2004; Carroll and Khessina, 2005). In other words, there is little available information about the risk set from which entry selection processes must be selected. Such studies require drawing samples of individuals from the entire population (instead of census-based firm data), which is often difficult for researchers to accomplish. This also involves a shift of level of analysis from the firm to the person (Scott and Rosa, 1996; Shane and Khurana, 2003).

A theoretical reason for the neglect of ex-ante selection is that in mainstream economics, ex-ante and ex-post selection are often treated as being close to observationally equivalent: ex-ante selection by rational actors and ex-post market selection are said to deliver the same outcomes. This assumes that foresight is perfect. According to Alchian (1950), the probability of entry and the probability of survival are likely to be interrelated. However, the presence of uncertainty and incomplete information (*i.e.*, the absence of perfect foresight) makes it likely that these two probabilities differ. In the organizational ecology paradigm, two selection processes are distinguished that do not necessarily align: involuntary unemployment or forced retirement can be expected to increase the likelihood of attempting to found a new business but may not increase its odds of success, and conversely, a strong regulatory regime may decrease the rate of attempts but increase the success rate of those that do (Carroll and Khessi-

na, 2005). Widely held notions of bounded rationality also suggest that while expectations about the future may guide individual behavior, common social situations are filled with uncertainty, ambiguity and imperfect information, thereby making the equation of ex-ante with ex-post selection unrealistic (compare the distinction between intrafirm selection and market selection, which can be traced back to Nelson and Winter, 1982). The economics profession in general focuses on revealed preferences (ex-post selection) instead of stated preferences and the decision process that precedes the revealed preference (ex-ante selection). This drives the study of the differences between pre-entry and post-entry market selection outside the scope of the dominant debates.

In a societal context, both types of exit are highly relevant. Exit before business start-up does have positive consequences: it could prevent excess entry (Camerer and Lovallo, 1999), overinvestment, and the waste of resources. However, a negative consequence might be the absence of experimentation (new variety) and (entrepreneurial) learning. Exit after business start-up might have private losses and the waste of resources (in the form of sunk costs) as a negative consequence but possible individual and vicarious learning about entrepreneurship and markets (Knott and Posen, 2005) as a positive result. These negative consequences are not present when the firm exits via a sell-off: resources are not wasted with this mode of exit, and it might even include private gains (Holmes and Schmitz, 1990; Stam *et al.*, 2008). People who have faced the market with their own business are likely to be better informed about markets than those who have never entered the market with their own business. Market forces provide feedback to entrepreneurs in a more immediate, concrete and blunt way than many other settings where expertise is attained. This is why "market experience" may have positive learning effects beyond the life of the entrepreneur's firm (Stam *et al.*, 2008).

In this chapter, we analyze both ex-ante and ex-post selection processes using a large survey of the European and US adult population. We define entrepreneurship as having the intention or making efforts to become a business owner, or currently owning a business (Hyytinen and Ilmakunnas, 2007). Exit before business start-up (ex-ante selection) depends on the market expectations of the nascent entrepreneur (imagined markets), while exit after business start-up (ex-post selection) is more likely to be affected by the (revealed, real) market selection process. There has been a long debate in industrial economics and organizational ecology on selection processes (Alchian, 1950; Winter, 1971; Geroski, 2001; Barnett *et al.*, 2003). However, research in these fields generally only includes revealed preferences. Our study also takes stated preferences and the decision to exit the population of nascent entrepreneurs into account. More specifically, these two exit processes are closely related to recent debates in research on the recognition, evaluation and exploitation of entrepreneurial opportunities (Shane and Venkataraman, 2000). There has been much research on the recognition and exploitation of opportunities but little is known about their evaluation. This evaluation can be done by the entrepreneur, which may lead to giving up the pursuit of a business opportuni-

ty. Better known is the evaluation by the market, *i.e.*, the external selection environment of businesses already in operation, which may lead to the closure of a business. The two selection processes can also be conceived as two types of exits from the entrepreneurial process: 1) Exit after opportunity recognition ("I thought of starting a business, or I had already taken steps to start a business, but gave up"); and 2) Exit after opportunity exploitation. This second type of exit is investigated under two circumstances: "I once started a business, but currently I am no longer an entrepreneur since business has failed", and "I once started a business, but currently I am no longer an entrepreneur since business was sold, transferred, or closed". The first option is the best indicator of market selection.

The contributions of this chapter are the analyses of the role of ecological and personal characteristics in ex-ante and ex-post market selection and of the differences in the explanations of entrepreneurial exit in imagined and real markets, respectively. In addition, we refine the exit in real markets by distinguishing between exit due to business failure and exit due to sell-off. We take into account characteristics related to personality and human capital, while the ecological characteristics reflect levels of environmental munificence, levels of competition and welfare state arrangements. Unlike prior studies with an evolutionary approach, we do not take the organization as the unit of selection; instead, we focus on the (potential) entrepreneur who has specific cognitive and other abilities. There are at least two arguments in favor of taking the individual person instead of the firm as the level of analysis: first, in the case of ex-ante selection, a firm does not (yet) exist, and second, most firms – even in advanced capitalist economies – are dominated by the entrepreneur. In Europe, the majority of formally registered firms involve less than two persons (European Commission, 2004). By combining both personal and ecological factors, we bring together the traits and rates approaches (Aldrich and Wiedenmayer, 1993).

The main research question in this chapter is "How can entrepreneurial exit in real and imagined markets be explained?" In addition we will discuss the differences between the explanation of exit in real markets and in imagined markets. The chapter starts with a discussion of the causes of entrepreneurial exit in real and imagined markets. Next, the data and method are presented. In the succeeding section, we present and interpret the outcomes of our empirical study. The chapter ends with our conclusion.

7.2 Entrepreneurial exit

Once the entrepreneur has entered the market with his/her new firm, he/she has to face the real – and not just the imagined – market selection. Most research, particularly in economics, has studied the (relative) importance of firm- and industry-specific variables explaining firm exit. Some stylized facts in this tradition are that firm exit is negatively related to firm (start-up) size, firm age, the number of plants operated by the firm, and the industry growth rate, and

firm exit is positively related to the extent of entry in the industry (Mata and Portugal, 1994; Ilmakunnas and Topi, 1999).

However, to understand new firm formation (including pre-entry market selection) and survival, one must understand the way individuals aspire and take action to start a firm (Shane and Khurana, 2003). In their analysis of firm survival, Cefis and Marsili (2005) also make a plea for taking into account the characteristics of entrepreneurs when explaining the survival of new firms. The few economic studies of firm exit that consider personal characteristics find ambiguous effects of age and a negative effect of several kinds of human capital, such as general education and industry experience (Bates, 1990; Van Praag, 2003). There has been some research outside economics on the relationship between the entrepreneur's personality and firm exit (Ciavarella *et al.*, 2004), but knowledge of the relation between personal characteristics and firm exit remains scarce. In the present chapter, we focus on entrepreneurial exit, *i.e.*, the decision to quit an entrepreneurial career. This is not necessarily the same as firm exit because entrepreneurs may own several firms at the same time ("portfolio entrepreneurship") or successively ("serial entrepreneurship"), or individuals may quit their entrepreneurial career by selling their business.

Many people never think about being an entrepreneur. This group of individuals can hardly be thought of as being at risk of becoming an entrepreneur or as being confronted with market forces in a process of economic selection (Alchian, 1950). However, this particular group cannot be neglected in the analysis of entrepreneurial exit, which will be shown later. Undoubtedly, people who are thinking about starting a business (Blanchflower *et al.*, 2001; Grilo and Irigoyen, 2006; Grilo and Thurik, 2008), or who are even taking steps to start a business (Reynolds, 1997; Davidsson, 2006), are at risk of becoming an entrepreneur (nascent entrepreneurs). They have to take into account the market forces that confront them after the business has been started. This implies that they have to develop expectations about the market forces that will eventually determine the viability of their future business. The closer they come to the entry of the market, the more likely they will have developed an image of the selection environment. This suggests that individuals who have started a business have better insights into the selection environment than individuals that are only thinking or trying to set up a business. Studies on nascent entrepreneurship have focused mainly on individual-level explanations. We will explicitly take into account different elements of the environment, such as the perceived resource availability of the environment, the degree of urbanization (a proxy for resource availability and competition), and the national institutional system. This latter element relates to a study by Henrekson (2005), which shows how key welfare state institutions tend to reduce economic incentives for entrepreneurship.

In order to explain exit in real and imagined markets, we compare persons who currently own a business with persons who no longer own a business and persons who aspire and take steps to start a business with persons who have given up these entrepreneurial aspirations and

efforts. In the next two sections we will discuss the potential personal- and ecological-level drivers of exit in imagined and real markets.

7.2.1 Personal characteristics

Determining the effects of individual characteristics on imagined and real market exit requires taking into account the effect of the specific variable on the probability of experiencing imagined and real market conditions, respectively. Therefore, we simultaneously include these two principles in one model formulation. Hence, we are also able to analyze the influence of individual characteristics on experiencing imagined and real market conditions.

Risk tolerant persons are more likely to experiment. Thus, they are more likely to consider and exploit nascent activities. Earlier research has already shown that risk tolerance matters for having entrepreneurial preferences (Grilo and Irigoyen, 2006; Grilo and Thurik, 2005a) and entry into self-employment (Van Praag and Cramer, 2001; Cramer *et al.*, 2002; Ekelund *et al.*, 2005; Caliendo *et al.*, 2009). It can also be expected that they have a higher chance of once having closed a business because they pursue less certain and, on average, lower quality opportunities than risk-averse individuals. At the same time, because of the lower threshold of recognizing an opportunity for risk-tolerant individuals, the exploitation of the recognized opportunity could be not as easy as expected, which may lead to a higher likelihood of exit in imagined markets.[80]

On the one hand, highly educated people are more likely to develop the necessary skills for realizing their entrepreneurial ideas and running a business successfully. However, on the other hand, they are also more likely to face high opportunity costs in comparison to wage labor and thus exit. Both ex-ante and ex-post selection are likely to be affected by opportunity costs (Amit *et al.*, 1995), *i.e.*, alternative job market opportunities. Exit after business start-up is especially likely to be affected by the aspiration level of the entrepreneur (Gimeno *et al.*, 1997; Baldwin and Rafiquzzaman, 1995). The outcome of the trade-off between improved skill levels and higher opportunity costs due to high levels of education is an empirical issue. With regard to nascent entrepreneurs, Parker and Belghitar (2006) found a negative effect of education on exit, while Van Gelderen *et al.* (2005) found no effect of education on exit. There has been more research on the effect of education on exit in real markets: two studies have found a negative effect of education on entrepreneurial exit (Bruce, 2002; Burke *et al.*, 2008), but other studies have either found no effect (Taylor, 1999; Van Praag, 2003; Schäfer and Talavera, 2009) or have found a positive effect (Blanchflower and Meyer, 1994). Given the unclear trade-off between improved skill levels and higher opportunity costs, we do not anticipate a clear-cut effect of education upon entrepreneurial exit (Van der Sluis *et al.*, 2005) from either imagined or real markets.

[80] We would like to thank one of the anonymous reviewers of this chapter for suggesting this effect of risk tolerance on exit in imagined markets.

Persons with self-employed parents will be more committed to entrepreneurship due to both social norms and the entrepreneurial skills that they have acquired (Aldrich and Kim, 2007). This means that they will be less likely to exit than persons without self-employed parents. Lentz and Laband (1990) found that, for self-employed individuals, acquisition of entrepreneurial human capital occurs primarily through experience and that the sons and daughters of the self-employed benefit greatly from early exposure to their parents' business establishments and subsequently decide to go into business themselves. Cooper (1993) found that having parents who owned a business appeared to increase the probability of firm survival, and Burke *et al.* (2008) found that a self-employed father increased persistence in an entrepreneurial career.

Young persons are more likely to be adventurous and experimenting than older people, which makes them more likely to think about becoming or take steps to become an entrepreneur (Lévesque and Minniti, 2006; Davidsson, 2006). This "age effect" may largely be covered by levels of risk tolerance,[81] or overconfidence (Forbes, 2005). Parker and Belghitar (2006) and Van Gelderen *et al.* (2005) found no significant effect of age on exit in imagined markets. Once they have started, young people are more likely to exit because they have less experience and more alternative labor market opportunities. Several studies, however, found a negative effect of age on exit in real markets (Evans and Leighton, 1989; Blanchflower and Meyer, 1994; Holtz-Eakin *et al.*, 1994; Taylor, 1999; Van Praag, 2003). This latter outcome can be explained by the combined effect of two mechanisms: age increases the human capital of the individual and thus should have a positive effect on the survival of the business, and age lowers the possibility of returning to employment (due to fewer labor market alternatives: Cooper, 1993), making the shift to a wage-earner career less likely. Evans and Leighton (1989) found very high exit rates for young persons, which reaches a plateau after the age of 30. Schäfer and Talavera (2009) find that individuals are more likely to quit self-employment at young and elderly ages. When we take the retirement age of individuals into account, we expect a slightly U-shaped curve, with increasing chances of exit by sell-off (for example with a business transfer) at the right-hand side of the curve.

7.2.2 Ecological characteristics

The ecologies in which entrepreneurs are active differ in their level of resource munificence and competition, which are expected to have negative and positive effects on exit, respectively. Box (2008) stresses the importance of the influence of environmental forces on exit. Munificent environments are likely to lower the barriers to entry and the chances of exit. We expect that indicators of perceived constraints in the environment are related to giving up entrepreneurial intentions and efforts and to closing a business as well.

[81] In more general terms, neuropsychological research found that age is negatively related to risk tolerance (Deakin *et al.*, 2004).

These perceived environmental constraints may be caused by a lack of resources in the environment or by a lack of *access* to resources. This latter cause relates to the legitimacy of the entrepreneur's activities (Hannan and Freeman, 1984; Delmar and Shane, 2004): in certain environments the activities of new firms are regarded as relatively less reliable and accountable than in other environments. This constrains their access to the necessary resources to realize a new firm and to survive in competition with established firms. This legitimacy effect is most likely reflected in the perceived lack of financial support and perceived difficulty of obtaining sufficient information.

Market opportunities, resources and competition are, in general, more concentrated in metropolitan and urban areas than in rural areas. The availability of resources and/or social networks that provide access to these resources (Sørenson and Sorenson, 2003; Stuart and Sorenson, 2003) makes it less likely that entrepreneurial intentions and efforts are constrained in metropolitan and urban areas. The large concentration of entrepreneurs in these areas also lowers the ambiguity attached to entrepreneurship and promotes its choice as a viable source of revenues (Minniti, 2005). An interesting related research question is whether the high levels of competition have a stronger effect on ex-ante selection than on ex-post selection. Because of this competition element, metropolitan in particular, but also urban areas, are likely to have a positive effect on exit in real markets (Huiban, 2009). Competition is more likely to be experienced in real markets than in imagined markets, so we do not expect an effect (or perhaps only a small effect) of the competition element on giving up entrepreneurial intentions or efforts.[82]

Many studies on entrepreneurship and firm exit use evidence from a single country to identify the role of economic institutions or policy. A cross-country set of micro-level data provides better identification of the effect of different institutional settings (Bartelsman *et al.*, 2005; Reynolds *et al.*, 2005). Welfare state institutions tend to reduce economic incentives for entrepreneurship (Henrekson, 2005). So, even if people are thinking about or taking steps toward starting a business in countries with strong welfare states, they are more likely to give up their entrepreneurial intentions and efforts because these are less likely to pay off in comparison to wage labor in such systems. Strong welfare states also discourage risky businesses, and such environments may have a positive effect on the survival of existing businesses.[83]

7.3 Data, measurement and method

The data we use come from the 2007 "Flash Eurobarometer Survey on Entrepreneurship, No. 192" of the European Commission, originally consisting of 20,674 observations from 25

[82] There might also be more job opportunities in urban areas, which has a positive effect on exit in real markets (*i.e.*, exchanging an entrepreneurial career for a better paid wage earner career).

[83] Weak welfare states, like the US and the UK, have less stringent regulations concerning the start-up of firms, which leads to relatively low entry and exit costs (Nicoletti *et al.*, 1999).

Member States of the European Union[84] as well as Iceland, Norway and the United States. Randomized telephone interviews were conducted by the Gallup Organization Hungary/Europe between January 9 and January 16, 2007 with respondents aged 15 years and over. In many European countries and in the US, the target sample size amounted to 1,000 respondents. However, in Austria, Cyprus, Denmark, Estonia, Finland, Iceland, Ireland, Latvia, Lithuania, Luxembourg, Malta, Norway, Slovakia, Slovenia, and Sweden, the target size was 500. Small variations around these target sample sizes may occur across countries.[85]

The following question forms the basis for the explanation of both types of exit: "*Have you ever started a business or are you taking steps to start one?*" In total, 20,474 out of 20,674 individuals answered either "no" (15,462) or "yes" (5,012) to this question. After having answered "no", respondents were redirected to a follow-up question in which they were confronted with the following three mutually exclusive options for characterizing their answers (the number of observations corresponding to each option is also given, next to the abbreviation we will use for each option in the remainder of this manuscript):

- "No, it never came to your mind to start a business." ("never considered"; 9,812 observations);
- "No, but you are thinking about it." ("thinking"; 2,298);
- "No, you thought of it or you had already taken steps to start a business but gave up." ("gave up"; 2,687).

Note that 665 respondents (out of 15,462) did not qualify their initial "no" answer. Individuals that initially answered "yes" had to choose one of the following five options:

- "Yes, you are currently taking steps to start a new business." ("taking steps"; 770);
- "Yes, you have started or taken over a business in the last 3 years which is still active today." ("young business"; 629);
- "Yes, you started or took over a business more than 3 years ago and it is still active." ("mature business"; 1,299);
- "Yes, you once started a business, but currently you are no longer an entrepreneur since business has failed." ("failure"; 505);
- "Yes, you once started a business, but currently you are no longer an entrepreneur since business was sold, transferred, or closed." ("sell-off"; 1,400).

[84] Romania and Bulgaria (EU Member States since 2007) are not included in the data set.

[85] For more background information on this data set (including the English questionnaire), we refer to the following website of the European Commission: http://ec.europa.eu/public_opinion/flash/fl_192_en.pdf.

It should be mentioned that 409 individuals (out of 5,012) did not answer this follow-up question. Hence, for 19,400 individuals it is known to which of the eight categories they belong.

Each of the eight options represents a different level of involvement in the entrepreneurial process, ranging from no familiarity with self-employment at all to exit in real markets. Grilo and Thurik (2008) refer to these categories as "engagement levels".[86] The two engagement levels describing real exit distinguish between successful entrepreneurs who retired, transferred their business (perhaps they have recognized a better opportunity) or profitably sold their business, and entrepreneurs met with less success and failed. The first type of real firm exit cannot be regarded as a straightforward outcome of market selection.

Individuals that have given up their aspirations or efforts may have experienced earlier real market conditions. Also, if a respondent does not answer "failure" or "sell-off", this does not necessarily mean that he/she had not closed a business before: currently thinking about entrepreneurship or taking steps may mask prior (or present) business ownership. Also, being a current business owner does not exclude having closed a business before (as with serial or portfolio entrepreneurs; see Westhead and Wright, 1998a).

For all countries, the percentages across all engagement levels are given in Table 7.1. Note that the total number of observations in Table 7.1 equals 19,400. Clear differences between the European countries and the US can be observed. In the US, 30 percent never considered setting up a business, while in the European countries this percentage amounts to 52. The "thinking" and "taking steps" percentages in Europe are considerably lower than in the US (unweighted averages of 11 and 4 percent versus 21 and 9 percent, respectively). Concerning imagined exit, 14 percent had given up his/her aspirations or efforts to start a business in Europe, sharply contrasting the 9 percent for the US. Furthermore, large variation occurs in the "sell-off" category: the US, the Scandinavian countries, Cyprus and Greece stand out with high percentages. Further inspection shows that the differences between the eight post-communist Member States and the other 19 European countries are relatively small (these percentages are omitted from Table 7.1). For example, in the post-communist countries, 51 percent reported "never considered", while 52 percent gave this answer in the non-communist countries. The "thinking" and "taking steps" categories represent 16 and 5 percent of the respondents in the post-communist and 10 and 3 percent in the non-communist countries.

[86] Note that Grilo and Thurik (2008) make no distinction is made between real exit due to business failure and real exit due to sell-off.

Table 7.1: Percentages per entrepreneurial engagement level per country.

	never consid.	thinking	taking steps	gave up	young business	mature business	failure	sell-off	observations
Austria	57	7	2	21	2	5	1	5	475
Belgium	63	6	3	9	2	7	2	7	897
Cyprus	40	15	3	12	5	11	4	11	493
Czech Republic	49	13	4	18	3	8	3	3	910
Denmark	47	20	3	12	2	5	3	8	495
Estonia	59	9	6	9	4	8	3	3	451
Finland	56	6	2	10	3	9	2	12	419
France	57	10	3	17	2	4	1	7	983
Germany	48	12	4	20	4	6	2	5	966
Greece	36	15	2	14	8	11	4	10	989
Hungary	53	14	3	6	2	10	4	7	983
Iceland	41	14	5	9	4	14	2	12	442
Ireland	49	13	4	12	4	7	4	6	477
Italy	56	7	4	15	3	5	2	8	941
Latvia	50	25	6	1	3	6	3	6	451
Lithuania	61	14	6	4	2	5	3	4	471
Luxembourg	55	8	3	20	3	4	2	6	462
Malta	63	8	1	24	1	2	0	1	434
Netherlands	52	8	4	18	4	5	2	8	937
Norway	58	11	2	8	3	9	1	8	461
Poland	45	14	6	15	2	8	4	6	963
Portugal	58	4	3	15	5	5	3	7	969
Slovakia	43	27	5	12	2	5	3	4	479
Slovenia	55	13	1	18	2	3	2	5	492
Spain	57	8	3	14	3	6	3	6	964
Sweden	45	15	6	12	3	5	2	11	478
UK	47	8	5	20	3	5	2	9	971
Europe	52	11	4	14	3	7	3	7	18,453
United States	30	21	9	9	4	8	4	14	947
Europe+US	51	12	4	14	3	7	3	7	19,400

We realize that the "method of moment inequalities" to investigate market entry and exit dynamics would be a sensible candidate for our purposes (Pakes *et al.*, 2005). The assumption of this method is that agents behave according to maximization of their expected returns. An approximation of realized profits from the actual choice strategy undertaken by the individual and at least one other feasible alternative is required. However, we do not have information about the expected profits of the realized strategy or the choice that has not been undertaken, or about any other approximation. Therefore, we will not use the method proposed in Pakes *et al.* (2005). Instead, given the categorical nature of the data, we make use of a multinomial logit model (McFadden, 1973) to examine how and in what way exit in imagined markets differs from exit in real markets.

The advantage of using a multinomial logit model is that it includes all eight engagement levels. For each engagement level, the model predicts the probability that an individual belongs to that particular engagement level. Individuals belonging to "never considered" cannot be neglected with respect to explaining the probability of exiting the imagined or real market place. It may well be that respondents that have never considered setting up a business have a likelihood (albeit probably small given the small values of their explanatory variables) of being active in the imagined and/or real market place.

First, we compare persons that gave up their entrepreneurial intentions or efforts with persons that currently have entrepreneurial intentions or are taking steps to start a business. In our multinomial logit set-up, we merge the engagement levels "thinking" and "taking steps" and take these two engagement levels as the reference category. Interpretation in a multinomial logit model is always done relative to a particular reference category. Then, we are able to investigate the effects of the personal and ecological characteristics on the odds (ratio of two probabilities) of the engagement level "gave up" relative to the reference category (*i.e.*, "thinking" and "taking steps"). To be more precise, we attempt to clarify which personal and ecological characteristics increase or decrease the likelihood that an individual has exited the imagined market place relative to currently being active in this imagined market place.

Second, we contrast persons that have closed their business, either successfully or unsuccessfully, with persons that currently own a business. In this case, we merge the engagement levels "young business" and "mature business" and take these two engagement levels as the reference category in our multinomial logit model. The analysis of exit in real markets amounts to two exercises: we do not only investigate the impact of the personal and ecological characteristics on the odds of "failure" relative to the reference category (*i.e.*, "young business" and "mature business"), but we also focus on the odds of "sell-off" relative to this reference category. See Table 7.2.

In sum, we perform multinomial logit regression with six categories: "never considered", a combination of "thinking" and "taking steps", "gave up", a combination of "young business" and "mature business", "failure", and "sell-off". First, the focus will be on analyzing the odds of "gave up" relative to "thinking" and "taking steps" to explain imagined exit. Second, we will focus on the odds of "failure" relative to "young business" and "mature business" and subsequently, on "sell-off" relative to "young business" and "mature business". Our main analysis thus boils down to three investigations with two reference categories. The very nature of the multinomial logit model also gives us the opportunity to investigate which individual characteristics have an effect on the selection into entrepreneurship. To be more precise, we will also investigate the odds of "thinking" and "taking steps" relative to "never considered" and the odds of "young business" and "mature business" relative to "never considered". Note that the choice of the reference category does not influence the results of the multinomial logit model.

Table 7.2: Set-up of multinomial logit model.

Engagement levels:	Never considered	Thinking	Taking steps	Gave up	Young Business	Mature Business	Failure	Sell-off
Our reduced categories:	Never considered	Entrepreneurial intentions/efforts		Exit in imagined market	Business owner		Exit in real market	

The explanatory variables used in the present study can be divided into two types: personal characteristics and ecological (environmental) characteristics.

Personal characteristics: gender, age, level of education and self-employed parents

Gender (male=1; female=0) and self-employed parents (at least one of the parents is/was self-employed=1; otherwise 0) are the obvious dummy variables. The first variable is only taken into account as a control variable. Age is measured as the current age – in years – of the respondent (not necessarily at time of exit, which then most likely happened at a younger age).[87] We also include age squared to allow for non-monotonic relationships. "Age when finished full education" is used as a continuous approximation of the level of education.[88]

Descriptive analyses reveal that 28 percent of the individuals in this sample have at least one (former) self-employed parent. The averages of age and education are 46.96 and 19.81 years (with standard deviations of 16.84 and 6.18 years), respectively. These numbers are based on 14,545 observations. Earlier, we have seen that 19,400 respondents specified their level of engagement in the entrepreneurial process. Our estimation sample, however, will consist of 14,545 observations. This number is retrieved such that no single observation contains missing values on any of the variables that will be included in the analyses that follow. In other words, our multinomial logit regression will be based on 14,545 observations. The difference of 4,855 observations between the earlier sample of 19,400 observations and the present estimation sample is thus the result of missing values for any of the variables that will be used to explain imagined and real exit.

Next to these "usual suspects" in demographic research, we have also included an often used entrepreneurial personality variable, namely risk tolerance. Risk tolerance is captured by the following question: "*One should not start a business if there is a risk it might fail*". For this

[87] Ideally, we would have had values of the explanatory variables at the time of exit. For example, we acknowledge that age at the time of imagined or real exit is preferred as the explanatory variable here, but we do not know how many years ago the exit took place.

[88] A small fraction of 319 individuals in the original sample responded that they never attended full time education. These observations have value 12 for the education level to reflect possible entry to the labor market. Also, all answers between 1 and 11 have been recoded into 12 (493 observations in the original sample).

statement the risk tolerance dummy takes value 1 if "disagree" or "strongly disagree", and 0 if "agree" or "strongly agree" is given as response.[89] The average value of this variable is 0.50.

Ecological characteristics

We have explicitly taken into account different elements of the environment: the perceived environmental constraints, the degree of urbanization (a proxy for resource munificence and competition), and the national institutional system. The perceived environmental constraints are measured using three variables: the perception of lack of available financial support, the perception of complexity of administrative procedures, and the perception of lack of sufficient information on setting up an own business. These variables are captured, respectively, by the question: "*Do you strongly agree, agree, disagree or strongly disagree with the following statements?*" given the following statements:

- "It is difficult to start one's own business due to a lack of available financial support."
- "It is difficult to start one's own business due to the complex administrative procedures."
- "It is difficult to obtain sufficient information on how to start a business."

For each statement a dummy variable is constructed. The dummy variables take value 1 in the case of "agree" or "strongly agree" for the four statements, and 0 if "disagree" or "strongly disagree" is answered. The averages are 0.79, 0.74 and 0.51, respectively, across the estimation sample.

The degree of urbanization is measured by asking the respondent in which kind of locality he/she lives. Three mutually exclusive answer categories are possible: metropolitan zone, urban center, and rural zone. Rural zone is taken as the base category. The percentages of metropolitan, urban and rural areas in the estimation sample are 0.22, 0.43 and 0.36, respectively.

Finally, the country-specific institutional systems are taken into account using the categorization of institutional systems by Esping-Andersen (1999) (see Table 7.3). In this categorization, Liberal/Anglo-Saxon countries[90] are taken as the base. Therefore, the coefficients associated with these variables are to be interpreted as the impact of being in the corresponding institutional system rather than being in Liberal/Anglo-Saxon. The relative contribution of each institutional system to the estimation sample is also given in Table 7.3 (*i.e.*, the averages of the constructed variables).

[89] Clearly, this is a crude indicator of risk attitudes and calling this dummy "risk tolerance" may be abusive. Nevertheless, in the absence of a better measure, we believe it provides some information on how taking risks is perceived by the respondent.

[90] This category is similar to the "Liberal Market Economy" in the "varieties of capitalism" literature (Hall and Soskice, 2001; Casper and Whitley, 2004).

Table 7.3: Categorization of national institutional systems.

Category	Countries	Relative contribution
Corporatist/Social Insurance	Austria, Belgium, France, Germany, Italy, Luxembourg, Netherlands	0.28 (4,111 observations)
Southern Europe	Cyprus, Greece, Malta, Portugal, Spain	0.21 (3,126 obs.)
Post-communist	Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia	0.26 (3,797 obs.)
Social democratic/ Universalist/Scandinavian	Denmark, Finland, Iceland, Norway, Sweden	0.10 (1,505 obs.)
Liberal/Anglo-Saxon[#]	Ireland, United Kingdom, United States	0.14 (2,006 obs.)

[#] This category is used as reference category in the regressions.

7.4 Results

How can exit in imagined and real markets be explained? Table 7.4 presents the results of the multinomial logit regression in terms of odds ratios.[91] The estimates represent the impact of the personal and ecological variables on the odds (ratio of two probabilities) of imagined or real exit relative to the appropriate reference category.[92] More specifically, the first column of results in Table 7.4 refers to the explanation of imagined exit: the estimates describe the impact of the corresponding variable on the odds of "gave up" relative to "thinking" and "taking steps".

Given an estimate above unity and holding all other variables equal, an increase in a variable raises the probability of belonging to the engagement level "gave up" as compared to the reference category consisting of the engagement levels "thinking" and "taking steps". The opposite is true for an estimate below unity. The second column of results in Table 7.4 focuses on the odds of "failure" relative to "young business" and "mature business" while the last column of results explains the odds of "sell-off" relative to "young business" and "mature business". Standard errors are also displayed in Table 7.4 next to asterisks denoting significant differences of the estimates from unity at the 0.01 (***), the 0.05 (**), and the 0.10 (*) level.

In the present section, we will first elaborate on the specification of the multinomial logit model. Subsequently, we present and discuss the effects of personal characteristics on entrepreneurial exit in imagined and real markets. This will be followed by a presentation and discussion of the effects of ecological characteristics.

[91] We should note here that the (un)biasedness of the coefficients depends on the validity of the IIA property, which may have consequences for the interpretation of these coefficients in terms of odds ratios.

[92] The analysis of the odds of "gave up" versus "thinking" and "taking steps" contains respondents that indicate to be self-employed at the same time. Next to the question on engagement levels the questionnaire asks respondents to specify their current occupation: "*As far as your current occupation is concerned, would you say you are self-employed, in paid employment, or would you say that you are without a professional activity?*". It could be that these respondents (those that indicate to be self-employed while being in "gave up", "thinking", or "taking steps") are "imagined portfolio entrepreneurs" in that they have taken steps or have thought about setting up a business next to their present business. Excluding these imagined portfolio entrepreneurs (346 observations in the original sample) does not result in different conclusions.

Table 7.4: Estimation results multinomial logit model explaining imagined and real exit (odds ratios).

Type of exit	Imagined exit		Real exit due to failure		Real exit due to sell-off	
Odds under investigation	"gave up" versus "thinking" and "taking steps"		"failure" versus "young business" and "mature business"		"sell-off" versus "young business" and "mature business"	
Personal determinants						
Risk tolerance	0.831***	(0.053)	0.687***	(0.080)	0.862*	(0.072)
Education	0.972***	(0.005)	0.985	(0.009)	0.982***	(0.006)
Self-employed parents	0.732***	(0.052)	0.598***	(0.078)	0.887	(0.075)
Male	0.949	(0.059)	0.789**	(0.088)	0.728***	(0.058)
Age	1.082***	(0.012)	0.973	(0.025)	0.910***	(0.016)
Age^2	1.000**	(0.000)	1.000	(0.000)	1.001***	(0.000)
Ecological determinants						
Perc. lack of financial support	0.983	(0.079)	1.574***	(0.233)	1.186*	(0.113)
Perc. administrative complexities	1.049	(0.077)	1.116	(0.145)	1.216**	(0.111)
Perc. insufficient information	0.992	(0.065)	1.052	(0.126)	0.972	(0.083)
Metropolitan	0.856*	(0.073)	1.557***	(0.236)	1.136	(0.121)
Urban	0.879*	(0.062)	1.315**	(0.174)	1.048	(0.095)
Corporatist	2.095***	(0.209)	0.647**	(0.127)	0.781**	(0.097)
Southern Europe	2.043***	(0.221)	0.827	(0.157)	0.535***	(0.071)
Post-communist	0.756***	(0.077)	0.903	(0.163)	0.402***	(0.054)
Social democratic	1.056	(0.136)	0.656*	(0.154)	0.918	(0.131)
Further statistics						
Number of observations	14,545					
Log likelihood at intercepts	-21,760					
Log likelihood at convergence	-19,776					
LR χ^2 (75 degrees of freedom)	3,969 (p-value<1%)					
Pseudo R^2 (McFadden)	0.09					
Pseudo R^2 (Nagelkerke)	0.25					

Notes: ***, **, and * denote significant differences from unity at the 1%, 5%, and 10% level, respectively. Standard errors are between parentheses. Estimated intercepts are not shown.

7.4.1 Model specification

The odds of any pair of categories in the multinomial logit model depend only on the characteristics of the two categories under consideration and are independent of the number of categories. This property is known as the independence of irrelevant alternatives (IIA: McFadden, 1973). Several tests have been proposed to assess whether this property can theoretically be sustained (McFadden *et al.*, 1981, Small and Hsiao, 1985, Hausman and McFadden, 1984). The performance of these tests has been investigated by Fry and Harris (1996, 1998) and Cheng and Long (2007). The latter authors even suggest (p. 598) that "(…) *tests of the IIA assumption that are based on the estimation of a restricted choice set are unsatisfactory for applied work*." Long and Freese (2006, p. 244) state that the tests above – that are based on estimating restricted choice sets – can produce "contradictory results". In our

application we expect, on theoretical grounds, the IIA property not to be a concern because of the dissimilar structure of our engagement levels (Amemiya, 1981). This dissimilar structure is emphasized by the fact that we are unable to combine any pair of categories (Cramer and Ridder, 1991).

The IIA property originates from the fact that the underlying disturbance terms of the categories are uncorrelated and homoskedastic by definition. This may be an unrealistic assumption in our case as there is a possibility that common omitted variables affect one or more engagement levels simultaneously. Alternative models that allow for cross-categorical disturbance correlation include the multinomial probit model (Hausman and Wise, 1978; for the relative benefits and liabilities of multinomial logit and multinomial probit, see Dow *et al.*, 2004), the nested logit model (Domencich and McFadden, 1975; Ben-Akiva and Lerman, 1985), and the mixed logit model (Train, 2003). The mixed logit model cannot be considered in our context as we do not have the availability of category-specific variables in our dataset, which are needed to relax the zero correlation between disturbance terms. The parameters in the multinomial probit model are only "fragilly identified" in the absence of exclusion restrictions, that is, restrictions that certain (category-)specific variables do not influence certain categories. However, our dataset only includes individual-specific variables (Keane, 1992). Furthermore, we abstain from using the nested logit model here because one may think of multiple specific nesting structures of the engagement levels; choosing one such nesting would thus be subjective. In this context, the following argument by Greene (2003, p. 727) applies: "*There is no well-defined testing procedure for discriminating among tree structures, which is a problematic aspect of the model*". Also, the issue of uncorrelated disturbance terms remains present between categories in one branch in a nested logit model.

Because it is difficult to define residuals in multinomial choice models, one has to rely on pseudo R^2 measures to assess the fit of these models. One such a measure has been proposed by McFadden (1973) that compares the log likelihood of the model with only intercept parameters with the log likelihood at convergence. As McFadden (1979, p. 307) points out, the values of these types of indices "*tend to be considerably lower than those of the R^2 index and should not be judged by the standards for a 'good fit' in ordinary regression analysis*." In our case, McFadden's R^2 amounts to 0.09 as can be seen in Table 7.4. Another definition has been proposed by Maddala (1983), which was revised by Nagelkerke (1991) to allow R^2 to lie between 0 and 1. The Maddala R^2 and Nagelkerke R^2 equal 0.24 and 0.25 in our case, respectively. Another method to assess the fit of the model is to examine the observed and predicted frequencies of all categories. In the estimation sample, the true frequencies are 0.46, 0.17, 0.15, 0.12, 0.03 and 0.08 for "never considered", "thinking"/"taking steps", "gave up", "young business"/"mature business", "failure", and "sell-off", respectively. For each individual we now compute the predicted probabilities for all categories. Averaging these numbers across all

individuals delivers predictions (0.46, 0.17, 0.15, 0.11, 0.03 and 0.08) that show huge resemblance with our previously presented numbers.

7.4.2 Personal characteristics

Unambiguously, and in contrast to our expectations, risk tolerance appears to have a negative influence on exit in imagined markets and on both types of exit in real markets. Repositioning the multinomial logit model with another reference category (*i.e.*, focusing on the odds of "thinking" and "taking steps" relative to "never considered") reveals that risk tolerance has a positive impact on having entrepreneurial intentions or undertaking efforts to start a business (Grilo and Thurik, 2008). These results are displayed in the first column of results in Table 7.5.

The impact of risk tolerance on entry into self-employment is illustrated in the second column of results in Table 7.5, which concentrates on the odds of "young business" and "mature business" relative to "never considered" (Grilo and Thurik, 2008). This impact is being "compensated" by the strong negative influence of risk tolerance on "failure" relative to "young business" and "mature business" in that an additional analysis shows that risk tolerant individuals are not more likely to be in the "failure" engagement level relative to "never considered". These additional analyses also reveal that the odds of "gave up" relative to "never considered" and "sell-off" relative to "never considered" are significantly influenced by risk tolerance.

Thus, given that one belongs to either of the two markets, risk tolerant individuals (who are more likely to be present in these markets) are also less likely to exit. The present research thus shows that risk tolerance not only discriminates between (potential) entrepreneurs and those without any entrepreneurial activity, but it also discriminates between individuals that currently experience imagined and real market conditions and those that have exited either of the two markets.

A clear significant negative effect for education is found for exit in imagined as well as from real markets due to sell-off. The importance of education might indicate that higher educated persons are better able to recognize high value entrepreneurial opportunities which lower the probability of exit in imagined markets. This strong effect of ability seems to offset the high opportunity costs of entrepreneurship for highly educated people. Hence, educational level does not only increase the probability that an individual undertakes serious activities to start a business (first column of Table 7.5); it also facilitates the persistence of realizing these intentions and/or efforts into business ownership given the lower probability of exiting the imagined market (Table 7.4) and given the higher probability of selection into business ownership (Table 7.5). An important observation in this context is that the odds of "failure" relative to currently having a business are not significantly affected by the education level.

Table 7.5: Estimation results multinomial logit model explaining selection into entrepreneurship (odds ratios).

Type of selection	Selection into entrepreneurial intentions/efforts		Selection into business ownership	
Odds under investigation	"thinking" and "taking steps" versus "never considered"		"young business" and "mature business" versus "never considered"	
Personal determinants				
Risk tolerance	1.400***	(0.074)	1.579***	(0.096)
Education	1.047***	(0.005)	1.033***	(0.005)
Self-employed parents	1.317***	(0.077)	1.805***	(0.114)
Male	1.631***	(0.085)	3.121***	(0.184)
Age	1.015*	(0.009)	1.269***	(0.017)
Age^2	0.999***	(0.000)	0.997***	(0.000)
Ecological determinants				
Perceived lack of financial support	1.189***	(0.078)	0.880*	(0.062)
Perceived administrative complexities	0.908	(0.055)	0.658***	(0.044)
Perceived insufficient information	0.962	(0.052)	1.024	(0.064)
Metropolitan	1.009	(0.070)	0.895	(0.071)
Urban	1.013	(0.059)	0.828***	(0.055)
Corporatist	0.471***	(0.039)	0.741***	(0.073)
Southern Europe	0.484***	(0.044)	1.272**	(0.130)
Post-communist	1.087	(0.088)	1.356***	(0.136)
Social democratic	0.671***	(0.068)	1.058	(0.122)

Notes: ***, **, and * denote significant differences from unity at the 1%, 5%, and 10% level, respectively. Standard errors are between parentheses. Estimated intercepts are not shown. Model statistics are displayed in Table 7.4.

According to our expectations, persons with self-employed parents are less likely to give up their entrepreneurial intentions and efforts, and once they have started as a business owner, they are less likely to fail. This might be explained by the indirect learning effect, *i.e.*, observing entrepreneurial actions of role models (Aldrich and Kim, 2007). While Table 7.5 shows that respondents with a self-employed parent have a much higher likelihood of having taken steps toward starting a business or of having run a business, we can also conclude from Table 7.4 that respondents without self-employment parents have a much higher likelihood of having given up these steps or to having failed. The impact of this variable on entrepreneurial exit is so strong that the odds of "gave up" relative to "never considered" and "failure" relative to "never considered" are not significantly affected by having a self-employed parent.

Age seems to have a positive linear effect on exit in imagined markets (irrelevant turning point at which the impact of age on the odds ratio becomes negative), and on exit due to failure.[93] Furthermore, there exists a U-shaped relationship between age and the odds of "sell-off" relative to "young business" and "mature business" (turning point at 32 years).

[93] Additional analyses excluding the squared age term confirm this finding (the estimate belonging to the linear age term is significantly different from unity at 5 percent).

7.4.3 Ecological characteristics

While perceived environmental constraints are hardly related to exit, urban and metropolitan locations have the expected negative effect on exit in imagined markets (albeit only significant at 10 percent). Note that the degree of urbanization does not have an influence on having entrepreneurial intentions and/or undertaking efforts to start a business (first column of Table 7.5). Furthermore, being located in a metropolitan or an urban area increases the odds of "failure" relative to "young business" and "mature business". Hence, the effect of real competition in metropolitan and urban environments seems to be more relevant than the imagined effect. Individuals in urban and metropolitan environments seem to hang on to their entrepreneurial intentions much more and once they enter real markets they more often fail.

We first note (based on Table 7.5) that all institutional regimes (relative to the Anglo-Saxon regime) have an equal or lower odds of "thinking" and "taking steps" relative to "never considered". Put it differently, individuals in the Anglo-Saxon regimes have the highest likelihood to undertake efforts to start a business. Table 7.4 additionally shows that the corporatist regime has the expected positive effect on exit in imagined markets: individuals in this welfare state regime thus have fewer incentives to maintain their entrepreneurial intentions and efforts relative to individuals in Anglo-Saxon regimes. Next to individuals in corporatist regions, it also turns out that Southern Europeans are twice as likely to have given up entrepreneurial intentions and/or efforts relative to individuals in Anglo-Saxon regimes. We also see (last column of Table 7.5) that individuals in corporatist regimes have the smallest probability of all regimes to own a business currently. Finally, and according to our expectations, the corporatist welfare and social democratic welfare regimes decrease the odds of "failure" versus "young business" and "mature business", relative to Anglo-Saxon countries.

Table 7.6 summarizes the empirical evidence of our analyses.[94]

[94] An interesting research question relates to changing patterns over time by conducting longitudinal research methods. A starting point is to perform the same analysis with an older version of the "Flash Eurobarometer Survey on Entrepreneurship", *i.e.*, No. 160 from 2004 which was used in Grilo and Thurik (2005a, 2005b) and in Chapter 2 of this thesis. There is no distinction between real exit due to business failure and due to sell-off in this 2004 version. The analysis of exit in imagined markets (2007 results are in the first column of Table 7.4) establishes the following results. Concerning personal characteristics we observe that risk tolerance, education and self-employed parents do not have significant effects (at 10 percent) in 2004, while we find clear negative effects in 2007. Age has a positive linear effect on exit in imagined markets in both years. Furthermore we see that perceived environmental constraints are not related to imagined exit which is also the case in 2007. Urban and metropolitan locations again have negative effects. We note that in 2004 all institutional regimes (relative to the Anglo-Saxon regime) have higher odds of "gave up" versus "thinking" and "taking steps". The 2004 multinomial regression is based on 16,502 observations. Finally, our focus is on the odds of "thinking" and "taking steps" versus "never considered" (2007 results are in the first column of Table 7.5). There are no qualitative differences between 2004 and 2007, except that being located in a metropolitan or in an urban area increases this odds in 2004 and that perceived lack of financial support is not of significant importance in 2004.

Table 7.6: Empirical evidence concerning exit in imagined and real markets.

Type of exit	Imagined exit	Real exit due to failure	Real exit due to sell-off
Risk tolerance	-	-	-
Education	-	0	-
Self-employed parents	-	-	0
Male	0	-	-
Age	+	+	U-shaped
Perceived environmental constraints	0	partly +	partly +
Metropolitan/urban	-	+	0
Strong welfare state	+	-	-

7.5 Conclusion and discussion

We present evidence on the determinants of entrepreneurial exit in real and imagined markets using a cross-sectional survey of some 20,000 individuals in European countries and the US. Prospective business owners enter an imagined market when they start thinking about setting up a business or are taking preparatory steps. The novelty of our approach is in the comparison of ex-post selection (business failure in real markets) with ex-ante selection (in imagined markets). We have assessed the role of personal and ecological characteristics in the explanation of exit in real and imagined markets. Our analyses show that risk tolerance and having a self-employed parent have significant negative relations with exit in imagined markets and exit in real markets due to business failure. Ecological characteristics related to urbanization and welfare state regimes seem to have contrasting effects on exit in imagined markets as compared to exit in real markets. Urbanization has a negative effect on exit in imagined markets, but a positive effect on exit in real markets. Strong welfare regimes have a positive effect on exit in imagined markets, while they have a negative effect on exit in real markets.

We could interpret our results from a "rational expectations" viewpoint: prospective entrants objectively assess the returns of entering the market as an entrepreneur. They make decisions on whether or not to enter as well as the timing and mode of entry in a manner that seeks to maximize expected profit in an uncertain environment (Helfat and Lieberman, 2002). While rational behavior of this sort may be a reasonable first approximation, numerous studies suggest that entrants often suffer from cognitive biases (Kahneman and Lovallo, 1993; Dosi and Lovallo, 1997). Individuals may be overly optimistic about their own entrepreneurial abilities, which would mean that such biases would contribute to "excessive" entry (*i.e.*, relatively low quality entrants). This seems especially relevant when certain explanatory variables do not have an effect (or have a negative effect) on exit in imagined markets, but do have an effect (or have a positive effect) on exit in real markets. Our analyses suggest that the entry of individuals in metropolitan and urban areas might be too optimistic (with a negative effect on imagined exit and a positive effect on real exit due to failure). Camerer and Lovallo

(1999) found evidence of excess market entry – entry into crowded markets that offered slim success chances – ostensibly instigated by individuals who held biased (*e.g.*, overconfident) assessments of their competitive abilities. This can be prevented, if potential entrepreneurs become better informed about their chances of entrepreneurial success (and thus will be more likely to "give up"). The reverse phenomenon – under optimism – might also be prevalent: our analyses suggest that corporatist and Southern European welfare regimes seem to have this effect on their inhabitants.

Exit has been the central topic in this chapter. One of the key axioms in economics is that the least viable (productive) businesses will be eliminated due to selection pressures in the market, *i.e.*, market selection (Bellone *et al.*, 2008). As stated before, entrepreneurial exit does not necessarily equate to business exit in two ways: first, so called habitual entrepreneurs can exit a business while continuing with another business, and second, entrepreneurs can exit their business while the business continues to exist (the "sell-off" category in our analyses). In this chapter we have made the distinction between entrepreneurial exit due to business failure and due to sell-off. In that sense, we have addressed a shortcoming in much of the exit literature that has equated business failure with sell-offs within an overall category of business exit. However, we also know that many entrepreneurs stick to a marginal business – and thus an entrepreneurial career – because they have relatively low aspiration levels, while a subset of entrepreneurs close down profitable businesses because these businesses do not reach the high aspiration levels of these ambitious (often human capital rich) entrepreneurs (Gimeno *et al.*, 1997). Even though we do not find a related positive effect of education on exit, the heterogeneity in aspiration levels questions the universal appropriateness of the evolutionary mechanism of "survival of the fittest". Some authors have also emphasized the evolutionary mechanism of "selection via differential growth" (Nelson and Winter, 1982). Such a mechanism is outside the scope of our empirical analyses. Even though we recognize the heterogeneity in businesses (ranging from marginal self-employed to the high-growth innovative industry leader; cf. Santarelli and Vivarelli, 2007), which is not taken into account in our analyses, we do still value the prevalence of the "survival of the fittest" mechanism. In a recent overview of the empirical industrial economics literature on growth and exit, Coad (2009) concludes that selection mainly operates via elimination of the least productive businesses and that the mechanism of selection via differential growth does not appear to be as strong.

Even though this chapter's main contribution is to the evolutionary economics research field, it contains some evidence that confirms the neo-classical approach to entrepreneurship. Although entrepreneurship is largely neglected in this branch of economics (see Bianchi and Henrekson, 2005), there are some key contributions which "explain" entrepreneurship by the risk preferences of individuals (Kihlstrom and Laffont, 1979). The empirical evidence in this chapter confirms the importance of risk tolerance in stepping up the "entrepreneurial ladder"

(Chapter 2 of this thesis) and more specifically, as a driver of entrepreneurial persistence in imagined and real markets.

Our chapter also contributes to the institutional literature on the effects of welfare state regimes (Esping-Andersen, 1999) and varieties of capitalism (Hall and Soskice, 2001) in a new way. This literature has largely neglected entrepreneurship or has only focused on entry (Casper, 2007). We have shown in this chapter that these institutions are also an important element in the explanation of entrepreneurial exit in real and imagined markets. The Anglo-Saxon regime, which is generally seen as the most fertile institutional system for entrepreneurship (Bosma *et al.*, 2008), seems to have a negative effect on exit in imagined markets in comparison with the corporatist and Southern Europe regimes having positive effects, while the corporatist regime seems to have a negative effect on exit in real markets. Our findings redirect attention to the role of non-market selection environments next to market selection environments (Nelson and Winter, 1982). Future research should include a better categorization of the institutional environment next to the welfare state typologies (Freytag and Thurik, 2007).

An important indirect measure of market selection is captured by our ecological variables "metropolitan" and "urban" environments. In these high density environments competition between businesses is known to be much fiercer than in low density, rural environments (Audretsch, 1998; Caniëls, 2000; Fritsch and Mueller, 2008; Van Stel and Suddle, 2008). We find that individuals do not seem to let their aspirations be affected by this competition, and once they have entered the real market, their businesses are more likely to fail in metropolitan and urban environments than in rural environments. This may be interpreted as evidence for the prevalence of overoptimistic entrepreneurs in high density areas, in which the barriers to entry are (perceived to be) relatively low (Hoover and Vernon, 1959) and thus might lure relatively many low quality entrepreneurs into the market, who subsequently face the strong selection pressure in these highly competitive environments. More research is needed into the specific nature and effects of urban and metropolitan environments on different aspects of the entrepreneurial process (Bosma, 2009).

This chapter is one of the first steps into a research field of entrepreneurial decision-making in imagined and real markets. Further studies may build on our explorations and provide more specific variables and longitudinal research methods, and experimental research methods, in order to trace the causes of decision-making that precedes entrance into the market by entrepreneurs.

Chapter 8

Entrepreneurial exit and entrepreneurial engagement

We investigate whether and how a recent entrepreneurial exit relates to subsequent engagement. We discriminate between six levels of engagement including none, potential, intentional, nascent, young and established entrepreneurship. We use individual-level data for 24 countries that participated in the Global Entrepreneurship Monitor during 2004, 2005 and 2006 (some 350,000 observations). Our findings indeed show that a recent exit decreases the probability of undertaking no entrepreneurial activity, whereas it substantially increases the probabilities of being involved in all other engagement levels. Investigating the conditions under which an exit increases engagement in entrepreneurial activities, we find that the probability of entrepreneurial engagement after exit is higher for males, for persons who know an entrepreneur and for persons with a low fear of failure. Educational attainment does not seem to be relevant. Moreover, there exists large cross-country variation in the probability of entrepreneurial engagement after exit.

This chapter is based on Hessels *et al.* (2010).

8.1 Introduction

The process of entry and exit of businesses is a major driver of the evolution of industries and economies. It is an important determinant of market performance in terms of productivity and structure. Much is known about the interplay between entry and exit (Carree and Thurik, 1996; Fok *et al.*, 2009), their variability over time and across industries (Geroski, 1995) and the way they bring about change (Audretsch, 1995; Baumol, 2002; Bartelsman *et al.*, 2004). These processes can be influenced by firm-specific, industry-specific, country-specific or spatial factors. Much less is known about the *persona causa* behind these processes, *i.e.*, about the entrepreneur. Audretsch *et al.* (2001) already point at the connection between the interest in market dynamics and that in the economics of entrepreneurship. Shane (2003), Santarelli and Vivarelli (2007), and Parker (2009) also mention this connection in their surveys of studies of new firm entry, exit, survival and growth. There have been waves of studies in the entrepreneurship literature about who enters (see Grilo and Thurik (2008) for a survey) and who exits (see Chapter 7 of this thesis for a survey). The present chapter attempts to connect these literatures by studying the effect of entrepreneurial exit in the past year on subsequent entrepreneurial engagement.

Entrepreneurial exit is defined as shutting down, discontinuing or quitting a business; sold businesses are not incorporated in our analysis. Exit can be an indicator of entrepreneurial learning and its effect on subsequent entrepreneurial engagement can be a major source of the evolution of industries and economies. Entrepreneurial engagement is a newly developed concept built on the recognition that entrepreneurship or "the creation of new economic activity" (Davidsson *et al.*, 2006, p. 27) can be viewed as a process that includes several (successive) engagement levels (Grilo and Thurik, 2005b, 2008), such as intentions to establish a firm and actual start-up activity. Discrimination between entrepreneurial engagement levels is important for scholars and policy makers, because the drivers are not necessarily equal across engagement levels. The typical questions then become: which people are likely to be involved in the entrepreneurial process, and why do they move from one level to the next? This entrepreneurial process can also be referred to as the entrepreneurial ladder (Chapter 2 of this thesis).

Recent literature suggests that the same people often exit and enter the start-up process repeatedly, a phenomenon called "revolving door entrepreneurship" or "serial entrepreneurship". Serial entrepreneurs run a substantial share of established businesses (Westhead *et al.*, 2005) and they are of considerable importance to the economy, as they drive the evolution of industries (Hyytinen and Ilmakunnas, 2007) and markets due to their internal (experience) and external (spillovers) learning. Still, little is currently known about the specific conditions that make an entrepreneur serial. We enter the area of "serial entrepreneurship" by investigating whether persons who exited recently are more likely to engage in entrepreneurial activities than those who have not. This immediately raises the question of which conditions influence

those who recently exited to engage in entrepreneurial activities, be they emerging, new or existing. Hence, next to the question whether a recent exit influences the probability of subsequent engagement, we will also raise the question what conditions influence this probability.

Inspired by human capital theory (Becker, 1964), an entrepreneurial exit can be seen as an indicator of accumulated entrepreneurial human capital (for example, knowledge, skills and experience).[95] Under this interpretation, one would expect a recent entrepreneurial exit to have a positive effect on the likelihood of engaging in the entrepreneurial process. However, another explanation for this form of path dependency that also links a past exit with subsequent re-engagement in entrepreneurial activity could be related to the marginalization of the previously self-employed on the job market. In the particular case of exit resulting from failure, that failure could act as a type of stigma, adversely affecting job opportunities.[96] Our investigation of the relationship between entrepreneurial exit and subsequent entrepreneurial engagement is based on these two possible explanations. It is here that our discrimination between six engagement levels (none, potential, intentional, nascent, young and established entrepreneurship) plays an important role. Those who have recently experienced an exit may, in a later stage, have increased their entrepreneurial ability and intentions. They may also be involved in some form of preparatory activities to start up a business, in a recently started new business (less than 42 months ago), or in an established business. However, it is also possible that they will not be involved in any form of entrepreneurial engagement.

It has already been argued that "serial entrepreneurs" represent a significant subgroup of entrepreneurs (Westhead *et al.*, 2005). Among young business owners in our sample, 7.1% experienced an exit in the previous year,[97] whereas among those not engaged in entrepreneurial activity, only 0.4% had exited previously. It is important to investigate further this link between exit and subsequent re-entry, while correcting for other individual characteristics influencing entrepreneurial engagement, as well as to investigate the determining factors of this link. These two tests will be performed with a dataset that covers some 350,000 individuals from 24 countries, representing both emerging and developed economies.

The remainder of this chapter is structured as follows. The next section offers a brief review of other empirical and theoretical work linking entrepreneurial exit with subsequent involvement in the entrepreneurial process. The data and methodology are discussed in Sec-

[95] An exit can be the result of a bad quality project and its failure the outcome of a well-functioning market. However, even in such cases knowledge, skills and experience can be acquired that may prove valuable in subsequent ventures.

[96] This would, however, require the job market (employers) to penalize failed entrepreneurs more harshly than those acting as sources of capital (investors, banks), consumers or even employees. Though this is beyond the scope of this chapter, it seems unlikely that stigma of failure would have a greater impact on the potential of a failed entrepreneur to be an employee than a second-time entrepreneur.

[97] Of all nascent entrepreneurs in our sample, 6.7% have exited during the previous year. We should note here that our percentages refer to a time frame of one year, while serial entrepreneurship is usually not restricted to a certain time span. Thus, there may be more serial entrepreneurs in our sample than are represented by the statistics. However, the focus of the chapter is on the link between *recent* exit and subsequent engagement.

tion 8.3 and Section 8.4, respectively, while Section 8.5 provides and discusses the estimation results. Section 8.6 concludes the chapter.

8.2 Literature background

DeTienne (2010) states that an understanding of the entrepreneurial process would be incomplete without insights into entrepreneurial exit. According to this author, the entrepreneurial process should not be considered solely as a series of activities leading to new firm creation, but should also incorporate entrepreneurial exit that may occur at any time during this process.

Furthermore, DeTienne (2010) concludes that entrepreneurial exits may not only have benefits for the entrepreneur, but also for the firm, for the industry and for the economy in general. Many studies have demonstrated the importance of exiting firms to the evolution of industries and economies (Audretsch *et al.*, 2004; Bartelsman *et al.*, 2004). Whereas these studies focus on the evolutionary process of firms and markets, the entrepreneurship literature focuses on persons and specific cases. For example, Pe'er and Vertinsky (2008) demonstrate that the exit of incumbents stimulates the entry of new, more productive enterprises in the same location. They can combine the resources (*e.g.*, knowledge) that were released by exiting firms in new ways to increase productivity. In addition, failed firms can generate externalities that substantially reduce industry costs (Knott and Posen, 2005), generating benefits for consumers and surviving producers in that industry.

Human capital theory (Becker, 1964) provides a possible explanation for the relationship between (personal) entrepreneurial exit and subsequent entrepreneurial engagement. Human capital relates to the intrinsic qualities of individuals, including knowledge, education, skills and experience (Deakins and Whittam, 2000), and predicts that investments in these factors enhance cognitive abilities and subsequently result in more productive or efficient behavior. It has been suggested that aspects of human capital are likely to influence the development of a business idea and the organization of resources (Deakins and Whittam, 2000). There is considerable empirical evidence that higher levels of relevant human capital, as indicated by variables such as education and experience, increase an individual's propensity to engage in venture start-up activities (Davidsson, 2006).

Entrepreneurial human capital refers to an individual's knowledge, skills and experience related to entrepreneurial activity. Individuals typically develop such entrepreneurial human capital through working in an entrepreneurial firm (Iyigun and Owen, 1998) or through start-up experience. Previous research considers entrepreneurial human capital in explaining start-up intentions (Kolvereid and Isaksen, 2006; Tamasy, 2006; Hyytinen and Ilmakunnas, 2007), entry into (nascent) entrepreneurship (Carroll and Mosakowski, 1987; Robinson and Sexton, 1994; Bates, 1995; Gimeno *et al.*, 1997; Davidsson and Honig, 2003; Kim *et al.*, 2006; Hyytinen and Ilmakunnas, 2007) and entrepreneurs' business performance (Bosma *et al.*, 2004).

The logic for linking prior start-up experience with new venture creation activity is that prior experience with owning and managing a business may provide basic business skills and confidence that can help to compensate for the liabilities of newness, and may therefore facilitate new market entry (Shrader *et al.*, 2000). Exited entrepreneurs may also be more capable of detecting and realizing new business opportunities.

It has been established that the same individuals exit and enter the start-up process repeatedly throughout their entrepreneurial career. In so doing, they learn about their endowment of entrepreneurial skills and may improve them. These "serial entrepreneurs" run a substantial share of new and established businesses (Westhead *et al.*, 2005). Many studies investigated the differences in characteristics and performance (at the firm and the individual level) between novice and "serial entrepreneurs" (Kalleberg and Leicht, 1991; Alsos and Kolvereid, 1998; Westhead and Wright, 1998a, 1998b; Westhead *et al.*, 2003, 2005). Evidence on performance differences is mixed; for example, Westhead *et al.* (2005) find that "serial entrepreneurs" show superior performance, whereas Westhead and Wright (1998a, 1998b) do not find such a difference.

The above arguments lead us to conjecture that experience with entrepreneurial exit may provide individuals with important human capital resources that drive (new) entrepreneurial engagement. This would suggest that a recent entrepreneurial exit positively influences the likelihood of engaging in the entrepreneurial process. It has to be acknowledged, however, that the path dependency implicit in a positive relationship between exit and re-engagement can also be the result of marginalization, whereby the formerly self-employed face greater difficulties in entering the job market than other workers.

There is a limited set of empirical investigations that focus on the determinants of entrepreneurial re-engagement, none of which includes an international comparison. Stam *et al.* (2008) analyze the factors that influence the probability that individuals will reconsider entrepreneurial activities after an exit in the Netherlands. These individuals are mainly highly educated, male and less than 40 years. Amaral *et al.* (2009) focus on the likelihood of re-entering entrepreneurship over time using Portuguese data. They find that men re-enter more quickly than women, whereas higher levels of education are likely to delay ex-entrepreneurs' decision to re-enter. The restart probability itself is the focus of Wagner's (2003) study of German business owners. In this study, the probability is found to decrease with age and risk aversion, it is higher for those who personally know a role model, and a relationship is absent for gender and education. Schutjens and Stam (2006), concentrating on the Netherlands, also find a negative age effect (on restart intentions), which they explain by lower opportunity costs for younger people, older people's need for income security, and the fact that young entrepreneurs have been brought up in a more entrepreneurial society.

When an entrepreneur experiences an exit event, this allows him or her to get involved in other entrepreneurial initiatives (DeTienne, 2010). In the case that this entrepreneurial exit coincides with a firm exit, the entrepreneur is no longer engaged in the primary ownership and

decision-making structure of the firm that has been closed. When a firm exits, resources are released that can be redeployed in new businesses (Pe'er and Vertinsky, 2008; DeTienne, 2010). The release of (entrepreneurial) human capital resources (as embedded within the entrepreneur that shut down, discontinued or quit the business) that results from an entrepreneurial exit may be redeployed in *new* or *emerging*, as well as in *existing*, entrepreneurial initiatives. For example, our sample reveals that 4.4% of all established business owners (in business for more than 42 months) experienced a recent entrepreneurial exit. This implies so-called portfolio entrepreneurship: entrepreneurs involved in parallel ventures exit one business and continue with at least one other existing business.

Business dynamics, and therefore exit decisions, have also been studied from a theoretical perspective following the very influential work of Schumpeter on creative destruction. These studies model entry and exit decisions as the result of strategic interactions between incumbents and potential entrants while taking account of a variety of determinants of success and informational limitations. Among the sources of success, which can simultaneously be at the origin of informational incompleteness, several papers have considered variants of what can be considered the entrepreneurs' ability, knowledge or talent. One example is Jovanovic (1982) where firm entry and exit result from a selection process among new firms facing costs of production that are random and differ across potential firms. These costs are unknown prior to entry, and the firm learns about them through a process based on post-entry performance. Decisions (of entry, exit, and quantity) are taken on the basis of expected profit maximization and the end result is that efficient firms survive and grow where inefficient ones decline and fail. In a broad sense, the differences in production costs can be interpreted as reflecting differences in entrepreneurial ability. Another example can be found in Lucas (1978) who expressly postulates a distribution of managerial "talent" in the population, which leads to an occupational decision between employment and entrepreneurial engagement. Jovanovic (1994) extends Lucas (1978) by allowing for the heterogeneity of workers' skills.

Another example of a model describing the strategic choices behind business dynamics is that of Landier (2005), which has the distinctions of rendering the stigma of failure endogenous and of establishing a link between entrepreneurial ability and the likelihood of exit followed by re-entry. More precisely, Landier (2005) develops a model with asymmetric information, where entrepreneurs choose whether to continue a project or to abandon it and raise funds to undertake a new project. This can be seen as a stylized description of the entrepreneurial process, where the entrepreneur's private information on the quality of the current project, together with his/her ability, the cost of capital for a new venture and the cost of capital faced by failed entrepreneurs will determine his/her choice to pursue or abandon the current project (exit). This model renders the cost of capital to failed entrepreneurs (which can be interpreted as a form of stigma of failure) endogenous and produces two types of equilibrium situations. The so-called "experimental equilibrium" is characterized by high entry and

exit rates and, in particular, by a high degree of "serial-entrepreneurialism". This dynamic equilibrium becomes more likely as entrepreneurial ability in the population increases. As a result, one of the testable implications of this model is that entrepreneurial ability in a country's population should be positively associated with the presence of "serial entrepreneurs" and the associated waves of exit and re-entry.

8.3 Data

We use individual-level data for 24 countries that participated in an adult population survey that was carried out as part of the Global Entrepreneurship Monitor (GEM)[98] in the years 2004, 2005 and 2006. Each year, a telephone or door-to-door survey on entrepreneurial activity is conducted with a random sample of at least 2,000 adults in each participating country. Our sample includes individuals from 24 countries in which surveys were conducted in 2004, 2005 and 2006. These countries are Argentina, Australia, Belgium, Brazil, Canada, Croatia, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Japan, the Netherlands, Norway, Singapore, Slovenia, South Africa, Spain, Sweden, the United Kingdom and the United States of America. The total number of observations in our sample is 348,567.

8.3.1 Entrepreneurial exit and entrepreneurial engagement

Entrepreneurial exit is a dummy variable equaling one in the case that a respondent indicates having shut down, discontinued or quit a business he/she owned and managed in the past 12 months, and zero otherwise.[99]

Entrepreneurial engagement is a categorical variable that reflects the following categories for entrepreneurial engagement:

1) No entrepreneurial engagement;
2) Potential entrepreneur (an individual believes he/she has the knowledge, skill and experience required to start a business and/or thinks there will be good opportunities for starting a business in the area he/she lives in the next six months);
3) Intentional entrepreneur (expects to start a new firm within the next three years);
4) Nascent entrepreneur (actively involved in setting up an own business);
5) Young business owner (owner and manager of a business that exists for 42 months or less);
6) Established business owner (owner and manager of a business that exists for more than 42 months).

[98] For more information, see http://www.gemconsortium.org.

[99] The GEM question explicitly states that sold businesses should not be incorporated: "*You have, in the past 12 months, shut down, discontinued or quit a business you owned and managed, any form of self-employment, or selling goods or services to anyone. Do not count a business that was sold*."

Note that one individual can belong to more than one engagement level. For instance, a person may have intentions to start a new business in the next three years and may simultaneously be an owner/manager of an established business. For the purpose of this study, each individual is assigned to the highest applicable engagement level. Hence, the imaginary person in the above example is considered as an established business owner only.

Our study specifically aims to examine whether individuals who have recently exited are more likely to be engaged in entrepreneurial initiatives than those without a recent exit experience. In this sense, our analyses serve to detect whether individuals display entrepreneurial engagement after a recent exit. While it has been made clear that "entrepreneurial exit" refers to the past year in this chapter, it should be noted that, with our data, it is not possible to determine the length of time that individuals have been engaged in the various categories. For example, we know that some nascent entrepreneurs attempt to set up a business for many years (Gartner *et al.*, 2004; Reynolds, 2007). Though at first glance it may appear that an exit situation is incompatible with engagement in an established business, it is possible for these two activities to coexist in our dataset. One possible explanation could be that the respondent only recently became involved as a co- or new owner/manager of a firm (we refer to our earlier statement that the human capital resources that result from an entrepreneurial exit may be redeployed in existing entrepreneurial initiatives). Note that it is not possible for us to detect whether a respondent has been an owner of an established business from its creation or whether he/she has acquired the status of owner/manager of an established business more recently. An alternative explanation relies on the existence of "simultaneous entrepreneurs", those who have parallel entrepreneurial ventures and could therefore combine a position as an owner of an established business with an exit from another entrepreneurial activity. The relatively high percentage (4.4%) of established owners who report an exit indicates that at least one of these explanations is relevant for the sampled population. Another confirmation of this in a multivariate setting arises from the positive and significant impact of an exit on the probability of belonging to the category of established business owners (see Section 8.5).

Table 8.1 presents the number of observations at each engagement level.[100] Additionally, for each engagement level, the number of individuals is displayed that have exited in the preceding 12 months. From a sample of 345,881, a total of 6,779 individuals (2.0%) indicate having exited within the past year. The contribution of these individuals is largest in the category of young business owners (7.1%). Although the majority of the sample consists of

[100] Survey questions on which the classification of potential entrepreneurs is based are asked to a random subset of respondents (imposed by GEM to reduce costs). Table 8.1 therefore gives a slightly distorted picture with respect to percentages of individuals without entrepreneurial engagement and potential entrepreneurs. Because each individual is assigned to the highest engagement level, percentages of other engagement levels do reflect population activities. This random selection also explains the differences between predicted probabilities of no engagement and potential engagement in Table 8.3 (and Table 8.4) and related column percentages in Table 8.1, although the sums of the percentages of these two engagement levels are comparable.

individuals that are not engaged in any entrepreneurial activity at all (48.9%), only 0.4% of them indicate having exited in the previous year. One might be tempted to conclude that a recent exit is positively related to entrepreneurial involvement. Additional evidence for this preliminary conclusion may be acquired by looking at all individuals that have recently experienced an exit. Of these 6,779 individuals, 10.1% are not engaged in entrepreneurial activity at the time of the survey compared to 49.6% for those without an exit experience, a striking difference. Differences between the two groups for all other engagement levels are also pronounced, as can be seen from Table 8.1. A further examination of the data (results not presented here) reveals that the percentages of individuals that have experienced a recent exit range from 1% to 3% in all countries, except for Argentina (9.0%), Brazil (6.2%), Australia (3.5%), France (3.2%) and Japan (0.8%) that closes this ranking.

8.3.2 Explanatory variables

To control for individual characteristics, we include a gender dummy (1 for men; 0 for women) and a variable reflecting the age of the individual (surveyed respondents are at least 18 years old). We also include the usual "age squared" to allow for a non-monotonic relationship (Grilo and Thurik, 2008). In addition, we created the following dummy variables to reflect an individual's educational attainment: some secondary education, secondary education, post-secondary education and university graduate. University graduate is used as reference category in our regressions.

Social capital refers to "the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit" (Nahapiet and Ghoshal, 1998, p. 243). Entrepreneurial social capital captures an individual's network with other entrepreneurs, as well as the resources that can be drawn from these relationships. An individual's relationship with other entrepreneurs can play a role in the decision to start a firm. For example, an individual's social network can increase alertness to business opportunities (Ardichvili *et al.*, 2003). Further, other entrepreneurs can function as role models and make entrepreneurship a more attractive career option for others. We capture entrepreneurial social capital with two dummy variables. The first, *knowing an entrepreneur*, is based on an individual's response to the question of whether he/she personally knows someone who started a new venture in the past two years (coded 1 if "yes"; 0 if "no"). The second, *informal investor experience*, is based on an individual's response to the question of whether he/she has personally invested money in the start-up of someone else's new venture in the past three years (coded 1 if "yes"; 0 if "no"). We include informal investor experience as an indicator of entrepreneurial social capital, since such experience may enable an individual to establish a network of entrepreneurs.

Table 8.1: Number of observations for entrepreneurial exit and entrepreneurial engagement. Row and column percentages are displayed between parentheses, respectively.

	No entrepreneurial exit	**Entrepreneurial exit**	**Total**
No entrepreneurial engagement	168,302 (99.6%; 49.6%)	681 (0.4%; 10.1%)	168,983 (100.0%; 48.9%)
Potential entrepreneur	117,514 (97.5%; 34.7%)	2,979 (2.5%; 43.9%)	120,493 (100.0%; 34.8%)
Intentional entrepreneur	18,023 (94.5%; 5.3%)	1,051 (5.5%; 15.5%)	19,074 (100.0%; 5.5%)
Nascent entrepreneur	7,920 (93.3%; 2.3%)	566 (6.7%; 8.4%)	8,486 (100.0%; 2.5%)
Young business owner	8,212 (92.9%; 2.4%)	630 (7.1%; 9.3%)	8,842 (100.0%; 2.6%)
Established business owner	19,131 (95.6%; 5.6%)	872 (4.4%; 12.9%)	20,003 (100.0%; 5.8%)
Total	339,102 (98.0%; 100.0%)	6,779 (2.0%; 100.0%)	345,881

Starting one's own business is a risky affair. Especially in the early years, the likelihood of failure is high: it is much higher than the risk of becoming unemployed when being wage-employed. People may refrain from starting a business because they fear that they might fail. Therefore, we also control for an individual's *fear of failure*. This is a dummy variable equaling 1 in the case that an individual has indicated that fear of failure would prevent him/her from starting a business, and 0 otherwise. A discussion of the exact interpretation of this variable is in order here. The survey question is meant to capture the extent to which the possibility of a failure would discourage entrepreneurial activity rather than to appraise whether the respondent actually assigns a high probability to failure in his current endeavor. This would proxy a form of risk aversion. However, it cannot be excluded that those having experienced a previous failure may have revised their attitudes towards risk of failure. In such cases, this variable would be influenced by the previous experience of the respondent and its interpretation requires caution. Therefore, regressions where this variable was used as explanatory variable were also performed without it (Section 8.5 shows that the results are qualitatively similar).

To control for country-specific influences, we use dummy variables for the 24 countries included in our sample. The United Kingdom is used as reference country in all regressions. Hence, the coefficients associated with the country dummy variables have to be interpreted as the impact of living in the corresponding country rather than living in the United Kingdom.

Since our data cover the years 2004-2006 we include year dummy variables to control for temporal differences, with 2004 being used as reference year. The focus of the present chapter is not on explaining country differences. However, we include these 23 country dummy

variables as the nature and the intensity of entrepreneurial activity varies across countries. Different institutional and regulatory environments provide different incentive structures for entrepreneurship (Freytag and Thurik, 2007; Wennekers *et al.*, 2007). Also, the level of economic development has consequences for the availability of entrepreneurial opportunities such that individuals will be differently distributed across the various engagement levels (Verheul *et al.*, 2006; Thurik *et al.*, 2008). Not only the distribution of individuals across the engagement levels is country-dependent, the process of entry and exit may be dependent on the specific country as well. For example, in highly dynamic and volatile emerging market economies, serial processes may be more pronounced than in less dynamic economies. And, while educational attainment may affect re-engagement after exit in higher-income countries, it may have little relevance in lower-income countries.

Some industries are more supportive of new venture creation than others (Blanchflower and Meyer, 1994; Taylor, 1996; Lin *et al.*, 2000). In addition, exit and survival rates differ substantially across industries (Brüderl *et al.*, 1992; Cressy, 1996; Gimeno *et al.*, 1997; Taylor, 1999, 2001). It has also been acknowledged that the interplay between entry and exit is determined by industry-specific factors (Johnson and Parker, 1996). Controlling for (inter-)industry variation in our analysis seems relevant. The GEM dataset allows for discrimination between industries (4-digit SIC codes). However, this information is only available for current nascent, young and established business owners. The industry from which the entrepreneurial exit took place is unknown. Therefore, we are unable to investigate in which industries re-engagement is most prevalent or between which industries transitions are most likely to occur. Descriptive statistics (not presented) show that, in particular, nascent entrepreneurs active in construction, manufacturing and retail trade were likely to have experienced a recent exit. For young and established entrepreneurs, results are less pronounced. Existing empirical evidence on the determinants of entrepreneurial (re)start reports the following concerning industry differences: Wagner (2003) does not take into account sector differences in the analysis. Stam *et al.* (2008) incorporate the industry in which the prior firm was active, but find no differences in preferences to re-enter into entrepreneurship across industries (*i.e.*, business services, construction and high-tech industries). Schutjens and Stam (2006) distinguish between firms in manufacturing and business services, but find no differences concerning restart intentions and actual restart realizations between these two industries. The results of Amaral *et al.* (2009) suggest that especially exit from the energy and construction sector is associated with a short time to re-enter.

Table 8.2 shows the sample means and standard deviations of the explanatory variables (country and year dummy variables are excluded). A closer inspection (results omitted) reveals that cross-country variation is large for *knowing an entrepreneur*, *informal investor experience*, *fear of failure* and educational attainment.

Table 8.2: Descriptive statistics for explanatory variables (country and year dummy variables are excluded; values are based on 227,512 observations).

Variable	Mean	Standard deviation
Male	0.49	0.50
Age	42.67	14.54
Knowing an entrepreneur	0.37	0.48
Informal investor experience	0.03	0.17
Fear of failure	0.37	0.48
Some secondary education	0.36	0.48
Secondary education	0.27	0.44
Post-secondary education	0.14	0.34
University graduate (reference category in regressions)	0.23	0.42

To mention a few examples, Iceland (66.0%), Croatia (46.9%) and Finland (46.8%) are characterized by high probabilities of knowing an entrepreneur, whereas Japan (31.2%), the Netherlands (28.4%) and the United States (25.2%) stand out with low chances. Being an informal investor is most prevalent in Iceland (7.1%), the United States (5.0%) and France (4.3%), and least prevalent in the United Kingdom (1.1%), Brazil (0.8%) and Japan (0.6%). Fear of failure rates are particularly high in Greece (54.3%), France (46.4%) and Spain (46.4%), whereas low rates can especially be found in Norway (23.9%), Japan (21.8%) and the United States (20.9%).

8.4 Methodology

Let X be a matrix summarizing all explanatory variables, *i.e.*, gender, age, age squared, knowing an entrepreneur, informal investor experience, fear of failure, 3 dummy variables reflecting educational attainment, 23 country dummy variables and 2 year dummy variables. This matrix also contains a row of ones to obtain intercept estimates. The observed variables entrepreneurial exit and entrepreneurial engagement are denoted by y_1 and y_2, respectively; y_1 takes the values 0 and 1 while y_2 takes the values 0,…,5.

Our analysis essentially boils down to two exercises. We start by estimating a multinomial logit model that relates entrepreneurial exit and the other explanatory variables to the various stages of the entrepreneurial process (no entrepreneurial engagement, potential, intentional, nascent, young and established entrepreneurship). This implies that we take y_2 as relevant dependent variable and y_1 and X as regressors. The probability that y_2 takes value j (j=0,…,5) is modeled as a function of y_1 and X: $\Pr(y_2 = j) = F(\gamma y_1 + X\beta_j)$, where the scalar γ and parameter vectors β_j need to be estimated. In the case of the multinomial logit model, $F(\cdot)$ is the cumulative logistic function, *i.e.*, $\Pr(y_2 = j) = \exp(\gamma y_1 + X\beta_j) / \sum_k \exp(\gamma y_1 + X\beta_k)$. Since this expression shows

that direct interpretation of the model parameters is difficult, we focus on marginal effects (Crawford *et al.*, 1998). Marginal effects measure the effect of a one unit increase of a regressor on the probability that an individual belongs to engagement level j; *i.e.*, the derivative of $\Pr(y_2=j)$ with respect to the relevant regressor. While parameter vectors β_j are estimated for only 5 engagement levels due to the assignment of a reference category, marginal effects are available for *all* engagement levels. These marginal effects are calculated at the means of the explanatory variables; *i.e.*, for the average profile of the estimation sample.

As a second exercise, we investigate the factors determining (re)engagement in the entrepreneurial process by again estimating a multinomial logit model, but *only* for individuals with a recent entrepreneurial exit experience. Hence, we restrict the sample to those having experienced an exit.

8.5 Results

Table 8.3 presents the marginal effects that result from our first exercise. The results are in line with our expectation that a positive relationship exists between entrepreneurial exit and (re)engagement. Indeed, Table 8.3 reveals that individuals who exited in the past twelve months have a higher likelihood of being involved in potential, intentional, nascent, young or established entrepreneurship than those without such an experience. More precisely, a recent exit decreases the probability of undertaking no entrepreneurial activity by 0.18 percentage points. The effect of entrepreneurial exit is of substantial magnitude for all other engagement levels as well. This can be seen from the predicted probabilities of the engagement levels that are calculated at the means of the explanatory variables. These probabilities, shown in the first row of Table 8.3, represent the probability that an "average" individual belongs to a specific engagement level.[101] To illustrate the impact of exit we observe the following: While the predicted probability of expecting to start a new firm within the next three years equals 0.06, this probability increases by another 0.05 percentage points in the case of a recent exit.

It is possible that entrepreneurial exit depends on unobserved characteristics that also determine entrepreneurial engagement.[102,103] Unobserved variables could involve variables that

[101] Note the drop in the number of observations (from 345,881 in Table 8.1 to 227,288 in Table 8.3). This difference can be attributed to the variables *knowing an entrepreneur* and *fear of failure*, whose corresponding survey questions are only presented to a randomly assigned subset of individuals.

[102] As a robustness check, we tested for a correlation between unobservables that affect both exit and engagement and whether the direct relationship between exit and engagement would still hold after taking into account such a correlation (Shaver, 2005). Therefore, we estimate the parameters of a two equation (recursive) probit model, where one equation treats entrepreneurial exit (y_1) as dependent variable. The other equation determines entrepreneurial engagement as an outcome of interest, with entrepreneurial exit appearing as regressor. For this purpose, a new variable capturing entrepreneurial engagement is generated. It is a dummy variable that takes the value 0 in the case of no entrepreneurial engagement and 1 for all other five engagement levels. In this model (a recursive probit model with an endogenous dummy regressor: entrepreneurial exit) no exclusion restrictions for the regressors are needed to establish parameter identification given that there is sufficient variation in the data (Wilde, 2000, p. 310), *i.e.*, one

by definition cannot be observed ("truly unobservables"). It is also possible that variables that could be in principle observed are not included in the model. In our case, it could be that unobserved variables relate to entrepreneurial quality. This quality may be acquired by accumulation of (entrepreneurial) human capital, but other dimensions might also reflect this quality. Thompson (2005) uses previous experience in the industry as a proxy for entrepreneurial quality and finds that this pre-entry experience has large and persistent effects on survival. We emphasized earlier that it is impossible to observe (an equivalent of) this variable.

Table 8.3 also reveals the effects of our explanatory variables: being a male and knowing an entrepreneur increase the probabilities of potential, intentional, nascent, young and established entrepreneurship. Marginal effects corresponding to established entrepreneurship in particular (0.04 in both cases relative to 0.06) stand out. Having informal investor experience increases the probabilities of intentional, nascent, young and established entrepreneurship substantially, whereas fear of failure has a convincing negative effect on these engagement levels. Educational attainment mainly distinguishes individuals without entrepreneurial engagement from those having the potential to engage in entrepreneurship, but fails to have substantial effects for all other types of entrepreneurial engagement. Parameter estimates reveal that the turning points at which the impact of age becomes negative are 48, 25, 38, 39 and 49 years respectively for potential, intentional, nascent, young and established entrepreneurship.[104] Country differences are primarily represented by large marginal effects on no entrepreneurial engagement and potential entrepreneurship, whereas differences are less pronounced for higher engagement levels. Brazil and Greece in particular perform well concerning their effects on probabilities of being in higher engagement levels. Year dummy variables only have minor impacts.

varying regressor in each equation. The model can be estimated with full information maximum likelihood (Greene, 1998, 2008, p. 823). Results show that an entrepreneurial exit experience increases the probability of being involved in entrepreneurial activity by 0.25 percentage points. We also find that the error terms of entrepreneurial exit and entrepreneurial engagement are negatively correlated. Thus, there exist unobserved variables that make individuals less likely to have experienced an exit in the past twelve months, while making them more likely to engage in the entrepreneurial process. It is not always possible to actually include such variables in a model. Even if all relevant variables that may affect dependent variables as identified by previous studies are included in a model, there is always the risk that some factor that cannot be observed or that has not been identified previously may affect both exit and engagement.

[103] The estimated marginal effect of exit on engagement will then be partly due to differences in these unobserved characteristics of individuals with and without a recent exit experience. Instrumental variables would be needed to account for the potentially endogenous nature of entrepreneurial exit. Inspection of marginal effects (and significances of these effects) of a multinomial logit model that explains entrepreneurial engagement without exit as regressor reveals that it is impossible to propose variables that are related to entrepreneurial exit but not to entrepreneurial engagement given the data at hand.

[104] These parameter estimates are not displayed here, but are available upon request from the authors.

Table 8.3: Marginal effects for each engagement level corresponding to multinomial logit regression including entrepreneurial exit as regressor (marginal effects and *p*-values of these marginal effects are displayed).

	No engagement		Engagement									
			Potential		Intentional		Nascent		Young		Established	
Predicted probability	0.28		0.55		0.06		0.02		0.03		0.06	
Entrepreneurial exit	-0.18	0.00	0.05	0.00	0.05	0.00	0.03	0.00	0.03	0.00	0.02	0.00
Male	-0.10	0.00	0.01	0.00	0.02	0.00	0.01	0.00	0.01	0.00	0.04	0.00
Age	-0.02	0.00	-0.01	0.00	0.00	0.99	0.00	0.00	0.00	0.00	0.01	0.00
Age^2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Knowing an entrepreneur	-0.18	0.00	0.04	0.00	0.05	0.00	0.03	0.00	0.03	0.00	0.04	0.00
Informal investor exper.	-0.11	0.00	-0.01	0.32	0.02	0.00	0.02	0.00	0.03	0.00	0.05	0.00
Fear of failure	0.07	0.00	0.03	0.00	-0.02	0.00	-0.02	0.00	-0.02	0.00	-0.04	0.00
Some secondary education	0.14	0.00	-0.10	0.00	-0.01	0.00	-0.01	0.00	-0.01	0.00	-0.01	0.00
Secondary education	0.07	0.00	-0.05	0.00	-0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Post-secondary education	0.05	0.00	-0.04	0.00	0.00	0.04	0.00	0.00	0.00	0.39	0.00	0.39
Argentina	-0.14	0.00	0.06	0.00	0.03	0.00	0.03	0.00	0.00	0.18	0.02	0.00
Australia	-0.11	0.00	-0.01	0.07	0.03	0.00	0.03	0.00	0.02	0.00	0.05	0.00
Belgium	0.00	0.57	0.03	0.00	0.00	0.50	-0.01	0.00	-0.02	0.00	-0.01	0.00
Brazil	-0.11	0.00	-0.18	0.00	0.14	0.00	0.01	0.00	0.06	0.00	0.09	0.00
Canada	-0.03	0.06	0.00	0.86	0.00	0.51	0.01	0.02	0.00	0.88	0.01	0.10
Croatia	-0.04	0.00	0.04	0.00	0.01	0.23	0.01	0.00	-0.01	0.03	-0.01	0.00
Denmark	-0.07	0.00	0.13	0.00	-0.01	0.00	-0.01	0.00	-0.01	0.00	-0.02	0.00
Finland	-0.04	0.00	0.04	0.00	-0.02	0.00	0.00	0.31	-0.01	0.00	0.03	0.00
France	0.22	0.00	-0.16	0.00	0.02	0.00	0.00	0.01	-0.02	0.00	-0.05	0.00
Germany	0.09	0.00	-0.09	0.00	0.00	0.26	0.00	0.27	0.00	0.47	0.00	0.97
Greece	-0.04	0.00	-0.10	0.00	0.06	0.00	0.03	0.00	-0.01	0.01	0.06	0.00
Iceland	-0.10	0.00	0.00	0.65	0.05	0.00	0.03	0.00	0.00	0.04	0.02	0.00
Ireland	-0.03	0.00	-0.03	0.00	0.01	0.09	0.01	0.00	0.00	0.07	0.03	0.00
Italy	0.10	0.00	-0.07	0.00	0.01	0.04	-0.01	0.00	-0.01	0.00	-0.01	0.00
Japan	0.33	0.00	-0.25	0.00	-0.05	0.00	-0.02	0.00	-0.01	0.00	-0.01	0.15
Netherlands	-0.03	0.00	0.05	0.00	-0.02	0.00	0.00	0.17	-0.01	0.00	0.01	0.01
Norway	0.03	0.00	-0.05	0.00	0.00	0.22	0.00	0.80	0.00	0.14	0.02	0.00
Singapore	0.22	0.00	-0.25	0.00	0.04	0.00	0.00	0.93	0.00	0.50	-0.01	0.00
Slovenia	0.07	0.00	-0.06	0.00	0.02	0.00	0.00	0.06	-0.02	0.00	-0.01	0.04
South Africa	0.11	0.00	-0.12	0.00	0.04	0.00	0.01	0.00	-0.01	0.00	-0.04	0.00
Spain	-0.05	0.00	0.07	0.00	-0.03	0.00	-0.01	0.00	0.00	0.70	0.01	0.00
Sweden	0.07	0.00	-0.01	0.09	0.00	0.17	-0.02	0.00	-0.02	0.00	-0.02	0.00
United States	0.09	0.00	-0.13	0.00	0.01	0.01	0.02	0.00	0.01	0.00	0.00	0.65
2005	-0.01	0.00	-0.02	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.02	0.00
2006	0.00	0.33	0.01	0.00	0.00	0.01	0.00	0.79	0.00	0.28	-0.01	0.00
Number of observations	227,288											
Log L	-273,993											
Log L_0	-305,192											
Pseudo R^2 (McFadden) (1-(log L/log L_0))	0.10											

Note: Reference categories: University graduate, United Kingdom, Year 2004.

Marginal effects corresponding to our second exercise (*i.e.*, estimating factors that determine (re)engagement in the entrepreneurial process for individuals with a recent exit experience) are presented in Table 8.4. In general, we find no effect of education. Even the distinction between no entrepreneurial engagement and potential entrepreneurship is no longer present. The only noteworthy observation with respect to the education variable is that lower education (less than university graduate level) reduces the probability of engaging in young business ownership.

Table 8.4 also reveals that entrepreneurial social capital is an important determining factor in engaging in entrepreneurial activity after exit: knowing an entrepreneur decreases the probability of no entrepreneurial engagement by 0.06 percentage points, whereas the informal investor experience variable is responsible for another 0.03 percentage point decrease. Surprisingly, both variables have a strong negative influence (more than 0.10 percentage points) on potential entrepreneurship, whereas knowing an entrepreneur has a positive influence on (re)engagement in all other levels. In addition, being male reduces the probabilities of not engaging in entrepreneurial activity (by 0.03 percentage points) and of potential entrepreneurship (by 0.08 percentage points), whereas it positively influences young business (marginal effect equals 0.03) and established business ownership (0.08). Fear of failure clearly is a hindering factor in entrepreneurial (re)engagement after exit. It increases the probabilities of no engagement and of potential engagement (by 0.07 percentage points), and has a negative effect on the probabilities of engagement at all other levels. A comparison of the role of this variable in this sample, which is restricted to those with recent previous exits, with the results from the full sample regression (Table 8.3) reveals similar qualitative results. This provides some confidence in the use of this variable.[105] The turning points of age equal 34, 39, 38 and 52 years respectively for intentional, nascent, young and established entrepreneurship. For potential entrepreneurship, only the linear age term has a significant influence.

While the results in Table 8.3 and Table 8.4 have a similar pattern concerning the impact of explanatory variables as discussed in the previous paragraph, country differences are more pronounced in Table 8.4 than in Table 8.3. We observe that, particularly in France, Italy, Japan and Singapore (relative to the United Kingdom), there is a strong tendency to abstain from direct entrepreneurial (re)engagement after exit. In all of these countries, the marginal effects of the corresponding country dummy variables on the probability of no involvement in entrepreneurial activity exceed 0.10. Individuals in Denmark, Finland, Slovenia and Spain (again compared to those in the United Kingdom), on the other hand, are likely to be potential reengagers in entrepreneurial activity, but marginal effects corresponding to higher levels of involvement are not high in these countries. Individuals in Argentina, Brazil and South Africa are characterized by high intentions to start a new business after exit, whereas individuals in

[105] See our discussion in Section 8.3. We have to acknowledge, however, that this is not a full proof argument that the role of fear of failure is independent of past failure experience, since exit does not necessarily imply failure.

Argentina and Croatia have the highest probability of undertaking nascent activities. Large marginal effects for Brazil and Greece in the last column suggest a high prevalence of simultaneous entrepreneurs in these countries. Again, there is little evidence for the significant influence of the year dummy variables.

Hence, in Table 8.4 a specific structure concerning country differences in the probability of (re)engagement after exit emerges: especially in lower-income countries (Argentina, Brazil, Croatia and South Africa have the lowest levels of per capita income among all countries in the dataset) serial processes seem to be much more prominent. On the other hand, it seems to be much more difficult to identify common characteristics of countries with a high probability of potential entrepreneurship after exit. The exact explanation of these country differences in terms of other (economy-specific) covariates and the potential differential impact of individual characteristics such as educational attainment remain interesting avenues for further research.

We performed a number of robustness checks. Equivalent regressions omitting the fear of failure variable lead to qualitatively similar results as currently presented in Table 8.3 and Table 8.4. Concerning the results in Table 8.3, for example, predicted probabilities and marginal effects of entrepreneurial exit and explanatory variables (excluding country and year dummy variables) do not change by more than 0.01 percentage points when omitting fear of failure. Marginal effects of country dummy variables do not change by more than 0.02 percentage points. These findings hold true for each engagement level and also apply to Table 8.4, except for the fact that marginal effects corresponding to Italy and Japan show a wider range of alterations. McFadden's R^2 measures change from 0.10 to 0.09 in both regressions.

Remember that we assign each individual to only one engagement level. Because individuals with multiple ventures have different characteristics than novice entrepreneurs (see Section 8.2), we also extend our analysis with an additional engagement level consisting of individuals that own/manage more than one business. Identifying all of these individuals is impossible, as it is only known whether someone owns/manages at least one young and at least one established business at the same time. Hence, the resulting group of 357 individuals is only a subset of all "simultaneous entrepreneurs". When comparing the results for the six engagement levels that are included in both analyses, we see that the marginal effects belonging to these six engagement levels are nearly identical. Moreover, the marginal effects corresponding to this new, seventh engagement level (and the predicted probability of this level) are practically zero. Of course, this may be caused by the low number of observations.

Table 8.4: Marginal effects for each engagement level corresponding to multinomial logit regression, only for individuals with an entrepreneurial exit experience (marginal effects and *p*-values of these marginal effects are displayed).

	No engage-ment		Engagement									
			Potential		Intentional		Nascent		Young		Established	
Predicted probability	0.07		0.50		0.15		0.08		0.08		0.13	
Male	-0.03	0.00	-0.08	0.00	0.01	0.59	0.02	0.01	0.03	0.00	0.06	0.00
Age	0.00	0.00	-0.01	0.00	0.00	0.48	0.00	0.16	0.01	0.00	0.01	0.00
Age^2	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.03	0.00	0.00	0.00	0.00
Knowing an entrepreneur	-0.06	0.00	-0.10	0.00	0.04	0.00	0.04	0.00	0.04	0.00	0.05	0.00
Informal investor exper.	-0.03	0.00	-0.11	0.00	0.02	0.31	0.03	0.01	0.01	0.47	0.09	0.00
Fear of failure	0.07	0.00	0.07	0.00	-0.03	0.00	-0.04	0.00	-0.03	0.00	-0.03	0.00
Some secondary education	0.03	0.00	0.02	0.22	0.01	0.48	-0.01	0.37	-0.04	0.00	-0.02	0.08
Secondary education	0.02	0.13	0.02	0.42	0.00	0.87	0.00	0.97	-0.02	0.01	-0.01	0.32
Post-secondary education	-0.01	0.30	0.03	0.13	0.00	0.76	-0.01	0.36	-0.02	0.08	0.00	0.89
Argentina	-0.04	0.00	-0.17	0.00	0.08	0.00	0.07	0.00	0.01	0.66	0.05	0.11
Australia	0.01	0.65	-0.08	0.04	0.02	0.45	-0.01	0.45	0.00	0.95	0.06	0.06
Belgium	-0.02	0.35	0.09	0.11	-0.03	0.36	-0.02	0.41	-0.05	0.00	0.04	0.40
Brazil	-0.03	0.00	-0.29	0.00	0.15	0.00	-0.02	0.18	0.09	0.00	0.10	0.00
Canada	-0.01	0.80	0.01	0.91	-0.01	0.91	-0.01	0.82	0.01	0.86	0.01	0.88
Croatia	0.00	0.92	-0.22	0.00	0.01	0.83	0.13	0.01	0.10	0.04	-0.02	0.62
Denmark	-0.03	0.06	0.09	0.02	0.00	0.92	-0.03	0.07	-0.03	0.04	0.00	0.98
Finland	-0.01	0.63	0.13	0.02	-0.11	0.00	-0.03	0.17	-0.02	0.43	0.05	0.26
France	0.20	0.00	-0.08	0.05	0.02	0.54	0.00	0.93	-0.05	0.01	-0.10	0.00
Germany	0.04	0.08	-0.07	0.06	0.02	0.37	-0.01	0.49	-0.01	0.54	0.03	0.33
Greece	-0.06	0.00	-0.03	0.49	-0.04	0.10	-0.05	0.00	-0.01	0.73	0.19	0.00
Iceland	-0.02	0.29	-0.07	0.14	0.04	0.24	0.05	0.06	0.03	0.33	-0.03	0.21
Ireland	0.04	0.23	-0.09	0.07	-0.04	0.27	0.00	0.96	0.02	0.61	0.07	0.09
Italy	0.12	0.00	-0.06	0.22	-0.02	0.69	0.06	0.10	-0.06	0.00	-0.04	0.21
Japan	0.22	0.00	0.00	0.95	-0.12	0.00	-0.03	0.36	-0.02	0.67	-0.05	0.27
Netherlands	0.01	0.71	0.06	0.28	-0.07	0.02	0.01	0.76	0.01	0.66	-0.02	0.55
Norway	0.02	0.54	-0.05	0.22	-0.01	0.68	-0.04	0.01	0.04	0.18	0.05	0.12
Singapore	0.10	0.00	-0.20	0.00	0.01	0.76	0.01	0.57	0.03	0.22	0.04	0.15
Slovenia	0.00	0.97	0.21	0.00	-0.02	0.67	-0.06	0.00	-0.07	0.00	-0.06	0.05
South Africa	0.01	0.69	-0.05	0.23	0.09	0.01	0.03	0.19	-0.03	0.05	-0.04	0.08
Spain	0.00	0.78	0.09	0.00	-0.09	0.00	-0.03	0.01	0.00	0.94	0.03	0.15
Sweden	0.01	0.45	0.05	0.09	0.00	0.92	-0.05	0.00	-0.02	0.07	0.01	0.48
United States	0.00	0.95	-0.14	0.00	0.00	0.93	0.05	0.06	0.06	0.05	0.04	0.28
2005	-0.01	0.08	0.00	0.80	-0.01	0.60	0.00	0.90	-0.01	0.31	0.02	0.07
2006	0.00	0.88	-0.02	0.30	0.00	0.99	-0.02	0.05	0.01	0.18	0.02	0.06
Number of observations	6,066											
Log L	-8,487											
Log L_0	-9,410											
Pseudo R^2 (McFadden) (1-(log L/log L_0))	0.10											

Note: Reference categories: University graduate, United Kingdom, Year 2004.

8.6 Concluding remarks

Where Schumpeter's theory of creative destruction revolved around the role of the entrepreneur (Schumpeter, 1934), the role of the firm seems to dominate the literature it inspired. Models of passive and active learning, capital vintage models and life cycle models concentrate on the firm rather than on the person starting it or closing it down. The present chapter focuses on the characteristics of persons from a wide variety of countries. It investigates the impact of recent entrepreneurial exit on the subsequent (re)engagement in six phases of the entrepreneurial process.

Our findings illustrate that a recent exit decreases the probability of not undertaking subsequent entrepreneurial activity, and that it mainly increases the probabilities of being a potential or intentional entrepreneur. The positive relationship with potential entrepreneurship demonstrates that people who recently experienced an entrepreneurial exit more often indicate having relevant entrepreneurial skills and more often perceive good entrepreneurial opportunities than those who did not experience an exit. This can be interpreted as support for our prediction that an exit experience increases entrepreneurial ability, thus supporting our human capital argument. It is relevant to include potential and intentional entrepreneurship, since entrepreneurial ability and intentions are important predictors of actual start-up behavior (Davidsson, 2006; Krueger *et al.*, 2000). We contribute to earlier findings by suggesting that exit may not only stimulate new entry, but may also positively affect entrepreneurial potential, intentions and even engagement in existing entrepreneurial activities. In other words, those individuals who have recently exited present an important source of entrepreneurial energy within societies.

Furthermore, we show that being a male, knowing an entrepreneur, having informal investor experience and fear of failure are important factors that influence entrepreneurial (re)engagement after recent exit. These variables also influence entrepreneurial engagement in general. Educational attainment does not seem to be relevant (see also Amaral *et al.* (2009) for an absence of an educational effect in the short run). Compared to individuals in the United Kingdom, inhabitants of Argentina, Brazil, Croatia and South Africa have a high likelihood of displaying entrepreneurial activity after exit, whereas the reverse is true for business owners in France, Italy, Japan and Singapore. We should be cautious with the interpretation of our results, as unobserved factors may exist that have (possibly opposite) effects on entrepreneurial exit and engagement. Future research should seek to identify these specific variables that may well be related to some measure of entrepreneurial quality. Variables attempting to capture this entrepreneurial quality should go beyond the factors that are used in the present study. Previous engagement (either successful or unsuccessful) in the same or a comparable industry might be one such candidate.

The path dependency of entrepreneurial activity as represented by the positive relationship between exit and re-entry begs further investigation into its underlying causes. In particular, investigating whether entrepreneurial human capital accumulation or marginalization are at

work would bring valuable insights in terms of policy implications. If indeed human capital accumulation is the main driver of this relationship, an environment that is too stringent for second chances in entrepreneurial ventures may discourage individuals with valuable knowledge and experience from bringing it to productive use. Conversely, if this relationship between exit and re-entry is the result of strong marginalization on the job market, it would mean that by pushing individuals towards new ventures due to a lack of employment possibilities, valuable resources may be lost. The fact that our dataset does not allow for a distinction between the various forms of exit, and that it cannot identify exits resulting from failure, makes it impossible to probe further into this matter. We nevertheless find the explanation based on accumulation of entrepreneurial human capital more likely for three reasons. First, marginalization would apply mainly to failure-induced exits, not all exits in our sample are of this type. Second, even among failures, for the marginalization argument to work it would require that its effect is stronger in the labor market than in the capital and product market; in other words, that failed entrepreneurs are less trusted by potential employers than by investors or clients. Third, as already indicated in this section, the positive relationship between recent exit and the conviction of having relevant entrepreneurial skills and perceiving good entrepreneurial opportunities provides support for the human capital argument.

Potential avenues for future research that explore the reasons behind the path dependency in greater depth (which the present dataset does not allow) include investigating the performance and survival of entrepreneurial ventures that are started or supported by entrepreneurs with previous exit experience. Furthermore, it is worthwhile to distinguish between different types of closure in future studies, such as successful and unsuccessful closures (Bates, 1995; Wennberg *et al.*, 2010), since the type of closure may affect the entrepreneur's decision to re-engage in entrepreneurship as well as the performance of the new or other businesses in which the entrepreneur engages. In addition, the use of different time lags may provide more insight into the relationship between entrepreneurial exit and engagement.

Chapter 9

Entrepreneurial exit, ability and engagement across countries in different stages of development

Entrepreneurial ability has been suggested to be an important predictor of entrepreneurial engagement. In this chapter we investigate the extent to which different types of recent entrepreneurial exit experiences foster entrepreneurial ability and subsequent entrepreneurial engagement. We discriminate between several exit modes and distinguish the following engagement levels: intentional, nascent, young and established entrepreneurship. We use individual-level data for 67 countries that participated in the Global Entrepreneurship Monitor during 2007, 2008 and 2009. Our findings indeed show that entrepreneurial exit directly fosters entrepreneurial engagement as well as indirectly through enhanced entrepreneurial ability. We also find that positive as well as negative exit experiences foster subsequent entrepreneurial engagement. In addition, the impacts of exit on ability and exit on engagement increase with the stage of development of a country.

9.1 Introduction

Entrepreneurship deals with individuals setting up and owning-managing their own businesses. At some point individuals will leave the firm they created or owned-managed, which marks an individual's entrepreneurial exit. Entrepreneurial exit has received limited research attention as compared to other aspects of the entrepreneurial process (DeTienne, 2010). However, it is known that there are many "serial entrepreneurs" who are engaged in sequential business start-ups (Westhead *et al.*, 2005; Hyytinen and Ilmakunnas, 2007; Plehn-Dujowich, 2010). This suggests that exiting entrepreneurs may be an important source of entrepreneurial energy. During entrepreneurial engagement individuals gain entrepreneurship-specific knowledge, skills and experience which they may re-deploy in other entrepreneurial initiatives after the exit.[106] Thus, exit can be seen as an indicator of accumulated entrepreneurial human capital such as knowledge, skills and experience (Becker, 1964). It can then be argued that a recent entrepreneurial exit enhances entrepreneurial ability and hence the likelihood of (re)engaging in the entrepreneurial process (for empirical evidence: Chapter 8 of this thesis).

Exit being an indicator of accumulated entrepreneurial human capital is not the only route that may explain why exiting entrepreneurs have an enhanced propensity of engaging in the entrepreneurial process again after exit. That is, individuals with entrepreneurial experience are more able to discover and exploit entrepreneurial opportunities (Politis, 2005; Shane, 2003; Shepherd *et al.*, 2000). Hence, experiencing an exit may cause individuals to be more alert to entrepreneurial opportunities. Entrepreneurial ability may then not only refer to entrepreneurial human capital, but also to alertness to entrepreneurial opportunities. There may be other explanations behind the tendency of people to re-engage after exit, but these will not be verified in the present chapter. For example, individuals may decide to engage in entrepreneurship after exit not so much as a result of enhanced entrepreneurial ability, but for example because they are disadvantaged at the labor market, or because opportunities for entrepreneurship are more widely available than alternative job opportunities.

Hence, the present chapter focuses on the impact of recent entrepreneurial exit on the probability of (re)engaging in the entrepreneurial process. This may happen through enhanced levels of entrepreneurial ability. Whereas entrepreneurial exit is defined as selling, discontinuing or quitting a business in the past 12 months, entrepreneurial ability is defined as having the knowledge, skill and experience required to start a business, in combination with the perception that good start-up opportunities exist in the near future. Current entrepreneurial engagement refers to four levels in the entrepreneurial process including intentions to set up a firm, nascent business activity, young business activity (less than 42 months) and established business activity (more than 42 months).

[106] These knowledge, skills and experience also benefit individuals to cope with the liability of newness (Politis, 2005; Shane and Khurana, 2003).

The exact dynamics behind the relationship between entrepreneurial exit on the one hand and entrepreneurial ability and re-engagement on the other hand has largely been ignored theoretically (Plehn-Dujowich, 2010) and empirically given the few empirical studies focusing on this path dependency. Certain factors are at play that influence the way in which entrepreneurial experience is transformed into entrepreneurial ability and entrepreneurial knowledge in particular (Politis, 2005). Although cognitive (Politis, 2005) and emotional (Shepherd, 2003) factors are clear examples, the present chapter focuses on the *quality* of the exit experience. It argues that the quality of the exit experience matters for the extent to which such an experience influences entrepreneurial ability and, subsequently, entrepreneurial (re-)engagement (Bates, 2005; Landier, 2005; Stam *et al.*, 2008).

First, the quality of the exit experience relates to the specific exit outcome. One may learn from failure (Shepherd, 2003) as well as from success, but in a different way (Politis, 2005). The present chapter takes account of seven distinct exit reasons. Some have positive connotations (sell-off; another job or business opportunity; planned exit), others more negative (unprofitable business; problems getting finance), and some can be a mixture of positive and negative outcomes (retirement; other (personal) reasons). The present chapter therefore deviates from many existing studies equating entrepreneurial exit with failure, or only making a distinction between failure and success (Bates, 2005; Wennberg *et al.*, 2010). It therefore follows the observation of DeTienne and Cardon (2010) that "(…) *exit may not be a unidimensional construct but rather may comprise many exit paths which must be specified in order to understand the construct fully*." This implies that the distinction between several exit routes is essential.

Second, the quality of the exit experience also depends on the country in which the specific entrepreneurial opportunity has been exploited. Therefore, we argue that a country's stage of development is relevant. Countries differ regarding the extent to which new and valuable opportunities for entrepreneurship are available. Especially in the present context where entrepreneurship is seen as a process that consists of successive engagement levels (such as intentions to set-up a firm and young start-up activity) a country's context is expected to be relevant. Countries in different stages of economic development differ regarding the opportunities that are available and thus individuals will be differently distributed across the engagement levels. These different opportunities will also have an effect on the nature of entrepreneurial activities (*e.g.*, high/low quality) and their economic impact (Thurik, 2009).

The remainder of this chapter is structured as follows. Section 9.2 focuses on theoretical work on the concept of entrepreneurial ability and the way ability is related to entrepreneurial (re)engagement. Whereas Section 9.3 describes the data and shows some basic descriptive numbers, Section 9.4 explains the model to be used. Section 9.5 discusses the acquired results. This chapter ends with some concluding remarks in Section 9.6.

9.2 Literature background

Entrepreneurial ability is central to many economic models of entrepreneurship (*e.g.*, Lucas, 1978; Jovanovic, 1982, 1994; Lazear, 2004, 2005). Lucas (1978) postulates a distribution of managerial "talent" in the population which leads to an occupational decision between paid employment and entrepreneurial engagement. Naturally, being more able increases the probability of being an entrepreneur. Landier (2005) has the particularity of rendering the stigma of failure endogenous and of establishing a link between entrepreneurial ability and the likelihood of exit followed by re-entry. The definition of entrepreneurial ability differs across studies. This chapter argues that entrepreneurial ability has two dimensions. First, it refers to an individual's knowledge, skills and experience. Second, an individual's alertness to entrepreneurial opportunities plays a role, following Kirzner (1973).

So far, insight into the factors that improve or hamper entrepreneurial ability is limited (Holmes and Schmitz, 1990; Naudé, 2008). One way for individuals to develop entrepreneurial ability is through an exit experience. Entrepreneurs may actually improve their entrepreneurial ability through learning processes that are associated with entrepreneurial exit, which may improve their success in new entrepreneurial activities. Still little is known about the specific conditions that impact the decision to exit and that make an entrepreneur serial, in particular in the context of developing countries (Naudé, 2008). It can be argued that the quality of the exit experience may matter for the extent to which an exit experience fosters entrepreneurial ability (Bates, 2005; Landier, 2005). Regarding the exit reason, entrepreneurial exit may not only be the result of failure; it can also be a successful outcome (Bates, 2005; Wennberg *et al.*, 2010). For example, if the firm fails an individual is perhaps less likely to develop entrepreneurial ability than in case of a more positive exit experience (*e.g.*, when the firm does not cease to exist but is sold instead). When entrepreneurial ability is a driver of entrepreneurial engagement, then the type of exit experience is also likely to indirectly affect (re-)entry into entrepreneurship. The present chapter also focuses on a country's stage of economic development. The extent to which an individual's exit experience leads to or fosters entrepreneurial ability, for example, is likely to be dependent upon the country environment. In higher income or innovation-driven countries, for example, an exit experience may be more likely to increase entrepreneurial ability than in lower income countries. The reason for this is that the quality of entrepreneurship in general may be higher in innovation-driven countries, which affects the value of the knowledge and experience obtained throughout the entrepreneurial process. Furthermore, the extent to which entrepreneurial opportunities are present may also differ for different country environments, which may influence entrepreneurial opportunity perception among individuals.

However, the impact of exit on (re)engagement in entrepreneurship does not have to run through entrepreneurial ability; it is also possible that individuals that experience an exit are more likely to (re-)enter entrepreneurship because of path dependency of different career

decisions on future career decisions or because of adverse selection; they may be limited in terms of alternative job opportunities in wage employment.

The (direct) relationship between recent exit and subsequent entrepreneurial engagement has been the focus in some empirical studies, leading to the conclusion that individuals who exit a firm often engage in the entrepreneurial process after exit (Chapter 8; Stam *et al.*, 2008; Wagner, 2003; Amaral *et al.*, 2009, although only the first study focuses on more than one engagement level), also in developing countries (Mead and Liedholm, 1998). Again there may be differences depending on the quality of the exit experience, in terms of exit reason and a country's stage of development. These two aspects have been mainly underresearched. For example, the four mentioned studies all lack an international comparison and Stam *et al.* (2008) is the only study among them that incorporates more than one exit reason.

The relationship between entrepreneurial exit and re-engagement can also be understood in the context of the Social Cognitive Theory (SCT). SCT postulates that an individual's perceived entrepreneurial ability (self-efficacy) is mainly influenced by enactive attainment (*i.e.*, experience). Bandura (1986, p. 399) states the following: "*Successes raise efficacy appraisals; repeated failures lower them* (…)." Thus, according to SCT it may be expected that an exit with a positive outcome increases self-efficacy, whereas a negative outcome has a negative impact. Note that the history of exit events also plays a role: "After a strong sense of self-efficacy is developed through repeated successes, occasional failures are unlikely to have much effect on judgments of one's capabilities" (p. 399). Empirically, Zhao *et al.* (2005) examine whether entrepreneurial self-efficacy mediates the relationship between entrepreneurial experience and entrepreneurial intentions. These authors indeed find evidence that entrepreneurial experience increases self-efficacy which again increases intentions using a sample of 265 master students. Thus, entrepreneurial experience indirectly influences the motivation to start a business via self-efficacy (see also Boyd and Vozikis, 1994; Chen *et al.*, 1998).

9.3 Data

We use individual-level data covering 67 countries that participated in an adult population survey that was carried out as part of the Global Entrepreneurship Monitor (GEM)[107] in the years 2007, 2008 or 2009. Each year, a telephone or door-to-door survey on entrepreneurial activity is conducted with a random sample of at least 2,000 adults in each participating country. The total number of observations in our sample is 445,262. Note that participation of a country in one year is enough to be included in our dataset.[108]

[107] For more information, see http://www.gemconsortium.org.

[108] For some countries, no permission was given to use 2009 data.

9.3.1 Entrepreneurial exit (type), ability, engagement, and stage of development

Entrepreneurial exit is a dummy variable equaling one in the case that a respondent indicates having shut down, discontinued, quit or sold a business (s)he owned and managed in the past 12 months, and zero otherwise.[109]

Type of exit is acquired by the most important reason individuals give for their entrepreneurial exit (only one answer possible): 1) An opportunity to sell the business; 2) The business was not profitable; 3) Problems getting finance; 4) Another job or business opportunity; 5) The exit was planned in advance; 6) Retirement; 7) Personal reasons; 8) Other reasons.

Entrepreneurial ability is a dummy variable reflecting whether an individual believes (s)he has the knowledge, skill and experience required to start a business *or* thinks there will be good opportunities for starting a business in the area (s)he lives in the next six months.

Entrepreneurial engagement is a categorical variable that reflects the following levels of entrepreneurial engagement:

1) No entrepreneurial engagement;
2) Intentional entrepreneur (expects to start a new firm within the next three years);
3) Nascent entrepreneur (actively involved in setting up an own business);
4) Young business owner (owner and manager of a business that exists for 42 months or less);
5) Established business owner (owner and manager of a business that exists for more than 42 months).

Although respondents could belong to multiple categories, we assign each individual to the highest level of entrepreneurial engagement (s)he belongs to. This is relevant because of our use of the multinomial logit model in the remainder of this chapter.

We distinguish between three *stages of economic development* between which transitions can occur. These stages are factor-driven (38,916 observations)[110], efficiency-driven (114,304)[111] and innovation-driven (292,042).[112]

[109] The exact GEM question is as follows: "*You have, in the past 12 months, sold, shut down, discontinued or quit a business you owned and managed, any form of self-employment, or selling goods or services to anyone*".

[110] The factor-driven economies are: Algeria, Angola, Bolivia, Bosnia and Herzegovina, Egypt, Guatemala, India, Jamaica, Kazakhstan, Lebanon, Morocco, Syria, Tonga, Uganda, Venezuela, West Bank & Gaza Strip, and Yemen.

[111] The efficiency-driven economies are: Argentina, Brazil, Chile, China, Colombia, Croatia, Dominican Republic, Ecuador, Hungary, Iran, Jordan, Latvia, Macedonia, Malaysia, Mexico, Panama, Peru, Romania, Russia, Serbia, Shenzhen, South Africa, Thailand, Turkey, and Uruguay.

[112] The innovation-driven economies are: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Hong Kong, Iceland, Ireland, Israel, Italy, Japan, Korea, Netherlands, Norway, Portugal, Puerto Rico, Slovenia, Spain, Sweden, Switzerland, the United Kingdom, United Arab Emirates, and the United States.

Table 9.1: Most important exit reason.

Reason	Number of observations	Percentage
An opportunity to sell the business	617	4.2
The business was not profitable	4,083	27.6
Problems getting finance	1,769	12.0
Another job or business opportunity	1,245	8.4
Exit planned in advance	460	3.1
Retirement	746	5.0
Personal reasons	2,611	17.7
Other reasons[113]	3,246	22.0
Total	14,777	100.0

When countries move from the factor-driven stage – in which production is based on primary factors of production such as land and unskilled labor – to the efficiency-driven stage, economic growth becomes more capital intensive. Technology plays a central role in the highest-income category, *i.e.*, innovation-driven. We create two dummy variables reflecting these different stages of economic development, where the group of factor-driven economies is taken as the reference category. To test whether exit (type) has differential impacts on entrepreneurial engagement and/or entrepreneurial ability, we make use of interaction terms in our models.

In total, we arrive at 14,777 individuals who have experienced an entrepreneurial exit in the past 12 months over the years 2007, 2008 and 2009. Each individual with such an experience has to specify the most important reason behind the exit. The distribution of individuals across these reasons is given in Table 9.1. It appears that most businesses are closed because they are not profitable. Also, a significant amount of individuals had problems acquiring finance for their businesses. Note that – because only one reason can be given – this does not necessarily imply that the particular business was unprofitable.

The variable entrepreneurial ability is defined for 268,924 individuals of which 176,166 (65.5%) agree with at least one statement (the other may be disagreed with or missing at all) and 92,758 (34.5%) disagree with both statements (or a disagreement with one statement and a missing for the other). The two questions that underlie the construction of our entrepreneurial ability variable are asked to a random subset of individuals. More precisely, a set of four questions of which these two statements take part of and another set of four questions were randomly proposed to individuals. This is why this number of observations is considerably lower than the total number of observations in the dataset.

[113] This category includes incidents, reasons that could not be classified, and reasons that have not been revealed by the respondent (refusal or "don't know").

9.3.2 Explanatory variables

Several control variables are used in our models explaining entrepreneurial ability and entrepreneurial engagement. In addition to gender (1 for men; 0 for women) and a linear and quadratic term of age (between 18 and 64 years old), we distinguish between the following categories of educational attainment: some secondary education (including no educational attainment at all), secondary education, post-secondary education and university graduate. University graduate is used as reference category in our regressions while we include dummy variables for the other categories.

Entrepreneurial social capital captures an individual's network with other entrepreneurs, as well as the resources that can be drawn from these relationships. An entrepreneur's social capital is captured with two dummy variables. The first, *knowing an entrepreneur*, is based on an individual's response to the question of whether (s)he personally knows someone who started a new venture in the past two years (1 if "yes"; 0 if "no"). The second, *informal investor experience*, is based on an individual's response to the question of whether (s)he has personally invested money in the start-up of someone else's new venture in the past three years (1 if "yes"; 0 if "no"). Such informal investor experience may enable an individual to establish a network of entrepreneurs.

People may refrain from starting a business because they fear that they might fail. Therefore, we also control for an individual's *fear of failure*. This is a dummy variable equaling 1 in the case that an individual has indicated that fear of failure would prevent him/her from starting a business, and 0 otherwise.

Since our data cover the years 2007-2009 we include year dummy variables to control for temporal differences, with 2007 as the reference year.

9.4 Models

Let T_j denote the type of exit, where j=1,…,8. These eight exit types correspond to those that are displayed in Table 9.1. They take value 1 if the corresponding exit type is mentioned and 0 otherwise. Entrepreneurial exit in general is denoted with E; it takes value 1 if any T_j equals 1 and 0 if all T_j equal 0.

Furthermore, A (also values 1 and 0) denotes entrepreneurial ability, which is a combination of whether an individual believes (s)he has the knowledge and skill required to start a business and whether (s)he sees good start-up opportunities in his/her residential area.

Suppose X summarizes all explanatory variables, *i.e.*, 2 dummy variables reflecting a country's stage of development, gender, age, age squared, 3 dummy variables reflecting educational attainment, knowing an entrepreneur, informal investor experience, fear of failure, and 2 year dummy variables. This matrix X also contains a row of ones to obtain intercept estimates.

Entrepreneurial engagement is denoted with Y and takes values 0,…,4 for no entrepreneurial engagement, intentional, nascent, young, and established entrepreneurship, respectively.

Our analysis basically comes down to two exercises. *First*, to assess the influence of entrepreneurial exit on an individual's ability, we explain entrepreneurial ability A in terms of entrepreneurial exit (type) and X by means of binary logit regressions. Hence, the following expressions hold: $\Pr(A=1)=F(\gamma E+X\beta_j)$ and $\Pr(A=1)=F(\Sigma\tau_j T_j+X\beta_j)$. Next, we determine whether the impacts of exit (type) (*i.e.*, γ and τ_j) depend of the level of development by including interaction terms between exit (type) and the two dummy variables representing the stage of economic development.

The *second* aim is to relate entrepreneurial exit (type) and the other explanatory variables to the various stages of the entrepreneurial process by means of multinomial logit regressions. This implies that we take Y as relevant dependent variable and E (and T_j) and X as regressors. The probability that Y takes value j (j=0,…,4) is modeled as follows: $\Pr(Y=j)=\exp(\gamma E+X\beta_j)/\Sigma_k\exp(\gamma E+X\beta_k)$ where also γE can be replaced with $\Sigma\tau_j T_j$. Again, we investigate differential impacts across stages of development by means of interaction terms. To assess the indirect influence of entrepreneurial exit on engagement through ability we also include ability A in these formulations in a next stage.

Average marginal effects are calculated. In case of dummy variables (such as A, E, and T_j) marginal effects are based on discrete differences between the two values of these variables.

9.5 Results

Some words about the significance level are in order here. The significance level denotes the maximum tolerated probability of rejecting the null hypothesis while it is true. In the present case with regression samples of about 300,000 observations, a conventional significance level of for example 1% would imply that a "false positive" already occurs 3,000 times. This is why we consider a less conservative one that considers all impacts having an associated p-value lower than 0.0001 to be significant.

9.5.1 Explanation of entrepreneurial ability

Here, we explore the link between entrepreneurial exit and entrepreneurial ability. The quality of the exit experience, in terms of the exit type and of a country's stage of development, is argued to influence this relationship between exit and ability. Binary logit regressions are performed with entrepreneurial ability A as dependent variable. First, entrepreneurial exit E is included as main independent variable, together with all other regressors in X. Importantly, we also include current entrepreneurial engagement (E) to control for the fact that being involved in some sort of entrepreneurial activity may have an impact on entrepreneurial ability.

Table 9.2: Binary logit regression of ability on exit (type).

	All	Factor	Efficiency	Innovation
Predicted probability	66.8	78.4	67.4	65.3
1) Entrepreneurial exit	16.2*	8.2*	16.0*	18.3*
2) Exit type				
Sell-off	13.6*	5.7	13.9	15.1*
Not profitable	15.4*	8.0*	16.3*	16.4*
Problems getting finance	18.6*	13.1*	18.6*	19.4
Job/business opportunity	17.8*	6.3	17.6*	20.3*
Planned exit	19.9*	8.7	17.3*	22.7*
Retirement	19.8*	8.4	18.9*	21.1*
Personal reasons	16.4*	8.7*	15.5*	19.5*
Other reasons	13.7*	4.1	13.2*	16.9*

Notes: * denotes significance at 0.0001. Only marginal effects of exit (type) are displayed.

The marginal effects of our binary logit regressions (for each stage of development) are displayed in Table 9.2. The marginal effects of entrepreneurial engagement (E) are not shown in Table 9.2. We also omit marginal effects that correspond to X.

As expected, an entrepreneurial exit increases an individual's ability, *i.e.*, by 16.2 percentage points relative to a baseline probability of 66.8 (top left number in Table 9.2). When including all exit types in our model formulation we see that corresponding marginal effects are comparable to the "overall" 16.2. Furthermore, when making the impacts of entrepreneurial exit (type) dependent on the stage of development (see columns 2-4 of Table 9.2), we note that the effect in general increases with the stage of economic development. Specifically, for factor-driven economies, the marginal effects of exit type are mostly not significant at the 0.0001 level.

9.5.2 Explanation of entrepreneurial engagement

This section reports on the impact of entrepreneurial exit (type) on current entrepreneurial engagement. Several multinomial logit regressions are performed with Y as the dependent variable. Remember that Y takes five values: no engagement, intentional, nascent, young, and established entrepreneurship.

Table 9.3 displays the marginal effects that result from multinomial logit regressions with E as independent variable and, subsequently, the various exit types T_j as independents.

Looking at the first column of Table 9.3, we see that entrepreneurial exit increases the probability of entrepreneurial engagement by 14.1 percentage points in total. Note that this is a total effect and that it includes all indirect effects that run through other variables such as entrepreneurial ability. The mediating role of ability will be further explored in the remainder of this section.

Table 9.3: Multinomial logit regression of entrepreneurial engagement on exit (type).

	No engagement	Intentional	Nascent	Young	Established
Predicted probability	68.7	11.7	5.1	5.1	9.5
1) Entrepreneurial exit	-14.1*	4.0*	4.2*	3.7*	2.1*
2) Exit type					
Sell-off	-19.6*	3.6	5.1*	4.5*	6.3*
Not profitable	-13.2*	2.8*	3.4*	3.9*	3.0*
Problems getting finance	-16.4*	5.4*	4.2*	4.3*	2.5
Job/business opportunity	-13.8*	2.7	4.9*	4.7*	1.5
Planned exit	-13.2*	0.9	3.5	2.9	6.0*
Retirement	-2.8	1.6	2.5	1.4	-2.7
Personal reasons	-12.9*	6.2*	4.4*	2.8*	-0.5
Other reasons	-15.9*	4.2*	5.0*	3.9*	2.8*

Notes: * denotes significance at 0.0001. Only marginal effects of exit (type) are displayed.

Glancing at the impacts of the exit types we note that exit through sell-off has the largest impact on entrepreneurial (re-)engagement. Large marginal effects are also found for entrepreneurs with negative business experience, such as those having difficulties with obtaining finance. Especially the large marginal effect for intentional entrepreneurship is striking in this case. Given that these financially constrained firms need not to be unprofitable (only one answer is allowed) and that owners/managers of these firms are to a large extent inclined to (re-)engage in entrepreneurship, this raises questions regarding SME support programs on access to finance.

It should also be mentioned that entrepreneurs who exited because of an unprofitable business – next to the fact that this type of exit enhances ability – are more likely to (re-)engage in entrepreneurial activities than those without such an exit experience given the significant marginal effects corresponding to each engagement level. Furthermore, especially those who quit out of personal reasons have intentions to set up a new firm in the near future. Marginal effects for the "planned" and "retirement" categories are in general unsurprisingly insignificant.

In a next exercise, we assess the differential impacts of exit (type) on entrepreneurial engagement across countries in different stages of economic development. Table 9.4 presents the marginal effects that belong to this exercise.

Again, the first row of Table 9.4 displays the predicted probabilities for each engagement level. The subsequent three rows confirm the expectation that the impact of exit on engagement depends on the stage of development: in factor-driven economies, the impact of exit is smallest. Indeed, distinguishing between the several exit types reveals that serial processes are not very pronounced in countries that are in the earliest stage of economic development. That is, most marginal effects are insignificant, except for some that belong to young entrepreneurship. For efficiency-driven economies, a wide range of marginal effects is significant.

Table 9.4: Multinomial logit regression of entrepreneurial engagement on exit (type), dependent on stage of economic development.

	No engagement	Intentional	Nascent	Young	Established
Predicted probability	68.7	11.7	5.1	5.1	9.5
1) Exit: factor	-10.3*	2.1	1.9	4.5*	1.8
Exit: efficiency	-15.5*	4.7*	5.9*	4.3*	0.7
Exit: innovation	-16.4*	5.7*	4.6*	3.4*	2.8*
2) Factor-driven					
Predicted probability	52.0	18.2	8.8	7.6	13.4
Sell-off	-8.1	0.4	1.3	-1.3	7.8
Not profitable	-9.6*	1.4	0.8	4.1*	3.3
Problems getting finance	-17.1*	5.8	2.6	6.0*	2.6
Job/business opportunity	-16.1*	1.0	3.7	4.1	7.4*
Planned exit	1.5	-11.8	2.3	3.0	5.0
Retirement	27.5	8.1	-8.0	-4.8	-22.9
Personal reasons	-7.0	4.5	1.4	3.5*	-2.4
Other reasons	-8.1	0.7	3.5	2.3	1.6
Efficiency-driven					
Predicted probability	57.0	19.3	6.8	6.7	10.2
Sell-off	-12.7	5.5	3.9	3.6	-0.2
Not profitable	-12.8*	3.5*	4.1*	3.6*	1.5
Problems getting finance	-17.6*	7.4*	5.1*	3.5*	1.6
Job/business opportunity	-17.8*	3.4	5.6*	5.9*	2.8
Planned exit	-17.6*	5.3	3.0	5.1	4.2
Retirement	-7.1	5.8	6.1*	4.0	-8.9
Personal reasons	-15.7*	8.1*	4.9*	3.2*	-0.5
Other reasons	-14.1*	4.2*	4.8*	3.3*	1.8
Innovation-driven					
Predicted probability	76.1	7.2	3.8	4.0	8.9
Sell-off	-20.3*	3.9	4.4*	4.4*	7.5*
Not profitable	-14.1*	4.2*	3.0*	2.9*	4.0*
Problems getting finance	-14.3*	5.1*	3.0*	2.5*	3.6
Job/business opportunity	-8.8*	4.4*	3.2*	2.5*	-1.3
Planned exit	-11.7*	1.8	3.4*	0.7	5.8*
Retirement	-0.3	-0.5	0.6	0.5	-0.3
Personal reasons	-11.8*	6.0*	3.9*	1.5	0.5
Other reasons	-18.0*	6.2*	3.8*	3.9*	4.1*

Notes: * denotes significance at 0.0001. Only marginal effects of exit (type) are displayed.

Another interesting aspect in these efficiency-driven economies is that the two "negative" exit types have convincing significant marginal effects on all engagement levels but established entrepreneurship. Also, exits because of personal and other reasons increase the

likelihood of (re)engaging in entrepreneurship. The results for innovation-driven economies reveal even more significant impacts of exit (type) on engagement. For example, exit through sell-off has pronounced effects on four of the five engagement levels in this case.

9.5.3 Mediating role of entrepreneurial ability

Table 9.5 presents the results of a multinomial logit regression with engagement as dependent variable and exit (type) as independent variables. Comparing these results with Table 9.3 we see that marginal effects of entrepreneurial exit in general decrease by about 30% (in case of nascent entrepreneurship) to 50% (in case of established entrepreneurship) when ability is added to the model. We also notice that ability significantly influences entrepreneurial engagement. Table 9.2 already showed the positive relationship between exit and ability. Hence, these observations imply that the impact of entrepreneurial exit on engagement also runs through ability. The same pattern can be observed for the various exit types in Table 9.5.

The role of the stage of economic development is illustrated in Table 9.6.

9.6 Concluding remarks

This study thought to enhance our understanding of the extent to which an individual's entrepreneurial exit fosters subsequent entrepreneurial ability and entrepreneurial engagement. We find support for our expectation that entrepreneurial exit directly fosters entrepreneurial engagement as well as indirectly through enhanced entrepreneurial ability. Our analysis sheds light on how the relationships between exit on the one hand and ability and engagement on the other hand may differ depending on the specific types of exit experiences as well as on a country's stage of development.

Since we suspected that the relationships between exit on the one hand and ability and engagement on the other hand depend on the type of closure (Bates, 1995; Wennberg *et al.*, 2010), we distinguish between different exit types in this study. Our results reveal that all exit types enhance ability. With respect to the relationship between exit and engagement some interesting patterns emerge. The two "negative" exit experiences have significant influences on entrepreneurial (re)engagement. That is, individuals whose business was not profitable, or who had problems getting finance, are likely to (re)engage in any stage of the entrepreneurial process. Furthermore, especially those who quit out of personal reasons are likely to have intentions to set up a new firm in the near future. Although intentions do not yet reflect actual activity they are important predictors of actual start-up behavior (Davidsson, 2006; Krueger *et al.*, 2000).

Table 9.5: Multinomial logit regression of entrepreneurial engagement on exit (type) and ability.

	No engagement	Intentional	Nascent	Young	Established
Predicted probability	66.6	12.5	5.5	5.4	10.0
1) Entrepreneurial exit	-8.7*	2.5*	2.8*	2.4*	1.0*
Ability	-26.9*	7.0*	5.9*	5.4*	8.5*
2) Exit type					
Sell-off	-13.8*	2.2	3.8*	3.5	4.4
Not profitable	-8.8*	1.4	2.7*	3.0*	1.7
Problems getting finance	-10.2*	3.6*	2.8*	3.1*	0.8
Job/business opportunity	-8.6*	1.3	3.8*	3.6 *	-0.2
Planned exit	-9.4*	0.1	2.8	2.2	4.4
Retirement	2.1	-1.0	2.0	0.6	-3.7*
Personal reasons	-8.4*	4.6*	3.2*	1.9*	-1.5
Other reasons	-11.8*	2.6*	4.4*	3.1*	1.7
Ability	-26.9*	7.0*	5.9*	5.4*	8.5*

Notes: * denotes significance at 0.0001. Only marginal effects of exit (type) and ability are displayed.

Our analysis demonstrates that it is not only important to take into account the type of exit, but that a country's stage of development also plays a role regarding the relationship between exit and ability/engagement. We find that the positive relationship between exit and ability is significant for all country groups, although the positive effect increases with stage of development. This hints at the possibly higher quality of exit experiences (or entrepreneurial experiences in general) in higher-income countries. Furthermore, we find that entrepreneurial engagement is not very pronounced among exiting entrepreneurs in countries that are in the earliest stage of economic development. Thus, higher-income economies are characterized by dynamic catch-up processes that result in numerous entrepreneurial opportunities. The result that a sell-off increases subsequent entrepreneurial engagement is only found for innovation-driven economies.

This study is prone to several limitations which provide some potential directions for future research. First, while our analysis provides indications of the interrelationships between entrepreneurial exit, ability and engagement, the cross-sectional nature makes it difficult to disentangle directions of causality. The use of longitudinal data may provide more insight into the relationship between an individual's experience with different types of entrepreneurial exit on the one hand and developments in his/her ability and engagement on the other hand. Furthermore, we focus on the impact of exit on ability and engagement. This leaves questions about performance and survival implications of entrepreneurial ventures that are started or supported by entrepreneurs with different types of previous exit experience unexploited and open for further research. In addition, our measure of entrepreneurial ability is by definition related to an individual's perception and does not necessarily fully capture the true ability of

an individual. For example, it may be the case that an individual is able to perform entrepreneurial tasks but due to a sequence of unfortunate circumstances (Jovanovic, 1982), his/her belief does not turn out to be informative about his/her true innate ability.

Table 9.6: Multinomial logit regression of entrepreneurial engagement on exit and exit type (dependent on stage of economic development) and ability.

	No engagement	Intentional	Nascent	Young	Established
1) Exit: factor	-12.7*	5.4*	4.5*	2.4*	0.5
Exit: efficiency	-12.7*	6.3*	3.7*	2.4*	0.5
Exit: innovation	-10.0*	3.5*	2.8*	2.1*	1.6
Ability	-19.2*	6.4*	4.4*	3.6*	4.7*
2) Factor-driven					
Predicted probability	54.3	17.4	8.6	7.2	12.5
Sell-off	-6.4	-0.1	1.0	-1.2	7.1
Not profitable	-7.1*	0.6	0.2	3.3*	2.9
Problems getting finance	-10.6*	3.9	1.0	4.6*	1.1
Job/business opportunity	-11.4	-0.5	3.1	3.2	5.5
Planned exit	2.3	-10.4	2.2	3.0	3.0
Retirement	29.0	2.5	-7.3	-4.2	-20.0
Personal reasons	-4.6	4.3	0.3	3.1*	-3.2
Other reasons	-7.4	1.0	3.5	1.5	1.4*
Ability	-30.8*	8.1*	8.2*	6.1*	8.4*
Efficiency-driven					
Predicted probability	55.4	20.1	7.1	7.0	10.5
Sell-off	-5.6	3.7	2.7	2.3	-3.2
Not profitable	-7.3*	0.9	3.5*	2.9*	-0.0
Problems getting finance	-10.8*	4.6*	3.7*	2.6*	-0.2
Job/business opportunity	-10.0*	0.5	4.4*	4.8*	0.2
Planned exit	-14.0	4.2	2.4	4.4	3.0
Retirement	-3.1	2.9	5.9*	3.5	-9.1
Personal reasons	-10.2*	5.6*	4.1*	2.3	-1.8
Other reasons	-9.3*	1.6	4.4*	2.7*	0.6
Ability	-30.4*	9.9*	6.9*	6.2*	7.4*
Innovation-driven					
Predicted probability	73.8	7.9	4.2	4.4	9.6
Sell-off	-16.6*	2.5	3.9*	4.0*	6.3*
Not profitable	-10.6*	3.2*	2.5*	2.3*	2.6*
Problems getting finance	-9.8*	3.7	2.5*	1.6	2.0
Job/business opportunity	-5.6	3.7*	2.8*	2.0	-2.9
Planned exit	-8.7	0.8	2.9	0.1	4.9
Retirement	5.6	-3.0	0.0	-0.6	-2.0
Personal reasons	-7.5*	4.6*	3.3*	0.4	-0.8
Other reasons	-14.7*	5.0*	3.2*	3.4*	3.0*
Ability	-25.7*	6.1*	5.3*	5.1*	9.2*

Notes: * denotes significance at 0.0001. Only marginal effects of exit (type) and ability are displayed.

Summary in Dutch (Nederlandse samenvatting)

Dit proefschrift analyseert het ondernemerschapsproces vanuit internationaal perspectief. In het kort gaat Deel I over mensen die ondernemer besluiten te worden. Waarom doen ze dat en welke factoren spelen een rol in die beslissing? En in welke landen kunnen ondernemerschapsactiviteiten het makkelijkst worden ontplooid? Deel II bekijkt de uittredingskant van het ondernemerschapsproces. Twee momenten worden onderscheiden waarop de uittreding kan plaatsvinden: vóór of na de oprichting van het bedrijf. Voorts bestudeert Deel II mensen die hebben besloten te stoppen met hun bedrijf, maar desondanks hun ondernemerschapscarrière voort willen zetten (hertoetreding).

Kortom, dit proefschrift analyseert niet alleen toetreding tot ondernemerschap, maar bestudeert ook twee andere elementen van het ondernemerschapsproces, namelijk uittreding en hertoetreding. Daarnaast introduceert dit proefschrift een ander dynamisch element: het ziet de beslissing om ondernemer te worden als een proces dat bestaat uit verschillende stappen. Deze fases van betrokkenheid in het ondernemerschapsproces variëren van geen enkele affiniteit met ondernemerschap tot het hebben van intenties, het ondernemen van serieuze stappen, en jong en gevestigd ondernemerschap. Het doorlopen van deze fases kan metaforisch worden aangeduid met het 'beklimmen van de ondernemerschapsladder'. Het onderscheid tussen stappen verschaft meer duidelijkheid over de factoren die een rol spelen bij de beslissing om tot toetreding, uittreding of hertoetreding over te gaan.

Motivatie

Waarom is het interessant het ondernemerschapsproces zo grondig te analyseren? *Ten eerste* zijn wetenschappers en beleidsmakers het met elkaar eens dat ondernemerschap een grote rol speelt bij de creatie van banen, het bewerkstelligen van een betere concurrentiepositie en uiteindelijk het genereren van economische groei in een land. Daarnaast is aangetoond dat ondernemerschap persoonlijk gezien een positieve rol speelt, bijvoorbeeld als het gaat om (werk)tevredenheid. Tevens heeft men laten zien dat ondernemerschap van belang kan zijn in het herstelproces van een economie.

Ten *tweede* is er vanuit beleidsinstanties veel interesse in de factoren die van invloed zijn op toetreding tot en uittreding van ondernemerschap. De Lissabon Strategie (2000), nieuw leven ingeblazen in 2005 en inmiddels omgedoopt tot de Europa 2020 Strategie, is hier een duidelijk voorbeeld van. Het laat zien dat de Europese Unie interesse heeft in het creëren van voorwaarden die het (her)toetreden tot ondernemerschap stimuleren. Dit proefschrift beoogt beleidsbepalers hierin te helpen.

Dit proefschrift neemt uitvoerig subjectieve percepties over de omgeving in ogenschouw, zoals in hoeverre een individu het moeilijk vindt een bedrijf te starten vanwege administratieve barrières of vanwege de moeilijkheid om aan financiële middelen te komen. Deze percepties kunnen door overheden beïnvloed worden en vormen dus een belangrijk middel om de posities van individuen in het ondernemerschapsproces te wijzigen. Wanneer bijvoorbeeld blijkt dat bepaalde percepties leiden tot een verminderde doorstoom op de ondernemerschapsladder, kan men actie ondernemen om die doorstroom te versoepelen. Een ander voorbeeld behelst de onderparticipatie van vrouwen in ondernemerschap. Alhoewel de participatie van vrouwen in ondernemerschap recentelijk aanzienlijk is gestegen, hebben vrouwen in veel landen nog steeds een achterstand op mannen. Vrouwen vormen dus een interessante groep voor beleidsmakers om het ondernemerschapklimaat een impuls te geven, niet in de laatste plaats omdat diversiteit (in termen van geslacht, etniciteit of opleiding) in de ondernemerschapswereld een belangrijke rol speelt voor de economische positie van een regio. De uitsplitsing in stappen op de ondernemerschapsladder laat precies zien waar vrouwen achterlopen op mannen. Dit leidt tot interessant beleidsmateriaal. Achterstanden op het gebied van intenties moeten bijvoorbeeld anders aangepakt worden dan achterstanden op het gebied van bedrijfsprestaties.

Kortom, dit proefschrift geeft op een aantal manieren nieuwe inzichten op het gebied van ondernemerschap die relevant zijn voor beleidsbepalende instituten en opleidingsinstituten. De datasets bevatten relevante factoren vanuit beleidsoogpunt (bijvoorbeeld percepties, verschillen man/vrouw of opleidingsniveau) die een rol spelen in de verschillende overgangen tussen de stappen in het ondernemerschapsproces. De unieke uitsplitsing tussen deze stappen is belangrijk omdat er precies in kaart kan worden gebracht in welke fase(s) individuen over- of ondervertegenwoordigd zijn. Overheden kunnen op specifieke plekken op de ondernemerschapsladder actie ondernemen om de doorstroom van (potentiële) ondernemers op die

ladder te versoepelen. Wanneer men actief en effectief het ondernemerschapsproces wil beïnvloeden moet men weten waar de knelpunten liggen en daar beleid voeren.

Bijdrage

Dit proefschrift verschaft op drie manieren nieuwe kennis op het gebied van toetreding tot en uittreding van het ondernemerschapsproces. Zoals we al hebben gezien, is deze nieuwe kennis relevant voor onder anderen beleidsmakers.

Ten eerste richten veel onderzoeken op het gebied van determinanten van ondernemerschap zich op één enkele fase in het ondernemerschapsproces. Deze statische benadering houdt in dat er bijvoorbeeld alleen gekeken wordt naar de mensen die aangeven intenties te hebben om ondernemer te worden. In werkelijkheid is de beslissing om ondernemer te worden niet zo statisch als veel onderzoeken doen geloven. Daarom bekijkt dit proefschrift de beslissing om ondernemer te worden vanuit een dynamisch, stapsgewijs, oogpunt. Deze stappen variëren van geen enkele affiniteit met ondernemerschap tot het hebben van intenties, het ondernemen van serieuze stappen, en jong en gevestigd ondernemerschap. Bij het doorlopen van de benodigde stappen beklimt men de zogenaamde "ondernemerschapsladder". Een dergelijke dynamische benadering verschaft veel relevante informatie over waarom mensen besluiten ondernemer te worden. Daarnaast laat dit proefschrift zien dat het onderscheid tussen de verschillende stappen ook essentieel is bij de bestudering van de twee overige elementen van het ondernemerschapsproces: uittreding en hertoetreding.

Op een gegeven moment zullen ondernemers van de ondernemerschapsladder vallen. Een *tweede* bijdrage van dit proefschrift behelst daarom een uitvoerige analyse van de uittredingskant van ondernemerschap op individueel niveau. Zo'n analyse is tot op heden onderbelicht gebleven. Er is vooral niet in kaart gebracht wat de bepalende factoren zijn van uittreding vóór bedrijfsoprichting. Deel II van dit proefschrift geeft daarom onder andere antwoord op de volgende vragen. Welke mensen lukt het niet hun intenties of stappen te vertalen naar een daadwerkelijke oprichting van een bedrijf? En wat zijn de factoren die bepalen of men het ondernemerschapsproces uiteindelijk verlaat?

Nadat men het ondernemerschapsproces heeft verlaten, doet zich een keuze voor: ga ik op zoek naar een reguliere baan of probeer ik wederom ondernemer te worden? Laatstgenoemde mogelijkheid is slechts door een handvol studies onderzocht, terwijl er dikwijls is aangetoond dat dezelfde mensen het ondernemerschapsproces verlaten en weer toetreden (serieel ondernemerschap). Dit proefschrift is dus vernieuwend in de zin dat het de uittredingskant en hertoetredingskant van ondernemerschap op individueel niveau belicht in Deel II.

Ten derde onderscheidt dit proefschrift zich door alle relaties door een internationale bril te bekijken. Waar zijn mensen in staat de ondernemerschapsladder snel te beklimmen? En waar zijn de kansen op uittreding en hertoetreding het grootst? Een dergelijke internationale focus

ontbreekt dikwijls in huidige onderzoeken. Neem als voorbeeld bestaande studies op het gebied van hertoetreding tot ondernemerschap. Naast het feit dat ze geen onderscheid maken tussen de verschillende fases in het ondernemerschapsproces, zijn ze vaak louter van nationale aard.

Een internationale analyse is belangrijk omdat landen en regio's erg heterogeen zijn voor wat betreft de kansen die zij bieden voor het ontplooien van ondernemerschapsactiviteiten. Het is erg belangrijk een duidelijk internationaal vergelijkend beeld te scheppen van het ondernemerschapsklimaat om beleidsmaatregelen te ontwikkelen die de ondernemerschapsactiviteit van individuen stimuleren. Wanneer blijkt dat mensen in verschillende landen tegen minder of andere barrières aanlopen in een bepaalde ondernemerschapsfase, kunnen landen en regio's van elkaar leren ('*best practices*').

Belangrijkste bevindingen per hoofdstuk

Hoofdstukken 2, 3 en 4 bestuderen de overgangen tussen de fasen in het ondernemerschapsproces. Deze fasen zijn 1) Mensen die nimmer hebben gedacht aan een ondernemerschapscarrière; 2) Mensen die intenties hebben om ondernemer te worden; 3) Mensen die actief stappen aan het nemen zijn om ondernemer te worden; 4) Jonge ondernemers; en 5) Gevestigde ondernemers. Hoofdstukken 2, 3 en 4 analyseren de relaties tussen individuele en omgevingsfactoren met de kans om een overgang te maken tussen de stappen op de ondernemerschapsladder.

Resultaten laten zien dat het inderdaad belangrijk is onderscheid te maken tussen deze stappen, zowel op individueel als op landsniveau. Vrouwen hebben meer moeite met het beklimmen van de ondernemerschapsladder dan mannen, maar vrouwen krijgen het relatief makkelijker zodra ze hogere tredes op de ondernemerschapsladder bereiken. Om precies te zijn, vrouwen blijken vooral minder vaak een ondernemerschapscarrière te overwegen en minder vaak serieuze stappen te ondernemen. Verschillen als het gaat om de realisatie van die stappen naar een daadwerkelijke oprichting blijken veel minder groot te zijn.

Daarnaast spelen percepties van administratieve barrières vooral een belemmerende rol in de twee eerste fases van ondernemerschap (het hebben van intenties en het ondernemen van stappen). Met andere woorden: negatievere percepties gaan gepaard met meer problemen op de ondernemerschapsladder. Dit resultaat geldt alleen voor Europese landen en is zelfs sterker in voormalige Oost-Europese transitie-economieën. In deze Oost-Europese landen is het daarnaast zo dat de kans om een hogere trede op de ondernemerschapsladder te bereiken afneemt zodra men vindt dat er niet genoeg startinformatie aanwezig is.

We vinden enorme landenverschillen op de ondernemerschapsladder. Deze kunnen voornamelijk toegeschreven worden aan het risicogedrag van inwoners. Landen met risicomijdende inwoners lopen over het algemeen achter op landen met risicozoekende inwoners.

Daarnaast lopen China en de VS voorop op het gebied van intenties en het ondernemen van stappen, maar verliezen hun voorsprong op hogere treden op de ondernemerschapsladder.

In **Hoofdstuk 5** komt het vraagstuk aan bod in hoeverre Europese bedrijven het makkelijk of moeilijk vinden om geld te lenen bij banken. Het blijkt dat percepties van de toegankelijkheid tot leningen verlicht kunnen worden door een betere balans in de informatievoorziening tussen het bedrijf dat de lening aangaat en de verstrekker van de lening (verminderen van asymmetrische informatie). Vooral jonge bedrijven (jonger dan tien jaar en dus met een beperkt leenverleden) en bedrijven met weinig omzet vinden het moeilijker om aan geld te komen. De eigenaarstructuur van een bedrijf beïnvloedt percepties niet, evenmin als het aantal werknemers binnen een bedrijf. Er bestaan enorme verschillen tussen landen met betrekking tot 'leenpercepties'. Terwijl Duitse bedrijven zeer pessimistisch zijn over de toegankelijkheid van bankleningen, geldt een geheel ander verhaal voor Estland en Finland. Verschillen kunnen voornamelijk verklaard worden door de mate van concentratie in de bankensector: een hogere concentratie (een klein aantal bankinstellingen heeft samen een groot marktaandeel) wordt gerelateerd aan een naar eigen zeggen makkelijker toegang tot bankleningen. Ook zijn er bijvoorbeeld in Finland veel programma's om bankleningen aan midden- en kleinbedrijven te stimuleren.

Hoofdstuk 6 richt zich op twee manieren om ondernemer te worden: het overnemen van een bestaand bedrijf of het starten van een nieuw bedrijf. Het overnemen van een bestaand bedrijf kan beschouwd worden als minder risicovol, minder ondernemend en minder spannend. De determinanten van deze ondernemerschapskeuze zijn zelden onderzocht. Toch is het vanuit beleidsmatig oogpunt een relevant onderwerp. Veel bedrijfseigenaren zijn namelijk op zoek naar geschikte opvolgers. Een rapport van de Europese Commissie uit 2006 laat zien dat ongeveer een derde van alle Europese ondernemingen een overnamekandidaat nodig heeft in de volgende tien jaar. Daar komt nog bij dat de economische waarde van bedrijven verloren gaat indien bedrijfseigenaren geen geschikte overnamekandidaat vinden. Dit zou negatieve gevolgen kunnen hebben voor het aantal banen en economische ontwikkeling. Dit hoofdstuk richt zich op de vraag hoe individuele en omgevingsfactoren gerelateerd zijn met de voorkeur om een bedrijf over te nemen of om een nieuw bedrijf te beginnen.

We vinden dat de voorkeur voor het overnemen van een bedrijf daalt met opleiding en stijgt met leeftijd. Daarnaast hebben risicozoekende mensen en innovatiegeoriënteerde mensen een voorkeur om een nieuw bedrijf te starten. We vinden veel landenverschillen, zelfs nadat we controleren voor alle individuele kenmerken. Het blijkt dat een overname vooral in Japan, Zuid-Korea en in een aantal Europese voormalige transitie-economieën de gewenste voorkeur is. We verklaren deze landenverschillen voornamelijk door culturele variabelen zoals risicoaversie of de mate waarin falen wordt gestigmatiseerd.

In **Hoofdstuk 7** wordt de uittredingskant van ondernemerschap onderzocht. We richten ons op twee specifieke momenten: vóór bedrijfsoprichting ("imaginaire markten") en na bedrijfs-

oprichting ("reële markten"). Het blijkt dat beide typen uittreding verschillende determinanten hebben. Zo verlagen persoonlijke eigenschappen als risicotolerantie en het hebben van ondernemende ouders de kansen op uittreding van imaginaire markten (vóór bedrijfsoprichting) en de kans op bedrijfsmislukking. Urbanisatie heeft een negatieve relatie met uittreding van imaginaire markten, maar een positieve relatie met uittreding van reële markten. Daarentegen is het wonen in Corporatistische en Zuid-Europese welvaartsstaten positief gerelateerd aan uittreding van imaginaire markten, maar negatief gerelateerd aan uittreding van reële markten.

De **Hoofdstukken 8 en 9** richten zich op de relatie tussen uittreding en hertoetreding. Zogenaamde seriële ondernemers staan dus centraal in deze hoofdstukken, dat wil zeggen: mensen die besluiten hun huidige ondernemerschapsactiviteiten stop te zetten en zich opnieuw in de ondernemerschapswereld te begeven. Hoofdstuk 8 laat zien dat dit inderdaad een regelmatig voorkomend fenomeen is. Een recente uittreding verhoogt de kans om intenties te hebben, stappen te ondernemen of om een jong of gevestigd bedrijf te hebben aanzienlijk. Degenen met een uittredingservaring vormen dus een belangrijke bron van nieuwe ondernemerschapsenergie. Vooral mannen, mensen die een ondernemer kennen, en (niet verrassend) mensen met een lage angst om te falen, hebben een hoge kans om opnieuw toe te treden tot het ondernemerschapsproces. Opleiding daarentegen speelt geen relevante rol.

Hoofdstuk 9 probeert de bevindingen van Hoofdstuk 8 beter te interpreteren. We beargumenteren namelijk dat de relatie tussen uittreding en hertoetreding afhangt van de kwaliteit van de uittreding. Hiertoe maken we onderscheid tussen acht uittredingsredenen. Sommige hebben een positieve associatie (bedrijf verkocht, andere bedrijfs- of baanmogelijkheid, exit was gepland), terwijl andere negatiever van aard zijn (niet winstgevend, geldproblemen). Ook beargumenteren we dat het land waarin de uittreding heeft plaatsgevonden een rol speelt. De resultaten laten zien dat uittreding niet alleen een direct effect heeft op hertoetreding, maar dat het ook indirect een rol speelt via '*entrepreneurial ability*'. Dit indirecte effect wordt ingegeven door het feit dat men ondernemerschapsspecifieke kennis en ervaring opdoet hetgeen weer gebruikt kan worden in volgende ondernemerschapsinitiatieven. Daarnaast zien we dat een uittreding die voortvloeit uit een verkocht bedrijf de sterkste relatie heeft met de kans op hertoetreding. Maar we vinden ook positieve relaties tussen de twee negatieve bedrijfservaringen (niet winstgevend, geldproblemen) en hertoetreding. Tot slot zijn seriële processen nauwelijks aanwezig in landen met de laagste economische ontwikkeling.

Conclusie

Dit proefschrift heeft drie essentiële elementen van het ondernemerschapsproces nader onderzocht: toetreding, uittreding (vóór of na bedrijfsoprichting) en hertoetreding. We hebben gezien dat het belangrijk is om onderscheid te maken tussen verschillende stappen in het ondernemerschapsproces. We hebben ook onderscheid gemaakt tussen twee mogelijkheden

om een bedrijf te starten: het overnemen van een bestaand bedrijf en het starten van een nieuwe. Daarnaast zijn uittreding vóór en na bedrijfsoprichting van verschillende factoren afhankelijk.

Wat kunnen we vanuit beleidsoogpunt van dit proefschrift opsteken? Ten eerste vinden we in de Hoofdstukken 2, 3 en 4 dat de percepties van administratieve barrières en gebrek aan startinformatie negatief gerelateerd zijn aan het vormen van intenties en het nemen van stappen (vooral in Europese landen). Dit is een signaal dat informatie transparanter en meer panklaar moet worden gemaakt voor potentiële ondernemers. Men kan zich richten op het aanpakken van verkeerde percepties of het direct verlagen van de betreffende barrières.

De bevinding in Hoofdstuk 7 dat urbanisatie een negatieve relatie heeft met uittreding van imaginaire markten en een positieve relatie op uittreding van reële markten duidt op de aanwezigheid van overoptimistische ondernemers in die regio's. Potentiële ondernemers zouden er voorzichtig op attent kunnen worden gemaakt dat er sterke selectiemechanismen aanwezig zijn in deze regio's en dus relatief hoge kansen op bedrijfsmislukkingen. Een goede voorbereiding op het starten van een bedrijf is dus bittere noodzaak in deze regio's.

De Hoofdstukken 8 en 9 laten zien dat er een sterke neiging bestaat om terug te keren in het ondernemerschapsproces nadat men is uitgetreden. Dit is van toepassing op zowel positieve als negatieve ondernemerschapservaringen. Deze bevinding doet vermoeden dat ondernemers zeer toegewijd zijn en zich niet zomaar uit het veld laten slaan. Daarnaast laat Hoofdstuk 8 zien dat een lage angst om te falen helpt om terug te keren in ondernemerschap, terwijl bijvoorbeeld opleiding geen rol speelt. Tegelijkertijd roept de terugkeer van degenen die geen geld konden krijgen (maar niet per se een failliet bedrijf hadden) de vraag op of het niet zonde is dat zij hun oorspronkelijke ondernemerschapsactiviteiten geen vervolg hebben kunnen geven. Er is immers economische waarde van het oorspronkelijke bedrijf verloren gegaan.

Hoe kunnen landen van elkaar leren? Het blijkt dat landenverschillen op de ondernemerschapsladder onder andere verklaard kunnen worden door de aanwezigheid van financiële barrières omtrent het starten van een bedrijf in een land. Deze bevinding staat in schril contrast met het feit dat individuele *percepties* geen rol spelen in het bereiken van een hogere trede op de ondernemerschapsladder.[114] Op financieel gebied zijn er daarnaast veel landenverschillen voor wat betreft de perceptie van de toegankelijkheid van bankleningen. Dit is enerzijds gerelateerd aan de hoge concentratie in de bankensector (een beperkt aantal banken met een groot gezamenlijk marktaandeel). Anderzijds speelt de aanwezigheid van MKB-initiatieven die zich richten op financieringssteun vermoedelijk een rol.

[114] Ter herinnering: onder percepties verstaan we in hoeverre personen het moeilijk vinden een bedrijf te starten vanwege administratieve barrières, vanwege de moeilijkheid om aan financiële middelen te komen of vanwege het gebrek aan startinformatie. We scharen persoonlijkheidskenmerken hier niet onder, zoals in hoeverre een individu bereid is risico's te nemen of in hoeverre hij/zij falen stigmatiseert.

Hoofdstuk 6 concludeert onder andere dat overheden zich bewust moeten zijn van de behoefte aan overnamekandidaten. Ze moeten aan deze vorm van ondernemerschap meer ruchtbaarheid geven onder de bewoners en het overnameproces makkelijker en transparanter maken. Daarnaast is het zo dat Europese landen enorm verschillen voor wat betreft de implementatie van suggesties om het overnameproces toegankelijker te maken.

Ten slotte laat Hoofdstuk 7 zien dat prille ondernemerschapsinitiatieven in bepaalde landen wellicht te gemakkelijk worden beëindigd. Het wonen in Corporatistische en Zuid-Europese landen (in vergelijking met Scandinavische, Angelsaksische en Oost-Europese landen) is namelijk positief gerelateerd aan uittreding van imaginaire markten, maar negatief gerelateerd aan uittreding van reële markten. Dit duidt op mogelijke actie van overheden om hun burgers erop te wijzen dat ze moeten volharden in hun ondernemerschapsinitiatieven.

Thesis in short

English

This thesis deals with the entrepreneurial process from an international perspective. The first part explores which people decide to enter entrepreneurship. A distinction is made between two modes of entrepreneurial entry: taking over an existing firm and starting a new firm. The second part focuses on the exit side and examines the determinants of exit before and after business start-up. In addition, the decision to re-enter entrepreneurship after having experienced an entrepreneurial exit is analyzed in this second part.

This thesis is of particular interest to policymakers, partly due to its dynamic approach. That is, this thesis distinguishes between several stages that make up the decision to become an entrepreneur. The stages range from no entrepreneurial activity to intentional, nascent, young, and established entrepreneurship (the "entrepreneurial ladder"). The conclusions of this thesis may help governments to intervene at positions on the entrepreneurial ladder where certain characteristics, such as perceptions about the entrepreneurial environment, hinder entrepreneurial progress or where regions lag behind.

We find that people with pessimistic views about the administrative start-up environment are discouraged in having intentions or undertaking attempts to set up their own businesses (particularly in Europe). Policies should be aimed at tackling inflated perceptions of administrative barriers (in case of misperceptions of the environment) or directly lowering these barriers. Exit before start-up and exit after business start-up have different determinants. For example, urbanization is negatively related to exit before start-up and positively related to exit after start-up. This finding points at the presence of overoptimistic entrepreneurs and strong selection mechanisms in these areas. Furthermore, individuals are inclined to enter the entrepreneurial process again after having experienced an exit. This finding holds true for positive as well as negative exit experiences.

Nederlands

Dit proefschrift analyseert het ondernemerschapsproces vanuit internationaal perspectief. In het eerste gedeelte worden de factoren onderzocht die een rol spelen bij de beslissing om ondernemer te worden. Daarbij wordt ook onderscheid gemaakt tussen twee manieren om ondernemer te worden: het overnemen van een bestaand bedrijf en het starten van een nieuw bedrijf. Het tweede gedeelte bekijkt de uittredingskant, zowel vóór als na bedrijfsoprichting. Ook hertoetreding tot ondernemerschap komt aan bod in dit tweede gedeelte: mensen die na het stoppen van hun bedrijf hun ondernemerschapscarrière voortzetten.

Vanuit beleidsoogpunt is dit proefschrift zeer interessant. Dit komt mede door de dynamische benadering: de beslissing om ondernemer te worden wordt gezien als een proces dat bestaat uit verschillende fases. Deze fases variëren van geen enkele affiniteit met ondernemerschap tot het hebben van intenties, het nemen van stappen en jong en gevestigd ondernemerschap (de 'ondernemerschapsladder'). Met behulp van de conclusies uit dit proefschrift kunnen overheden op specifieke plekken op de ladder actie ondernemen om de doorstroom van ondernemers te versoepelen.

We vinden dat de perceptie van administratieve barrières negatief gerelateerd is aan het vormen van intenties en het nemen van stappen (vooral in Europese landen). Administratieve procedures moeten dus verlicht en transparanter gemaakt worden. Verder hebben uittreding vóór en na bedrijfsoprichting verschillende determinanten. Urbanisatie is bijvoorbeeld negatief gerelateerd aan uittreding vóór oprichting, maar positief gerelateerd aan uittreding na oprichting. Dit duidt op overoptimistische ondernemers en sterke selectiemechanismes in deze regio's. Resultaten laten verder zien dat er een sterke neiging bestaat om terug te keren in het ondernemerschapsproces nadat men is uitgetreden. Dit geldt voor zowel positieve als negatieve uittredingsredenen.

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THE ENTREPRENEURIAL PROCESS
AN INTERNATIONAL ANALYSIS OF ENTRY AND EXIT

This thesis deals with the entrepreneurial process from an international perspective. The first part explores which people decide to enter entrepreneurship. A distinction is made between two modes of entrepreneurial entry: taking over an existing firm and starting a new firm. The second part focuses on the exit side and examines the determinants of exit before and after business start-up. In addition, the decision to re-enter entrepreneurship after having experienced an entrepreneurial exit is analyzed in this second part.

This thesis is of particular interest to policymakers, partly due to its dynamic approach. That is, this thesis distinguishes between several stages that make up the decision to become an entrepreneur. The stages range from no entrepreneurial activity to intentional, nascent, young, and established entrepreneurship (the "entrepreneurial ladder"). The conclusions of this thesis may help governments to intervene at positions on the entrepreneurial ladder where certain characteristics, such as perceptions of the entrepreneurial environment, hinder entrepreneurial progress or where regions lag behind.

We find that people with pessimistic views about the administrative start-up environment are discouraged in having intentions or undertaking attempts to set up their own businesses (particularly in Europe). Policies should be aimed at tackling inflated perceptions of administrative barriers (in case of misperceptions of the environment) or directly lowering these barriers. Exit before start-up and exit after business start-up have different determinants. For example, urbanization is negatively related to exit before start-up and positively related to exit after start-up. This finding points at the presence of overoptimistic entrepreneurs and strong selection mechanisms in urban areas. Furthermore, individuals tend to enter the entrepreneurial process again after having experienced an exit. This finding holds for positive as well as negative exit experiences.

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