



**“DIVERSITY IN  
ENTREPRENEURSHIP”**

***3<sup>rd</sup> Inter-RENT Online Publication***

***Editor***  
**David Urbano**

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and Entrepreneurship (ECSB)**

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# Diversity in entrepreneurship (Editorial)

*David Urbano*

## **The Inter-RENT Workshop 2006**

The idea for the Inter-RENT workshop came originally from the Board of the ECSB and was developed by the ECSB secretariat together with a group of ECSB members (such as the editors of the first Inter-RENT publication, Tom Cooney and Pasi Malinen). The objective behind Inter-RENT was to increase co-operation and networking of entrepreneurship researchers between various RENT-conferences. A forum was created and as an output, a new online journal is published annually which deal with a specific topic each year. The organizers of Inter-RENT are nominated based upon their expertise regarding the selected topic for the year and therefore the organizer(s) will change on a yearly basis.

For Inter-RENT 2006, a total of ten RENT conference papers that were presented at the RENT 2005 Conference in Naples participated in the process. The theme of the publication was 'Diversity in Entrepreneurship' since a substantial number of good quality papers had been presented on the theme at the conference.

Once the papers had been identified, the process began with an internal peer review of the papers. Each participant was asked to review two of the papers, which meant that each author would receive feedback from two of their peers, plus they would develop their own editing skills by reviewing other papers. Each author was then asked to revise their paper based upon the feedback received from their peers. After this, expert referees from the Autonomous University of Barcelona (Spain) were selected based on their specific expertise in entrepreneurship and small business research as related to the different papers. Their comments and feedback on how to improve the papers were incorporated by authors into the next revision.

Finally, a small committee which consisted of the initiator of Inter-RENT, Dr. Tom Cooney, last year's Inter-RENT chair Prof. Friederike Welter, the upcoming chair for 2007, Professor Olivier Torres, and ECSB Executive Secretary Kaisu Paasio, have been reviewing all papers for this electronic best-paper selection of Inter-RENT.

Inter-RENT 2006 built on the previous year's experiences, and several persons were involved to make it a success. This includes the authors, who contributed to the process, and Kaisu Paasio, who held lead responsibility for the website and support throughout the all Inter-Rent process.

Our thanks also go to those who were involved in refereeing and selecting the papers. Their active participation and guidance is highly appreciated. The referees of the Inter-RENT were (in alphabetical order):

- Dr. Thomas M. Cooney, Dublin University of Technology, Ireland
- Dr. Kaisu Paasio, University of Turku, Finland
- Dr. Àlex Rialp, Autonomous University of Barcelona, Spain
- Dr. Josep Rialp, Autonomous University of Barcelona, Spain
- Dr. Christian Serarols, Autonomous University of Barcelona, Spain
- Dr. Núria Toledano, Autonomous University of Barcelona–University of Huelva, Spain
- Dr. Olivier Torres, E.M. Lyon, France
- Dr. Yancy Vaillant, Autonomous University of Barcelona, Spain
- Prof. Friederike Welter, University of Siegen, Germany

## The Inter-RENT 2006 Best Papers

This online publication consists of 3 papers covering very relevant topics in “Diversity in Entrepreneurship” research, specifically themes concerning rural, ethnic, women, and academic entrepreneurship, that we believe will become of very great interest not only for both academics and practitioners, but also for policy makers in the field of entrepreneurship and SMEs.

The first paper ***“The University and the spin-off process- A dynamic capability approach”*** (Einar Rasmussen and Odd Jarl Borch -*Bodø Graduate School of Business*-) investigates the organizational routines within a university facilitating the creation of new ventures based on academic research. The authors look at the particular challenges related to exploration and exploitation of entrepreneurial opportunities within the university setting and introduce both de-coupling and integration mechanisms to configure resource for spin-off development. They introduce a set of four dynamic capabilities facilitating entrepreneurial processes within the university, emphasizing the creation of new paths of action; the creation of new knowledge resources; balancing past, present, and future positions; and the reconfiguration and integration of resources. These capabilities are explored by longitudinal studies of four spin-off cases. Implications for further research and policy are provided.

In the second paper ***“A Structural model of entrepreneurial intent among students: findings from Austria”*** (Erich J. Schwarz, Daniela A. Almer-Jarz and Malgorzata A. Wdowiak -*Klagenfurt University, Department of Innovation Management and Entrepreneurship*-) entrepreneurial intent has been proven to be a primary predictor of the future behaviour, specifically, the creation of a new venture. In this paper, determinants of entrepreneurial intent among students from seven Austrian universities were examined. The authors explore the impact of attitudes in general, attitudes toward self-employment, and perception of environment on the students’ intent to create their own business. In a proposed structural model, the attitudes, both general and entrepreneurial, and the perception of environment act as the primary determinants of entrepreneurial intent. The findings broadly confirm the model. In particular, the attitudes toward entrepreneurship and autonomy emerge as the best predictors of entrepreneurial intent.

In the last paper, ***“Owners’ residency status as a predictor of growth performance of rural Scottish SMEs: an initial evaluation”*** (Laura Galloway and Robbie Mochrie -*School of Management and Languages, Heriot-Watt University*-) the authors argue that migrants are unlikely to perform better than local entrepreneurs, reporting on a telephone survey of business owners drawn from rural areas of Scotland. The findings confirm the hypothesis of no effect, and show that business growth appears to be determined largely by recent business acquisition, external market orientation and ambitions for growth. These tend to be characteristics of businesses owned by migrants, and are sufficient to explain any apparent differences in performance of these businesses.

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# The university and the spin-off process- A dynamic capability approach

*Einar Rasmussen and Odd Jarl Borch*

## **Abstract**

This paper investigates the organizational routines within a university facilitating the creation of new ventures based on academic research. We look at the particular challenges related to exploration and exploitation of entrepreneurial opportunities within the university setting and introduce both de-coupling and integration mechanisms to configure resource for spin-off development. We introduce a set of four dynamic capabilities facilitating entrepreneurial processes within the university, emphasizing the creation of new paths of action; the creation of new knowledge resources; balancing past, present, and future positions; and the reconfiguration and integration of resources. These capabilities are explored by longitudinal studies of four European spin-off cases. Implications for further research and policy are provided.

**Key Words:** spin-offs, universities, organizational routines, new ventures.

## **1. Introduction**

Scientific knowledge becomes increasingly important for innovation, business development, and wealth creation. Government innovation policy states a new role for universities with respect to commercialization of research results or 'entrepreneurial science' (Mansfield and Lee, 1996). Policy makers at national, regional, and university level have allocated substantial financial and administrative resources to make the university more entrepreneurial and promote the creation of university spin-off ventures. Within universities, several institutional arrangements like technology transfer offices (TTO), incubators, entrepreneurship centers and internal seed funds are set up to increase the commercialization of research (Rasmussen et al., 2006). The introduction of these new tasks at universities is not without controversy (Laukkanen, 2003). Conflicts are imminent between the new entrepreneurial tasks towards a market orientated ideology, and the traditional Humboldtian ideology of free education and open research. The commercialization process may therefore create new challenges for the university management. In spite of the numerous studies of different outputs from universities such as patents, licensing agreements, and spin-off ventures, we lack knowledge on how universities deal with and promote the formation of spin-off companies (Mowery and Shane, 2002; Nicolaou and Birley, 2003a) and on how the new managerial tools for university entrepreneurship should be designed (Lockett et al., 2005).

This paper emphasizes the needs for organizational routines in order to facilitate the process of creating a spin-off firm within an organization characterized by a broad range of different stakeholders and partly conflicting objectives. We focus on the entrepreneurial process of creating new commercial spin-off companies based on university research, from the emerging research idea until the launch of an independent new firm. The university spin-off can be seen as the result of a corporate entrepreneurship process, with challenges related both to exploration of new commercial opportunities based on key personnel competence, and exploitation of

resources redirected towards the venturing process (Sharma and Chrisman, 1999). The corporate entrepreneurship literature emphasizes the challenges of giving birth to new business within an existing organization and the transformation of organizations through a renewal of their key ideas (Guth and Ginsberg, 1990). This paper looks into the process of developing a new venture, and the interaction between the spin-off entrepreneur(s) and the university as the mother organization. Taking into consideration the potential for conflict and the organizational characteristics, we include an emphasis on actions needed to meet the specific organizational challenges of a university setting.

The barriers for entrepreneurship within a university setting are inherent in a decision making processes within university organizations characterized as complex and ambiguous (March and Olsen, 1976), conflict-loaded (Navarro and Gallardo, 2003), and with a high degree of autonomy within each research group reducing the opportunities for top-down governance (Etzkowitz, 2003; Weick, 1976). These features make the university different from a business corporation and strategic planning becomes a challenging task (Harvey et al., 2002). Thus, the university may contain barriers that severely hamper the facilitation and support of new research-based ventures. As suggested by Lockett and Wright (2005), referring to the dynamic capability literature, the university business development capabilities are important for spin-off creation. Prior research have, however, been more occupied with university characteristics leading to spin-off formation (Link and Scott, 2005; Roberts and Malone, 1996; Shane and Stuart, 2002), rather than how the universities can facilitate spin-off creation. More knowledge is needed on the internal processes of channeling scarce university resources towards new firm creation, and the adaptations necessary to facilitate change in this particular setting. We contribute to the discussion on routines within the university organization that may help the university management to increase the number and performance of research-based spin-offs. The spin-off process has important strategic implications for the whole university, emphasizing the need to look closer into the strategic management of the university.

We introduce the dynamic capabilities perspective to illuminate possible organizational tools facilitating corporate entrepreneurship within this loosely-coupled and complex setting. The challenge of the university organization is to create unique, knowledge-intensive business ventures with high commercial value and competitive strength. The dynamic capability perspective highlights mechanisms that build, gain, integrate, reconfigure, and release internal and external resources to address rapidly changing environments (Eisenhardt and Martin, 2000; Griffith and Harvey, 2001; Teece et al., 1997). The dynamic capability approach has, in particular, contributed to an increased focus on the manipulation of the knowledge resources, and the internal processes needed to handle new bundles of resources in an organization pre-occupied with other tasks. This perspective may prove fruitful in a university context due to its emphasis on the process of reconfiguring present resources and on mechanisms for renewal and development of competence resources. Tailor-made dynamic spin-off capabilities may increase the pace of change and contribute to the creation of new business ideas and subsequent high-growth spin-off ventures. Thus, the dynamic capabilities are routines to facilitate change and a continuous entrepreneurial process within the university. They represent routines or working patterns that gain access to, modify, and integrate critical resources without generating new devastating conflicts within the university organization (Mauri and Michaels, 1998).

This paper contributes to the spin-off literature by illuminating the difficulties of integrating commercialization processes into a university organization, and by presenting a set of dynamic capabilities or routines that may facilitate the spin-off process without up-scaling internal conflicts and avoiding sub-optimization within the



present organization. The next section outlines the characteristics of the university and the challenges connected to entrepreneurial and commercial activities within a university organization. Further, we present the dynamic capabilities perspective and outlines four propositions that may provide a broader theoretical platform for managing entrepreneurial spin-off processes in a university setting. We build upon explorative studies of four spin-off processes to illustrate the action patterns and the different dynamic capabilities needed to facilitate entrepreneurship. Finally, implications for further research and policy are provided.

## **2. Theoretical platform**

### *2.1. The University Context*

The university has been regarded as a challenging type of organization providing composite products within education and basic research. To achieve its objectives, the university organization is characterized by a fragmented structure with loose couplings between different parts of the organization (Weick, 1976). Participation in the decision-making process is often fluid, and the number and role of actors involved, and the amount of effort they put in, are uncertain and changing (Cohen et al., 1972). Internally, this complexity is due to the highly specialized competence and autonomous work practice of the employees, the creative nature of work tasks, and the norms and structure of the science system (Merton, 1973; Stephan, 1996). Externally, complexity is evident from the many stakeholders in the university operation such as government, students, funding agencies, industry, and other adopters of research results. Diverse goals and outputs such as teaching, research, social responsibility, and both non-profit and commercial activity add to this complexity (Lee, 1996; Navarro and Gallardo, 2003).

The characteristics of the university setting have given birth to the “garbage can” model describing the university as a decision-making arena with several streams of goals or problems, solutions, and decision-making opportunities, as well as uncertainty about whether decisions are made and their final outcome (Cohen et al., 1972; March and Olsen, 1976). The garbage can model illustrates the challenges of introducing new target-oriented and resource-demanding tasks, new processes requiring decision-making stringency, as well as commercial self-interest into this type of organization. Hence, facilitating commercialization processes such as spin-off creation may be particularly challenging within a classic type of university building upon a Humboldtian tradition of public education and open research.

The description above illustrates the need to differentiate between different types of organizations when it comes to entrepreneurship (Morris and Jones, 1999). The university setting is different from both the individual and the corporate entrepreneurship context that have received most of the attention within entrepreneurship research. Table 1 illustrates some of the differences in the entrepreneurial context between the independent entrepreneur, the corporation, and the university.

**Table 1: Differences between independent, corporate, and university setting**

	Independent entrepreneur	Corporation	University
Stakeholders	Few	Many	Many, diverse objectives
Hierarchies	None	Several	Few
Rules and procedures	Low	High	Both high and low
Main orientation/focus	External	Internal and external	Internal
Main objective/incentives	Personal gain	Shareholder, commercial gain	Public, non-commercial, academic
Internal communication	Person-to-person	Personal and organizational links	Individualized, limited couplings

In contrast to the university setting, the entrepreneurial process within a business firm is characterized by a high commercial focus, a more stringent decision-making process, and top-down manipulation of resources. Thus, in order to facilitate new commercial ventures, it may be expected that universities need not only to introduce activities to explore and exploit new opportunities. In addition, they have to develop the necessary structuring mechanisms to increase speed of decision-making, provide the internal and external communication links, and introduce mechanisms for reducing conflicts between tasks (Navarro and Gallardo, 2003).

The garbage can model implies that we should look closer into integrative mechanisms governing the stream of entrepreneurial elements that add up to the formation of a new business venture. Introducing routines and structures may influence the outcomes from a commercialization process in three ways. First, they affect the time pattern of the arrival of problems, choice opportunities, solutions, or decisions makers. In a commercialization process, the time pattern has to be structured to secure that all the building blocks of the firm is present at the right time in the business development process. Second, they determine the allocation of resources or energy by potential participants into the decision-making process. In a research-based spin-off, the contribution of persons with specialized competence and key decision makers is crucial for the development of a research idea into a commercial product. Third, they establish linkages among the various streams, both to increase speed of decision-making and to balance interests. With a broad set of stakeholders, and a broad set of responsibilities related to each of the researchers involved in the spin-off process, establishing linkages between different resource areas and interest groups is crucial both to achieve the necessary resources, and to reduce the risk of conflict. Thus, the university needs routines that are able to cope with extreme complexity and the transfer of energy towards new strategic tasks. Also, there has to be routines for reducing the conflict potential related to present tasks or, even worse, problem avoidance. These “anarchic” decision-making characteristics and the broad set of potential conflicts of interests have so far received limited attention within the university spin-off literature.

## *2.2. Entrepreneurship within the University Context*

Stevenson and Jarillo (1990:23) define entrepreneurship as "... a process by which individuals – either on their own or inside organizations – pursue opportunities without regard to resources they currently control". New firm venturing inside an organization may vary in terms of structural autonomy, degree of relatedness to existing business, extent of innovation, and nature of sponsorship (Sharma and Chrisman, 1999). University spin-offs are characterized by knowledge-intensive products where the fundamental resource is the basic research conducted by a researcher or a research team. For instance, the intellectual eminence of universities is related to a higher spin-off rate (Di Gregorio and Shane, 2003).

In order to create commercial opportunities from research results, both the creative ability to explore new business models and the ability to exploit these concepts through transformation into a viable business platform is important (Katila and Ahuja, 2002; March, 1991; Schumpeter, 1934). During the explorative opportunity-seeking process, the research-based knowledge of the university faculty has to be transformed into commercial models showing how resources are linked to form a new venture and meet market needs (Shane, 2003). This act of entrepreneurship is strongly related to the capacity and motivation of the individual researcher (Gaglio and Katz, 2001).

In the process of exploiting possible opportunities, the access to university resources may represent a challenging task with a number of underlying tensions (Lockett et al., 2003). Establishing a new research-based knowledge-intensive firm is extremely resource-demanding. The university managers have to make difficult decisions on how much of scarce financial, organizational, and personal resources that should be channeled into the new commercial project. Due to differences in objectives and rationale of action, the university needs balancing capabilities to avoid too heavy emphasis on either activity, among others to avoid devastating organizational effects of too costly exploitation activity (Levinthal and March, 1993; Weick, 1976).

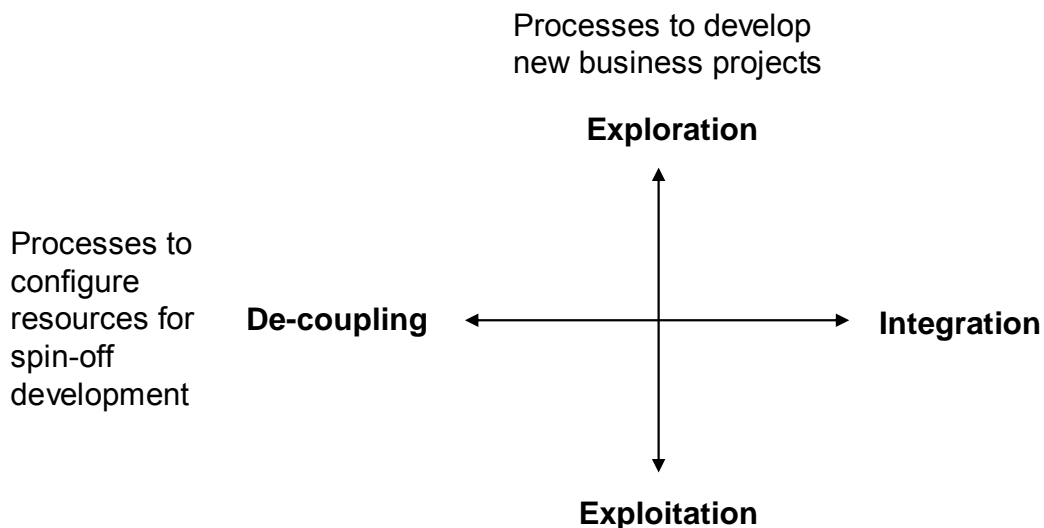
The resources needed in the entrepreneurial process may be locked into existing patterns of action like education and basic research. This means that internal decoupling activity and integration towards external actors providing new financial and market-based knowledge resources may be crucial for the entrepreneurial process. Thus, the university needs organizational capabilities to reposition resources related to the faculty, and to achieve new resources such as entrepreneurial competence, market knowledge, and links to external resources like equity capital providers and actors within the regional innovation system.

Traditionally, the incentives within the university are in particular related to scientific and teaching capabilities, and not to commercialization skills. In contrast, external interests may be looking for direct economic activity emanating from investments in the university sector. For instance, the public, business interests, government, and regional authorities at different levels often have high expectations about the university spin-off role (Miner et al., 2001). As a consequence, the university resources such as university professors, research facilities and laboratories, competent students, and financial support are in high demand.

The university management has to act strategically and develop the organizational routines that both encourage the entrepreneurial process towards creating successful new spin-off ventures, and at the same time protect intellectual properties and secure the optimal configuration of scarce resources towards the broader set of objectives at different levels. The university may also become an active stakeholder in the new

commercial firm through patents and ownership. Increased complexity is imminent as the university enters a new area of activity; as investor where high values may be at stake.

We state that the university needs specific capabilities to facilitate the entrepreneurial spin-off process in order to provide the necessary resources and to avoid conflicts with other university stakeholders. These capabilities may have distinct qualities compared with commercial organizations due to the particular organizational characteristics of the university. Thus, we claim that action is needed along two main alleys, with consequences for the organizational capabilities of the entrepreneurial university. The first line of action consists of processes to develop new business concepts, where both exploration and exploitation efforts are needed. The second line consists of processes to reconfigure resources for spin-off development, where activities related to both de-coupling and commercial integration are present. Figure 1 illustrates these central lines of entrepreneurial action within a university.



**Figure 1: Capability dimensions within the university setting**

Exploration is defined as the experimental process of creating a broader specter of opportunities and searching for new commercial ideas. This relates to action towards exploration of opportunities creating and amplifying fluctuations that initiate new order in the form of alternative commercial patterns. Exploitation is the process of effective allocation of resources into valuable and competitive business platforms based on existing knowledge (Holmqvist, 2004; March, 1991; Minniti and Bygrave, 2001). This relates to exploitation of existing resources and competencies towards a new prototype and commercial concept. De-coupling is the process of releasing bindings between existing resources and breaking up old patterns within the academic university structure so that they may be linked together into new patterns. The integration process is defined as activities to bundle both the existing and the new resources available into resource configurations that can form the resource base for a new independent spin-off firm (Chiles et al., 2004).

### *2.3. Dynamic Capabilities within the University*

The presentation above describes several strategic challenges within the university related to multiple outputs, stakeholders, and goals as well as actions to overcome these barriers. We have pointed to a number of operational and cultural differences between the academic system and commercial entrepreneurial processes (Stephan and Levin, 1996). To facilitate entrepreneurial processes, the university has to develop organizational capabilities or routines that may stimulate action within the two action lines of exploration/exploitation and de-coupling/integration. Such mechanisms are, however, not easily tracked or managed, they are often individualized, based on tacit knowledge, and socially and emotionally embedded (McGuinness and Morgan, 2000). The dynamic capability (DC) framework is about knowledge-handling routines that facilitate entrepreneurial change (Grant, 1996; Pisano, 1994). In particular, the focus is on latent rules and routines stimulating the creation of new distinctive and difficult to imitate advantages. Within the university, this includes research generating new knowledge resources, managing the creation of new business concepts, the operational management of present activities, and balancing or removing traces of earlier paths that may hamper the renewal processes. Path dependencies may be rooted in the classic university values emphasizing education, open debate, and transparent research.

The DC approach highlights in particular the development and manipulation of future knowledge resources (Grant, 1996; Kogut, 1996), making it especially relevant for the analysis of knowledge-intensive organizations. Hence, the DC framework may be particularly suited to the study of technology transfer and spin-off formation from universities. The framework deals with rapid technological change – which is the very basis for university entrepreneurship. Further, the DC framework leaves room for the idiosyncratic development of unique opportunities, addressing a weakness within the resource based view of the firm by focusing on process rather than specific strategies and resources. The DC approach also pays attention to current positions and previous history making it possible to integrate the university's versatile missions and the principles of the science system together with the aim of increased commercialization of research. The DC view is not only concerned with resources inside the firm's borders, but also emphasizes processes towards achieving the necessary control over resources owned by others (Barney, 2001; Hitt et al., 2001). Thus, the DCs do not only affect the output for the organization in which they reside, but also indirectly through influencing operational capabilities (Helfat and Peteraf, 2003).

Many universities offer a range of support initiatives to stimulate and to protect the researcher such as leave of absent, use of infrastructure and working time, scholarships and grants for project development, training programs for entrepreneurs, and consulting services (Rasmussen et al., 2006). Organizational units like incubators, technology transfer offices, entrepreneurship centers, and commercialization units also play a role in bridging the boundary between the university and the commercial world. Still, we do not know how these tools are related to the basic challenges of entrepreneurship within a university, and we lack a theoretical platform for designing such tools. There is a need for more research showing the relation between the activities within a commercialization process, and the university capabilities or routines needed to facilitate such dynamic processes (Lockett and Wright, 2005).

One reason for the problems in developing such routines may be that the capabilities for spin-off creation have to include and balance several different types of action. It might be that commercial exploration routines also need to contribute to the de-coupling of critical resources from traditional tasks within the organization, for example from traditional ideologies or ways of thinking. Stacey claims: "...that for a system to be

innovative, creative, and changeable it must be driven far from equilibrium where it can make use of disorder, irregularity, and difference as essential elements in the process of change” (1995:490). Likewise, new behavior or properties might emerge that have to be aligned or ‘resonated’ into the organization (Macintosh and Maclean, 1999). The exploration supporting routines may also contribute to integrative action helping in transforming the research-based knowledge into new business models. For example, these routines may help to reduce the risk of too much focus on the research findings and the technology, with emphasis on “technology-push” rather than “market-pull”, regarded as a hampering factor in the new venture process (Samsom and Gurdon, 1993). There is also a need for routines to stimulate exploitation of new commercial ideas that at the same time provide the necessary de-coupling from the academic setting, such as releasing the researcher from current activities of research and teaching. Further, there is a need for exploitation-supporting routines that integrate internal and external resources into commercial resource configurations.

Following the theoretical implications from the dynamic capability perspective, we may find a theoretical platform for the more complex routines facilitating the combined action patterns like (1) explorative and decoupling actions, (2) explorative and integrative actions, (3) exploitative and de-coupling actions, and (4) exploitative and integrative actions. Hence, we suggest four categories of combined dynamic capabilities. First, the university needs capabilities that may reduce the path dependency of earlier strategic adaptation and resource bundling, and stimulate the exploration of new paths showing the direction for the new venture. Second, the university needs capabilities that explore new valuable resources through internal learning processes and that link up to external complementary competence. Third, to avoid conflicts and secure resources for a longer range of time, there is a need for capabilities that balance the present and the future interests of the organizational stakeholders, not the least protecting the new commercialization process from counter-acting interests within the university organization. Finally, the university needs capabilities that reconfigure the available resources into a suitable exploitative pattern and link them together into a commercial venture. These four capabilities are illustrated in Figure 2, and a proposition related to each capability is outlined in the following sections.



capabilities to patch or realign business concepts where resources are added, combined, or split (Eisenhardt and Brown, 1999). Greene et al. (1999) argue that in order to achieve spin-off success, the organization has to map a broad set of resources and competencies, both existent and emergent.

The decoupling process may prove easier in a university than in many other organizations. Universities may here benefit from their open structure with high autonomy and few formal borders. If properly handled, this may increase flexibility, the speed of decision-making, and increase opportunities for linking resources in different parts of the organization (D'Amboise and Muldowney, 1988). This also includes reducing the barriers towards resources in the environment, especially commercial partners. Linked to the exploration side, this may represent a benefit for the university setting in particular. The dynamic capabilities are here inherent in the autonomy and motivation of each researcher and department. Hence, routines to make spin-off creation a viable part of the university operation might be needed.

*P1: There is a positive relation between new action path mechanisms and spin-off based entrepreneurship within universities*

#### *2.5. Dynamic capabilities that create new knowledge resources*

This category of DC is expected to facilitate combined explorative and integrative action. Exploration has to be balanced with action to adapt new ideas into viable commercial concepts that can be developed into new business platforms. This means adaptation to customer needs, government regulations, and the potential threat from competitors. From studying cases of university spin-offs, Vohora et al. (2004:161) propose that “without developing or accessing the capability to combine scientific knowledge with a commercially feasible offering that satisfies an unfulfilled market need, academic scientists would not be able to proceed towards commercializing their technologies”. Several studies points to the risk that advanced knowledge based ideas may fade away if the idea is separated from the creator or researcher (Henrekson and Rosenberg, 2001; Stankiewicz, 1986). Lack of business experience and management skills is recognized as a potential barrier to success for venturing scientists (Radosevich, 1995). Hence, routines that facilitate the integration of internal and external resources might play a crucial role. Personal interaction between university researchers and people with market knowledge leads to the identification of new opportunities and subsequently into the development of a business venture (Bird and Allen, 1989).

The university may develop capabilities that “make the thousand flowers bloom” by increasing the number of ties between the different parts of the university and towards creative resources in the environment. Several studies show that researchers’ networking and interaction with industry is associated with spin-off formation (Grandi and Grimaldi, 2005; Nicolaou and Birley, 2003b; Shane and Stuart, 2002). The integrative action is important to provide the necessary broadness related to new competence resources, as the new venture often needs more general knowledge than the initial, often technology-based, innovation. This implies new knowledge creation in cross-disciplinary teams and links to other parts of the innovation system. The spin-off project needs significant new knowledge related to customers and the market mechanisms for input of capital and personnel.

*P2: There is a positive relation between new knowledge creation mechanisms and spin-off based entrepreneurship within universities*



## *2.6. Dynamic capabilities that balance past, present, and future positions*

This category of DC is expected to facilitate combined exploitative and de-coupling action. The future possibilities of an organization are partly decided by its history and current position (Teece et al., 1997) and a university's previous success in technology transfer is found to be a key explanatory factor for spin-off creation (O'Shea et al., 2005). Further, several studies conclude that local cultures and norms are important for stimulating entrepreneurship at university departments (Chrisman et al., 1995; Franklin et al., 2001; Kenney and Goe, 2004; Louis et al., 1989). An important challenge, that may hamper the academic entrepreneur and the spin-off project, is the risk of conflicts with other faculty members and the university organization related to issues such as use of time and resources, intellectual property ownership and rewards (Stephan and Levin, 1996), and violation of academic norms (Nelson, 2004).

Within government institutions, such as universities, one may find bureaucratic regulations, red tape, and power play that may induce negative sanctions, especially related to new and unfamiliar activities. Previous failures and successes may facilitate and constrain future activities, and conflicts occur where basic values are contradictory. The capabilities of balancing the historic values and objectives of the academic research community with the new more commercially oriented focus is crucial for the entrepreneurial university. The high number of stakeholders within the university setting may represent a challenge as soon as resources are moved from one activity to another. Hence, there might be a need for routines to separate and protect the spin-off process from the many other objectives and stakeholders in the university context. This might include meeting places for the significant stakeholders and conflict resolving mechanisms to balance the interests of the organization.

*P3: There is a positive relation between university mechanisms that balance past, present, and future positions, and spin-off based entrepreneurship within universities*

## *2.7. Dynamic capabilities that reconfigure and integrate resources*

This category of DC is expected to facilitate combined exploitative and integrative action. To exploit the available resources in a market context, there has to be knowledge about how to run a firm and how to link possibly conflicting resources and interests. At the integrative side, a combination of resources is the driver for the new venture creation process (Greene et al., 1999). New combinations of productive resources have to be identified in the organization and the capabilities could be extended by discussing synergies between resource combinations within and outside the firm (Venkataraman et al., 1992). Connecting several organizations with different resources also enhance the organization's ongoing adaptation. Such linkages both improve overall innovation management, enable the organization to reconfigure its resources, and provides ways to experiment with new ideas (Dougherty, 1992). Developing networks with industry and the business community might be an important element in integrating external resources into university spin-off processes (Pérez and Sánchez, 2003).

Linked to exploitation, the integration activities have to be target-oriented towards finding the building blocks towards a new business firm, based on both experience and new knowledge. Not the least, there will be a need for the entrepreneurs to take part in the knowledge of persons with practical experience in the market. Hence, there might be a need for routines to bring in and integrate external resources strengthening the spin-off project.

*P4: There is a positive relation between reconfiguration and integrating mechanisms and spin-off based entrepreneurship within universities*

In the remaining part of this paper we use illustrative cases to elaborate on the specific contents of the four types of dynamic capabilities outlined above.

### 3. Methodology

A longitudinal case study research design was chosen to key into the development process of university spin-off creation and its different activities (Eisenhardt, 1989). This approach gave us a richer contextual insight, an opportunity to develop trust relations to the actors, and an in-depth understanding of a process that have been scarcely investigated in prior studies. Parallel to the case studies, theoretical constructs were developed from the entrepreneurship and dynamic capability literature to broaden the perspective and create a multi-disciplinary research platform (Borch and Arthur, 1995).

#### 3.1. Case Selection and data collection

This study includes two universities representing typical segments in the European university system. The two universities were of different age and size presenting high variety in context (Yin, 1989). University A is quite large with a history of more than a hundred years, while university B is smaller and thirty years old. The spin-off cases were chosen in order to achieve high variation on key variables. Two cases come from research groups within university A, having traditionally strong ties to industry and from where a number of companies have spun-out throughout the years. University B traditionally had much weaker ties to industry, and fewer examples of spin-off companies. We chose cases where the technological basis for the spin-off was based on university research, and the academic researchers played an important role in the initiation and development of the spin-off project. Table 2 shows central properties about the cases selected for this study.

**Table 2: Central properties of spin-off cases summarized**

Topics and events	Alpha (A)	Beta (B)	Gamma (A)	Delta (B)
Founder(s)	Four professors	Two professors	Joint venture	One researcher
University ownership	No	Yes, major	Yes, minor	No
Premises	University incubator	University incubator	University incubator	- (Entrepreneur)
Main R&D partner	Industry	University	University	Ad hoc.
Most critical source of opportunity development	One professor's industrial experience	Prior industry cooperation	Prior spin-off and industry network	Founders own practical experience
Field of research	Engineering	Biotechnology	Engineering	Engineering
Product	Software	Medicine	Electro-mechanical	Electro-mechanical

Data triangulation including several sources of data was used to map out the situation and critical events prior to and during the development of the spin-off projects. Secondary data from the universities were collected through documentary sources such as strategy plans, annual reports, and web pages. Primary data from each

university was collected through visits, conversations, and interviews for a four year period at university A and a two year period at university B. Primary data from the spin-off projects was collected by 6 to 16 personal interviews at each case conducted throughout a 12-15 month period. People in various positions were interviewed including: company founders and entrepreneurial team members, researchers, university managers, and people involved in commercialization support. Following a narrative approach (Polkinghorne, 1988), the interviews got the informant to describe his or her involvement in and knowledge of the spin-off project from its inception up to date, with a minimum of interruption by the interviewer. This type of narrative interviewing (Czarniawska, 1998:29) was done in order to get closer to the actual events and to avoid that personal views and theoretical perspectives influenced the data collection. Most interviews were recorded and the transcriptions were done by one of the authors as a part of the data analysis process. For each of the firms, archival data, including financial reports, business plans, market analyses, and research documents, were achieved. In addition, relevant written documentation was collected both from the informants and other sources like magazines, newspapers, and the internet. By combining the different sources of information and collecting information over a period of time doing repetitive interviews with central informants, an in-depth description of the research and commercialization process was obtained. For confidentiality reasons the cases are anonymized, and some of the factual information have been slightly adjusted. Confidentiality has resulted in a richer set of data including better access to documentation and more honest statements from the informants.

### 3.2. *Data Analysis*

The data analysis has been an integrated part of the data collection process. The collected data provided both narrative accounts of the process (Czarniawska, 1998; Pentland, 1999) and factual descriptions of context, actors, and events from a large number of sources. From the data we identified critical characteristics and events that influenced on how the spin-off process emerged and developed in the university context. In order to derive at theoretical explanations for the processes observed, we identified observations that matched theoretical concepts (Borch and Arthur, 1995). The theoretical concepts were formed to match the empirical data in an interactive process. As the analysis proceeded, the overarching logical frame shifted from exploring data using retrodution to verifying theory through deduction (Van de Ven and Poole, 2002).

## 4. Findings

This section presents the findings from our cases by using the theoretical framework developed above. This framework emphasizes the role of the university context and the university mechanisms in facilitating the entrepreneurial process of developing the spin-off companies.

### 4.1. *The spin-offs*

Some characteristics of the four spin-off projects as they emerge and develop within the university context are outlined in Table 3. We see that the founders, the university and a number of both public and private actors have played significant roles.

**Table 3: Characteristics of the spin-off projects**

	Alpha	Beta	Gamma	Delta
Source of initial idea	Industry need	Basic university research	Industry partner	University research
Source of basic technology and competence	University research and industry experience	Industry sponsored university research	University research and prior spin-off company	University research
Major performer of technology development	Founders	University	University	Founder
Other performers of technology development	Industrial partners	Additional research partners	Prior spin-off from same university group	Technology inventor at university
Major role in market development	Founding team (professors and external members)	Founders and new management	Interaction between CEO, professors, and industry partners	Founder assisted by science park advisor
First commitment for funding	Public sources	University	University	Public sources

4.2. *The interplay between the university and the spin off project*

We have argued that spin-off processes within the university context are dependent both on processes to create new business concepts in the form of exploration and exploitation and on processes to configure resources for developing spin-off ventures through de-coupling from the academic setting and integration with the commercial setting. Table 4 exemplifies how these processes were apparent in the four spin-off cases and how the university setting contributed.

**Table 4: Spin-off processes and the university role in the four cases**

	Alpha	Beta	Gamma	Delta
Processes to create new business concepts in a university setting	Exploration -New combination of research fields -Creative idea development process in founding team	-Invention discovered from basic research -Search for a way to continue research project	-Searching for new business areas to apply technology -Idea search process initiated by the university	-Innovative university professor -Professor searching for ways to commercialize technology
Exploitation	-Tenant in university incubator -Use of sabbatical year for firm formation	-Narrow project down to meet commercial requirements -Use of university laboratories and tenant in incubator	-Forming joint venture between university and industry -Establish laboratory at university	-Research projects and students used to develop prototype -Partner with entrepreneur due to lack of interest from industry

Processes to configure resources for developing spin-off ventures in a university setting	De-coupling  Integration	-Ending the professors' existing relations to industry partners -Less focus on research and teaching -Including external experience in funding team -Including industrial competence in business development	-Move the research activity into spin-off firm -University management supporting spin-off project internally -Include industry experience in project team and board	-University TTO working on agreements and IPR issues  -Hired CEO with industry experience -Inviting industrial partners to join project	-Technology owned by professor's holding company -Entrepreneur leaves the university  -Informal relation to university resources -Resources from government support agency involved
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The empirical findings illustrate that the process of creating university spin-offs includes a broader set of activities than emphasized in most existing spin-off literature. In the following sections, the four cases will be used to discuss how the four types of dynamic capabilities outlined above may influence the university spin-off processes.

#### 4.3. *Dynamic capabilities that create new paths*

The spin-off projects were initiated by creative and experimental behavior among university academics and all four cases were based on basic research activities within the university. The innovative combination of two engineering fields by two PhD students created the knowledge base on which Alpha is based. The medical effect exploited by Beta was initially discovered by a group of young and curiosity driven researchers. Discussions between academics and practitioners were central for developing the technology which Gamma were based on. Hence, the university's emphasis on academic freedom, flexible conditions for doing fundamental research, and securing the activity of dynamic research teams were highly important in order to create the new knowledge that formed the basis for the subsequent spin-off project.

Another important condition, both for the decision to start the spin-off process and for the further development, was the signals from policy makers and university management that spin-off activity had their support. Due to recent national policy changes, the universities have been very supportive to the spin-off projects. New conceptions of what is viable behavior in a university setting make the step from traditional behavior possible. One of the founders of Alpha said that "I was asked 10 years ago if it could be viable to start a new venture, but at that time I considered this to be impossible. The prevailing attitude was that it would be a personal defeat to fail and little credit to gain from trying. There were no incentives to leave a safe position at the university". Increased interest for entrepreneurship among students was also mentioned as one of the factors triggering the professors to look for entrepreneurial opportunities. In recent years "the students started to gain interest in starting new ventures and writing business plans", and "the issue of forming new ventures became a topic at the university and the signal from the central university management was that they looked favorable on such initiatives". "Also the tremendous success of the company X which spun-off from another university department made great impression" (Founder Alpha). Thus, in this situation the professors chose to pursue a spin-off project instead of following the traditional industry consulting pattern.

In addition to the general accept and support of spin-off activity perceived by the university researchers, direct university support was sometimes crucial. In case Beta, the process of taking over the project and the related patents from the industry partner was long and cumbersome. The university was heavily involved in this process with considerable financial and administrative support. "I do not know how this had ended if it had not been that we had this backing from the university management" (Founder Beta). Another example of proactive university support can be found in case Gamma. Although the researchers had discussed the idea earlier, it was brought further after an idea search process conducted by the university TTO. An example of flexibility in the university can be found in case Alpha, where the professors were able to explore the possibility of starting a new venture without leaving the university position. The tradition for doing external work with industry gave room for the professors to spend time on the spin-off project instead.

In the first proposition we suggested that there is a positive relation between new action path mechanisms and spin-off based entrepreneurship within universities. The cases reveal that a learning process took place at the university level for how to handle spin-off cases. From our cases we found that increased legitimacy and supportive attitudes towards entrepreneurship among research teams and students may play an important role in the process of spin-off initiation. Likewise, the entrepreneurial objectives of university management may also play a role and direct university support can be an important catalyst for succeeding with the spin-off projects. For instance, good opportunities for taking leave and sabbatical arrangements make it possible for the professors to experiment without risking their jobs.

Because they are based within the university culture, it seems like some of the university capabilities take some time to build and cannot be implemented only by setting up structures and policies. Here, the attitudes among colleagues, role models, and even student attitudes can play important roles. In our cases, cooperation with industry has been a central premise for being able to form the idea and having competence and networks to start developing the spin-off project. There are, however, several ways to gain such competence, such as: mobility between university and industry, cooperative research and consulting, and contacts with former students. This indicates that university capabilities can be based at multiple levels in the organization. Hence, both bottom-up and top-down policies (Goldfarb and Henrekson, 2002) can be effective.

#### 4.4. *Dynamic capabilities that create new knowledge resources*

The total competence and composition of the entrepreneurial team was frequently considered as the most valuable asset for exploring and developing the spin-off projects. Especially, the role of industry experience was seen as crucial. Traditionally, professors within European universities rarely have strong links to industry as part of their career. "I think the founders of Beta are atypical as researchers. They have worked for an industrial partner for many years, so they probably have other attitudes than the average researcher" (Consultant Beta). In case Alpha, the idea was identified by one of the professors who had a long career in industry. Also in case Gamma and Delta, the professors were generally eager to keep close contact with industry and conduct relevant research. "By being involved in company X [industry partner] I know very much about how things work in the commercial world" (Professor Gamma).

Although the entrepreneurial team is decisive, the university can also contribute to the spin-off projects by introducing new knowledge resources that are important for the exploration process. In the Gamma case, the university contributed to further

development of the technology by investing in a new laboratory where the specifications partly were made to fit the needs of the spin-off project. Case Beta caused a radical learning process for the university organization, as prior experience and routines for handling commercialization cases was limited. Within the university, however, several individuals had relevant competence that was used to help the project in a difficult situation. According to one of the founders “The competence at the university have had the same status as us [the founders], it has emerged as we have been working. I think both we and the university have learned a lot, but to learn as you go is not necessary the most efficient way to walk” (Founder Beta).

In the second proposition we suggested that there is a positive relation between new knowledge creation mechanisms and spin-off based entrepreneurship. It seems clear that it is of crucial importance to integrate industry experience into the spin-off projects. This can be done in several ways such as: establishment of cross-functional research teams, networking and cooperation with industry, training for academic entrepreneurs, personnel mobility, including industry competence in the entrepreneurial teams, and through a learning process involving the academic entrepreneurs.

#### 4.5. *Dynamic capabilities that balance past, present, and future positions*

The adaptation to the business environment may represent a difficult task within the university organization. This challenge was dealt with through continuous information exchange and active dialogue where the expanded business-oriented activity of the professors were discussed and partly accepted within the university. “The university is updated on what we do. We have put all facts on the table from the beginning” (Founder Alpha). In the Alpha, Beta, and Gamma case the academic entrepreneurs had interactive processes with the university to find arrangements and regulations in the interface between the spin-off company and the university interests. This was important for legitimizing the spin-offs, both internally and externally. Another approach was chosen by the entrepreneur of Delta who left the university as soon as he had obtained enough resources to be able to develop the idea further. Still, he had access to some university resources through informal contacts.

The importance of having a clear and unambiguous relation to the university was emphasized by several informants. Legitimacy had to be gained at several levels in the university organization and this process might be both time and resource demanding. “When we started the project, having a company funding our research and taking patents on it, this was not always perceived positive among our colleagues. This is a maturation process, but there are still some critical voices. As we have published quite a lot, graduated many students, and been a cooperation partner in research, the attitude to our work has gradually become more positive. It is also good to have contractual agreements with the university to have a clear relationship” (Founder Beta). The CEO of Gamma spent a lot of time in formalizing the relation to university resources such as use of personnel, laboratories, and IPR issues. Another important resource for the spin-offs may be the use of students, but also here some clear routines and guidelines needs to be established, “we need to make an agreement with the university that legitimizes use of these resources” (Team member Alpha).

Even if the university management at central level were supporting the spin-off project, it was not seen as unproblematic at department level: “The philosophy here has been not to create companies, but to build a strong research group. When creating a company you change focus from working with high motivation in the research group to use a lot of time and energy in the company” (Department manager Alpha). Not only the loss of key personnel, but also the use of university resources created strain at the

department level. “The departments get paid for use of the facilities, regulated through agreements. Hopefully, this will be perceived positively by the departments. It takes some time to work out agreements, as this is the first case at the university” (University manager Beta). Seen from the founders, “this has been a tough process, because the university does not have any experience. This is the first company the university formally establishes, which means that we had to make many new roads as we moved along. There are many rounds to go to make agreements with the university. The university, however, have done all what they could do to help in this process, but lack experience”. Hence, the founders generally acknowledge the importance of the university context, although a lack of experience and organizing has posed constraints on the process. “The relation to the university was a little ambiguous in the beginning, but as we became an incubator company we do now have a clear and good relation to the university” (Founder Alpha). The university was through this communication and formalization activity able to find acceptable solutions to the internal challenges raised by “bringing the market” into the university and adapt to a new type of activity. This also meant that the university became a stakeholder in the spin-off project creating new challenges through strong ties and dependency on the university in the spin-off process.

In the third proposition we suggested that there is a positive relation between university mechanisms that balance past, present, and future positions, and spin-off based entrepreneurship within universities. It is increasingly recognized that university spin-offs are heterogeneous (Heirman and Clarysse, 2004; Vanaelst et al., 2006), and our findings suggest that interactive university governance adapted to idiosyncratic spin-off processes might be needed to respond to the particular challenges of each spin-off project. The development of university policies have been a central task in several cases. It seems more important to have clear policies than to have any particular set of policies, as the policy related discussions were consuming both time and resources from the spin-off projects. Incentives are needed at different organizational levels, related to resource compensation, university management support, clear policies, and routines for handling controversies. For instance, an incubator facility seems to help in separating the academic and the commercial activity, while the spin-off project still maintains a close relation to university resources.

#### 4.6. *Dynamic capabilities that reconfigure and integrate resources*

Going from university research to business application is a transition involving challenges for both the university and the academic entrepreneurs involved. The challenge for universities is to facilitate the creation of structure in the unstructured university environment. From the start, it was important that the spin-off projects were adapted to the commercial setting. The founders’ prior experience and interaction with industry were crucial for all spin-off cases. The industry interaction was critical both in forming the business concept and in developing the founders’ personal competencies, network, and experience of critical value for the spin-off project. In case Alpha, the professor with industrial background had a key role. According to one of the other founders, “... he got the market contact, without him this project would have been impossible. He is a previous ‘customer’ and he thinks like a customer” (Founder Alpha). In case Alpha the academic entrepreneurs were very aware of the need for external resources, and in addition to the diversified competence among the professors, two external persons were included in the start-up team. The team worked on external relations and business concept development the first year, before doing technical work where they knew they possessed the sufficient competence.



Our cases emphasize the importance of support from 'godfathers' or influential persons in central positions that have power and authority to push important decisions through. Such persons may be found in industrial partners, prospective costumers, investors, public agencies, and within the university. As seen in case Beta, the university actively used the latent contacts of persons in the organization to access competence when needed, and influential persons at the university took central roles in supporting the spin-off process in critical phases. Hence, the cases heavily emphasize the importance of university management support to legitimize the activity, to establish a clear relation, and in case Beta to directly help in a difficult situation. For three of the projects, a position in the university incubator helped to gain external legitimacy for the projects by showing that the project had been evaluated and the university was supportive. "It is an advantage to be located at the university, it gives us credibility and help us in the relation towards industry" (Founder Alpha). That the professors were able to maintain a position at the university in the early stages of the spin-off development was important for reducing the risk and keeping the costs down. In addition, the university generously granted leave of absent and sabbatical arrangements which allowed the professors to concentrate on the spin-off project.

The TTOs and commercialization units connected to the universities seemed, however, to play only a modest role compared to the latent networks of the academics and their ability to engage specialist competence. "I know a lot of people in domestic and international industry. That is a strength being a professor. You only work with the best people in your field, some of them you learn to know very well." (Founder Alpha). The access to PhD- and Master-students is also considered to be one of the main university resources for the spin-offs. Students contribute through thesis and smaller projects, as a source for future employees, and former students constitute a valuable network in industry.

In the fourth proposition we suggested that there is a positive relation between reconfiguration and integrating mechanisms and spin-off based entrepreneurship within universities. A range of mechanisms are important, both internally in the university, but also at boundary organizations and through general public support. Specialized university coordination mechanisms, such as incubators and technology transfer offices, can support the projects through gaining legitimacy and networking with external resources, like industry and venture capital actors. Prior students can also be an important network. In addition, the existence of external support, such as government programs and seed funding are crucial for spin-off development (Mustar, 1997). The majority of government support initiatives aimed at facilitating spin-off activity is related to this category of DC.

#### 4.7. *The role of dynamic capabilities throughout the university spin-off process*

It seems like the four dynamic capabilities outlined above may be more or less important at different times in the spin-off process. During the early opportunity development and creation of business model the processes related to exploration and de-coupling were especially important, while the in the later commercialization phase processes related to exploitation and integration played a more important role. Hence, the first capability of new path creation is important in order for new spin-off ideas to emerge. As the spin-off project develops, the capabilities creating new knowledge resources and the capabilities balancing past, present, and future positions becomes important. Finally, the capabilities that reconfigure and integrate resources becomes more important when the spin-off project is well established within the university and are about to become an independent new firm.

As an example, this transition or process was clearly articulated in case Beta where the academic entrepreneurs have gradually changed the company focus (e.g. board composition). First, the project was targeted to gain internal support and to use the competence within the university. After the internal support and legitimacy was established in the university, the focus was changed towards connections to external resources of importance for the business development.

## **5. Conclusions and implications**

In this article we have proposed a dynamic view on the university spin-off process. Evidence suggest that complex processes within a university, like the creation of a spin-off venture, does not follow a prescribed pattern of development nor are dependent on a specific set of resources (Lockett et al., 2005). Still, universities can through explicit and implicit choices build capabilities that promote and facilitate the development of idiosyncratic spin-off processes. Prior research has usually pointed at university characteristics determining the rate of spin-off formation. As found by Lockett and Wright (2005), however, not only the stock of resources, but also the universities' business development capabilities are significant. We contribute by suggesting four specific dynamic capabilities within the university setting that may promote the creation of research-based spin-off ventures, including the creation of new paths of action from academic research to commercial perspectives, the development of research processes creating unique and valuable knowledge resources, the reconfiguration and integration of specialized resources, and creation of new vision and inspiration balancing past and future paths in the multi-faceted university organization. Although each of the DCs plays a more prominent role at different times in the spin-off process, they appear more as overlapping than sequential. Well developed university capabilities related to reconfiguration and integration will, for instance, give a signaling effect that the action path of spin-off formation is viable in the university context.

### *5.1. Implications for further research*

The lack of theoretical approaches in the study of how universities facilitate spin-off creation provides abundant opportunities for further research. The findings in this paper, based on a dynamic capability approach, calls for further knowledge on the in-depth characteristics of the dynamic capabilities, how the dynamic capabilities of the university facilitating entrepreneurship will differ as the process evolves over time, and their mutual interaction. To investigate these complex issues further, our theoretical concepts and propositions should be developed further through in-depth studies taking a holistic perspective of the university spin-off process. We need further knowledge especially during the first phase of development where intentions are developed and opportunities are recognized at the faculty level.

Only by understanding the dynamics of the spin-off process in a broader context including the faculty, the university, and its environment can we uncover what organizational mechanisms being most critical in different parts of the process. In this respect, we may also find significant differences across the industries and regions where the spin-off is taking place. Further, it could be fruitful to investigate the network development of the faculty involved throughout the spin-off process.

This paper has dealt with the university setting, but the theoretical framework and propositions developed may be well suited to study entrepreneurship in other settings, such as corporate spin-offs and public sector entrepreneurship.

## 5.2. *Implications for policy*

As each spin-off process is idiosyncratic, it is not enough to provide general resources and measures to support new venture creation at universities. The dynamic capabilities to respond to the specific needs of each spin-off project are important. Following the propositions in this paper, policy makers should strive for developing four specific dynamic capabilities or routines for spin-off development within the university setting.

First, new paths of action seeing spin-off formation as a viable activity within the university needs to be stimulated. This might be achieved through establishing an infrastructure and a culture within the university supporting spin-offs. Bottom-up factors such as the role of prior spin-off successes, role models, academics with commercial background, and student interest in entrepreneurship clearly seems to have a positive influence on the initiation of new spin-off projects. In addition, top-down initiatives such as support from the university management, policies, and incentive systems can contribute to this type of capabilities.

Second, the creation of new knowledge resources suitable for spin-off formation needs to be stimulated. The existence of and access to market knowledge and industry experience is often crucial for the spin-off projects to develop. Establishing such resources are often time consuming, and policies stimulating university-industry collaboration, mobility of personnel, networking, and training programs for academics can contribute to create this type of capabilities.

Third, past, present, and future positions need to be balanced in order to remove barriers for spin-off formation. The high number of stakeholders at multiple levels inside and outside the university creates many potential barriers to the spin-off process. Our findings stress the need for clear policies, but also active involvement by the university might be needed to protect spin-off projects from conflicting interests. Specific arrangements to balance commercial and academic objectives may be on-campus incubators and arrangements to compensate for resources used at department level.

Fourth, the university needs to stimulate the reconfiguration and integration of resources into a new spin-off venture. A number of initiatives to stimulate this type of capabilities can be identified, typically boundary organizations providing industry and market knowledge, such as TTOs, incubators, entrepreneurship centers, and networking arrangements. Still, it seems like the most important channel to access and integrate resources are through the academic inventors and their network and ability to include external competence in the start-up team. In addition, public funding sources, both in the form of grants and seed-funding, make it possible to develop and exploit the spin-off opportunity.

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# A Structural model of entrepreneurial intent among students: findings from Austria

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## **Abstract**

Entrepreneurial intent has been proven to be a primary predictor of the future behavior, i.e., creation of a new venture. However, there have been only a limited number of studies addressing student's entrepreneurial interest. In this paper, determinants of entrepreneurial intent among students are examined. We explore the impact of attitudes in general, attitudes toward self-employment, and perception of environment on the students' intent to found their own business. In a proposed structural model, the attitudes, both general and entrepreneurial, and the perception of environment act as the primary determinants of entrepreneurial intent. The database used in this study includes about 1326 students from seven Austrian universities. The findings broadly confirm the model. In particular, the attitudes toward entrepreneurship and autonomy emerge as the best predictors of entrepreneurial intent.

**Key words:** entrepreneurship, entrepreneurial intent, attitudes, universities, Austria.

## **1. Introduction**

Recently, there has been growing interest in undertaking and intensifying actions promoting and supporting the idea of entrepreneurship as an attractive alternative to wage employment among students. There are several reasons for this tendency. Firstly, well-educated entrepreneurs are expected to create ventures that grow faster than enterprises of their counterparts. The importance of education to the successful performance of new ventures is well recognized both by management practitioners and researchers (Kennedy and Drennan, 2001; Cooper et al., 1994). Secondly, due to the restructuring processes in organizations following intensified competition on the market worldwide, previous advantages connected with wage employment in established, mostly large enterprises such as job security or reward of loyalty have lost on their actuality, thus, increasing the desirability of self-employment (Lüthje and Fanke, 2003; Kolvereid, 1996). Finally, the unemployment among graduates has been grown during the last years in Europe. For example in Austria, the unemployment rate among graduates has risen in the period of 2000-2002 by 34 % (BMBWK, 2002).<sup>1</sup>

Entrepreneurial intent has proven to be a primary predictor of future entrepreneurial behavior (Krueger et al., 2000; Reynolds, 1995; Katz, 1988).

Therefore, investigating what factors determine the entrepreneurial intent is a crucial issue in the entrepreneurship research. In general, intent can be defined as "a state of mind directing a person's attention toward a specific object or a path in order to achieve

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<sup>1</sup> In Austria, the unemployment among graduates decreased slightly 2001. However, there is a long-term tendency for unemployment of graduates to rise (BMBWK, 2002).

something” (Vesalainen and Pihkala, 1999: p. 3). A common theoretical framework for models explaining pre-start up processes is the theory of planned behavior that views the behavioral intent as an immediate determinant of planned behavior (Fishbein and Ajzen, 1975). It applies particularly, when the behavior is rare, hard to observe, or involves unpredictable time lags (Krueger et al., 2000). Entrepreneurship can be viewed as the type of planned behavior, for which intention models are appropriate (Krueger et al., 2000; Autio et al., 1997). In previous research, personal and environment-based determinants of entrepreneurial intent such as personality traits, attitudes toward entrepreneurship, or social environment have been extensively discussed (Franke and Lüthje, 2004; Begley et al., 1997; Brandstätter, 1997; Davidsson, 1995; Robinson et al., 1991). However, there have been only a limited number of studies addressing influence factors for students’ entrepreneurial intention (Wang and Wong, 2004; Lüthje and Fanke, 2003). In addition, research results are partly inconsistent. Specifically, it is not widely known whether external findings conditions or the individual characteristic drive the students’ career decision toward self-employment. A central question that arises is what factors determine entrepreneurial intent among students.

The objective of the paper is to examine key factors influencing students’ intent to create a new venture. Based on previous research, we incorporate both internal and external influence factors into a model. In particular, we investigate the affect of individuals’ attitudes in general and toward self-employment on their choice of entrepreneurial carrier. Furthermore, we examine whether the perception of environment, including the university setting, has an impact on the students’ intent to found their own businesses.

The paper consists of four main parts and a conclusion. The introduction is followed by the discussion of the results of previous research on entrepreneurial intent. Based upon the presented findings, the next part is concerned with the development of a model of entrepreneurial intent among students. This section is followed by the outline of methodology used in the study. Finally, the results are discussed.

## **2. Entrepreneurial intent in previous research**

Early research on entrepreneurship and factors influencing the decision to start a new venture concentrate on personality characteristics of individuals. A number of personality factors have been recognized as relevant for entrepreneurial intent and success, e.g., need for achievement, risk taking propensity, internal locus of control, or innovativeness (Brockhaus and Horwitz, 1986). However, the personality approaches are not out of criticism (Gartner, 1988; Robinson et al., 1991). As an alternative to the personality theories, the attitude approach has become widely used for the prediction of likelihood to found an enterprise since 1990s (Robinson et al., 1991; Douglas, 1999). This study continues on this line.

According to the theory of planned behavior, individual’s attitudes have an impact on behavior via intention. In particular, there are three fundamental attitudinal antecedents of intent: personal attitude toward outcomes of the behavior, perceived social norm, and perceived behavioral control (self-efficacy). They have proven to account for a large part of the variance in intentions (Fishbein and Ajzen, 1975). In general, attitudes can be defined as “a learned predisposition to respond in a consistently favorable or unfavorable manner with respect to a given object” (Fishbein and Ajzen, 1975: p.6). They are relatively less stable than personality traits and can be changed both across time and across situations in virtue of individual’s interaction with the environment (Robinson et al., 1991). Therefore, entrepreneurial attitudes may be influenced by

educators and practitioners. In a new venture context, Robinson et al. (1991) emphasize a necessity to distinguish between general attitudes related to the broad psychological dispositions of an individual and domain attitudes referring to the person's more specific attitude toward entrepreneurship. The application of specific attitudes increases the accuracy of the measurement within the specified domain, thus, improving the predictability of the behavioral intent. The importance of attitudes, both in general and toward entrepreneurship, in explaining people's aspiration to create a new venture have been recognized and empirically confirmed in previous studies (Krueger et al., 2000; Douglas, 1999; Autio et al., 1997; Robinson et al., 1991). However, the empirical findings to support the direction and significance of the attitude-intent relationship are partly inconsistent. The inconclusive evidence results primarily from a wide variation in research context and in measurement of both independent and dependent variables. In the following, we concentrate predominately on empirical studies addressing entrepreneurial aspiration among students in order to draw conclusions for a model suitable for an university student context.

Douglas (1999) has investigated the relationship between the intention to start one's own business and individual's attitudes toward income, independence, risk, and work effort. Results of his empirical study suggest that individuals having more positive attitude toward independence (autonomy) and risk are characterized by higher willingness to become an entrepreneur. However, people's attitudes to work efforts correlate negatively with the intent to be self-employed. He found also no significant difference in attitude toward income (money). Contrary to Douglas's findings, Wang and Wong (2004) reported a non-significant influence of risk-averse attitude on entrepreneurial interest. Autio et al. (1997) have also provided an insight into the role of general attitudes in entrepreneurial career choice. They examine influence of attitudes toward achievement, autonomy, money, change, and competitiveness on entrepreneurial conviction (the perceived ease of starting and running a new venture) viewed as the primary determinant of entrepreneurial intention. With the exception of competitiveness, they found individual's general attitudes to have a high moderating influence on entrepreneurial conviction. Especially, need for achievement and positive attitude to autonomy emerge as influential attitudinal moderators of entrepreneurial conviction. Autio et al. (1997) additionally confirm a positive impact of attitude toward entrepreneurship on entrepreneurial conviction. In a survey of university business students, Krueger et al. (2000)<sup>2</sup> found support for the theory of planned behavior. In particular, personal attitude toward the act, i.e., entrepreneurship, and self-efficacy act as significant predictors of entrepreneurial intention. However, they report a non-significant impact of the remaining attitudinal variable, i.e., perceived social norm, on entrepreneurial intent. In their analysis of entrepreneurial aspiration of business students at two universities in German-speaking countries and one of the leading US academic institutions, Franke and Lüthje (2004) found a strong positive relationship between the attitude toward self-employment and the intention to become an entrepreneur. In a survey of students of technical disciplines at the Massachusetts Institute of Technology, Lüthje and Franke (2003) examine the impact of personal dispositions and of perceived environmental conditions for founding a new venture on entrepreneurial intent. They reveal that the attitude toward entrepreneurship is the most important determinant of entrepreneurial intention.

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<sup>2</sup> Precisely, Krueger et al. (2000) have tested the theory of planned behaviour and Shaper's model of the entrepreneurial event. As mentioned before, in the theory of planned behaviour attitudes have proven to be the primary determinant of behavioural intention (Fishbein and Ajzen, 1975). In particular, there are three attitudinal antecedents of intent: personal attitude toward outcomes of the behavior, perceived social norm, and perceived behavioral control (self-efficacy). In the model of the entrepreneurial event, intention depends upon perceived desirability (personal attractiveness of new venture creation), perceived feasibility, and propensity to act upon opportunities (Krueger et al., 2000).

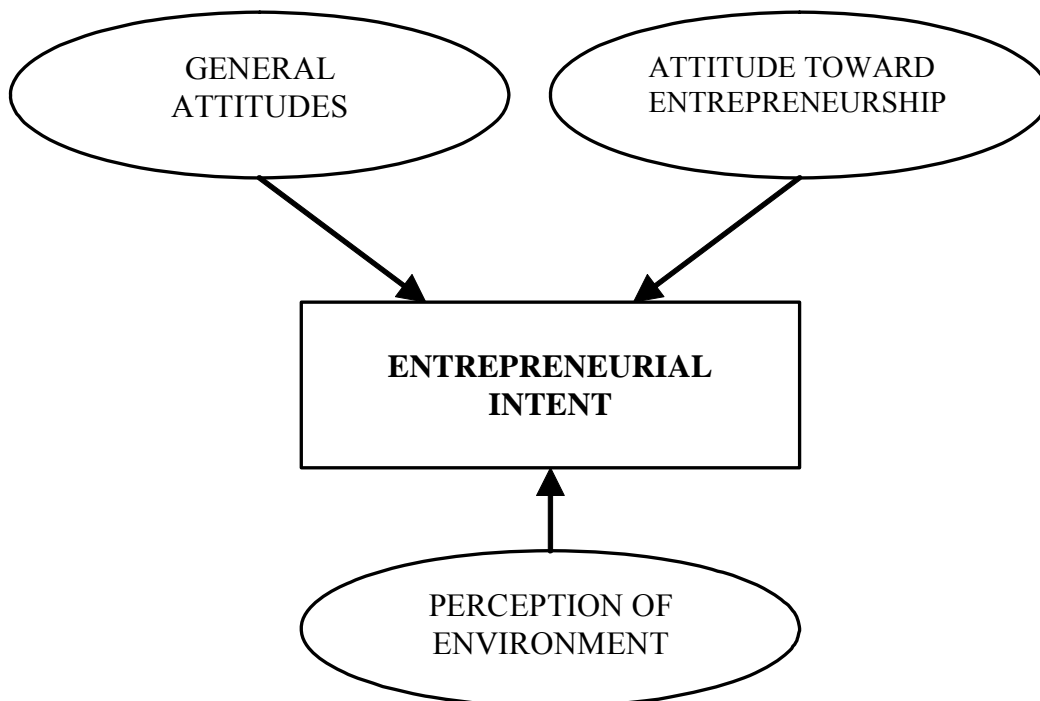
Another stream of studies in the entrepreneurship discipline focuses on environment conditions as determinants of people's aspiration to start a company. The environment is viewed as an explanation why the relationship between personal-related factors and entrepreneurial intent is not always deterministic in nature (Lüthje and Fanke, 2003). Also Aldrich & Zimmer (1986) have stressed that individuals can not be viewed as atomized decision-makers who operate as autonomous entities. Likewise, the representatives of the attitude approach to the prediction of entrepreneurship remark that attitudes do not exist "in isolation" (Robinson et al., 1991: p. 19). Therefore, it is reasonable to focus on entrepreneurial process as an embedded process in a social, cultural and economic context. Previous research that recognize the importance of external influence factors for individual's interest to become an entrepreneur concentrate particularly on person's social networks, image of entrepreneurs in society, socio-cultural norms, and barriers to entrepreneurship (Lüthje and Fanke, 2003; Autio et al., 1997; Begley et al., 1997). However, empirical studies linking external conditions for entrepreneurship and individuals' career choice provide also inconsistent results.

Raijman (2001) examines the role of social networks in which individuals are embedded in predicting entrepreneurial intent. His results confirm that having close relatives who are entrepreneurs increases the willingness to be self-employed. Begley et al. (1997) analyze impact of four socio-cultural conditions of entrepreneurship, i.e., importance of work, value of innovation, shame of failure and status of entrepreneurship in a society, on business students' interest in becoming an entrepreneur in seven different countries. Social status of entrepreneurship emerges as a good predictor of entrepreneurial interest. They reported a non-significant influence of shame of failure and relevance of work in a society. Finally, they found a negative relationship between value of innovation and intent, i.e., individuals who believed innovation was highly regarded were less likely to want to start a company. Lüthje and Franke (2003) demonstrate that the student's entrepreneurial intent is also directly affected by perceived entrepreneurship-related barriers and support factors. Specifically, the more favorable students perceived support actions for entrepreneurship, the stronger their entrepreneurial intention was. When students realized a hostile environment for business founders, e.g., credit conditions as being too restrictive, they were less likely to become entrepreneurs irrespective of their attitude toward self-employment. In another study, Franke and Lüthje (2004) examine influence of the university environment on entrepreneurial intent. Results of their study suggest that the lower level of student's founding intention follows from a negative appraisal of the university's activities to provide students with the knowledge required to start a business and to support the process of new venture creation actively. In addition, the differences in entrepreneurial intent relative to the individual's perception of the university environment were significant and stronger than the differences with regard to personality traits, attitudes and socio-economic environmental factors. Contrary to Franke and Lüthje (2004), Autio et al. (1997) found support of university environment to have a negative impact on entrepreneurial intent.

The findings of previous research being partly inconsistent indicate that there is still a necessity to improve our understanding of entrepreneurial intent's preconditions. In particular, it seems to be crucial to develop interactive models with the aim of explaining entrepreneurial behavior as a function of the person and the environment conditions.

### 3. A structural model of entrepreneurial intent

Based on previous research, we develop a structural model of entrepreneurial intent that incorporates both personal and environment-related influence factors. Specifically, the proposed model focuses on three constructs to predict the entrepreneurial intent, i.e., the general attitudes, the attitude toward entrepreneurship, and the perception of environment conditions. The constructs are expected to explore preconditions of entrepreneurial intent (Figure 1).



**Figure 1 Structural model of entrepreneurial intent**

As mentioned above, attitudes have proven to explain approximately 50 % of the variance in intentions (Autio et al., 1997). In a new venture context, it is reasonable to distinguish between general attitudes of an individual and specific attitudes toward entrepreneurship (Robinson et al., 1991). We investigate impact of four general attitudinal dispositions on students' interest to become an entrepreneur, i.e., attitudes toward autonomy, change, money, and competitiveness. We hypothesize that students with a favorable attitude toward the given objects are more likely to have a stronger aspiration to start a business. For example, individuals with a positive attitude toward autonomy prefer to have decision-making control and to serve one's own objectives rather than follow another's orders. Such striving for independence may cause a greater interest to become self-employed (Douglas, 1999). Further, individuals possessing a positive attitude toward change are characterized primarily by the propensity to view situations that are ambiguous and changing rapidly or unpredictable as attractive rather than threatening (Shane et al., 2003). Because the challenges associated with new venture creation are by nature unpredictable, persons with such psychological disposition are more likely to see the founding of a company as an

attractive career alternative. A favorable attitude toward money refers to individuals who view high incomes as a symbol of success (achievement) and means to attain autonomy, freedom and power (Lim and Teo, 2003). Such features are often connected with the picture of successful entrepreneurs. Therefore, individuals having a positive attitude toward money may be more likely to want to be self-employed. Finally, a favorable attitude to competitiveness is viewed as a factor influencing entrepreneurial motivation positively (Autio et al., 1997).

In view of above, the following hypotheses related to the general attitudes of individuals will be tested:

*H 1.1 Students with a positive attitude toward autonomy are more likely to have a stronger intention to become an entrepreneur.*

*H 1.2 Students with a positive attitude toward change are more likely to have a stronger intention to become an entrepreneur.*

*H 1.3 Students with a positive attitude toward money are more likely to have a stronger intention to become an entrepreneur.*

*H 1.4 Students with a positive attitude toward competitiveness are more likely to have a stronger intention to become an entrepreneur.*

The importance of domain-specific attitudes in explaining entrepreneurial intent and behavior have been recognized in entrepreneurship research (Robinson et al., 1991; Kolvereid, 1996). In the model, attitude toward entrepreneurship act also as a primary determinant of students' willingness to be self-employed. This factor refers to the individual's perception of the personal desirability of performing the behavior, i.e., creation of a new venture, and corresponds to the attitude toward the act in the theory of planned behavior (Fishbein and Ajzen, 1975; Krueger et al., 2000). Obviously, the more students value the entrepreneurial career path, the stronger their interest to start a business (Franke and Lüthje, 2004). Therefore, we hypothesize:

*H 2 Students with a favorable attitude toward entrepreneurship are more likely to have a stronger intention to become an entrepreneur.*

The intent to become self-employed does not depend exclusive of students' attitudes connected with entrepreneurship. Due to the fact that individuals do not exist and do not act in isolation, they also take environmental conditions into account by their decision-making processes. When students realize a hostile environment for business founders (e.g., too restrictive credit conditions or deficient legitimacy of entrepreneurship), they can be less likely to become entrepreneurs irrespective of their attitude toward self-employment. Contrary, when they perceive the environment – including a university environment – as entrepreneurship-supportive, they can be more disposed to create a new venture. Therefore, the following hypotheses related to the perception of environment will be tested:

*H 3.1 Students who perceive entrepreneurship-related support positively are more likely to have a stronger intention to become an entrepreneur.*

*H 3.2 Students who perceive entrepreneurship-related barriers negatively are more likely to have a weaker intention to become an entrepreneur.*

*H 3.3 Students who perceive university environment as entrepreneurship-supportive are more likely to have a stronger intention to become an entrepreneur.*

## 4. Methodology

### *Sample and method*

The population is build by the students from four universities<sup>3</sup> and three Universities of Applied Science<sup>4</sup> in Austria. Those universities offer studies in a broad scope of fields: technics, medicine, law, natural science, human science, and social and economics science. Since the middle of the nineties in Austria all students get an E-mail address provided, which enable them to manage their study (register for course, register for exams, and get information about courses). These e-mail addresses are administered by the charge of the universities and are reflecting nearly the complete population of students in Austria. With the exception of students, who have started before the middle of the nineties, who do not want to have an e-mail address (range of 1-2 percent) the universities have complete e-mail addresses of all students. In this study the charges of the Universities provided us those data source. With the exception of the technical university, for this university we have got only 55% of the addresses, the analysis is nearly complete survey of whole population of the students of those seven institutions. The respondents obtained an e-mail with short information about survey's objectives and a link to the questionnaire that was available online. The sample size was 35040. The response rate was 8.10 % (2838 completed questionnaires). Through the sample's split conducted for a future cross-validation, 1419 cases were selected to test the model. Finally, 1326 completed questionnaires were considered for the analysis due to the excluding missing values exceeding 30%. Missing values amounting to less than 30% were replaced by using the EM-algorithm with NORM 2.03. In order to test the causal relationship between the attitudes, perception of environment, and entrepreneurial intent of the investigated students' population, structural equation modelling with AMOS 5.0 software was employed.

### *Measurement*

All items used in the study are listed in the appendix.

In the previous research, entrepreneurial intention has been measured in different ways. Both an individual's preference for self-employed and a time dimension of this career path have been taken into account. We adopted measures from Autio et al. (1997):

"How interested are you in setting up your own business?" (mean 1.281; measured by a five point Likert-scale: 1= strongly interested; 5= completely uninterested).

"How likely is it that you will set up (another) business during the next two years?" (mean 0.920; measured by a five point Likert-scale: 1=very probably; 5=very improbably).

"How likely is it that you will set up (another) business during the next five years?" (mean 1.143; measured by a five point Likert-scale: 1=very probably; 5=very improbably).

The Cronbach alpha of this construct is 0.738. All remaining items were measured by a five point Likert-scale: 1=strongly agree; 5= strongly disagree.

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<sup>3</sup> Klagenfurt University, University of Graz, Technical University of Graz, Medical University of Graz.

<sup>4</sup> University of Applied Science Joanneum, University of Applied Science Campus 02, University of Applied Science Carinthian.

The perception of university environment refers to the degree to which the university is perceived as supporting organization to start a new venture. The construct was measured by a set of four statements, e.g., “the creative atmosphere at the university inspires to develop ideas for new venture”, or “the courses at the university provide knowledge required to new venture creation”. The Cronbach alpha of this construct is 0.831.

The perception of entrepreneurship-related support relates to the degree to which external conditions to start a business, particularly financing factors, are perceived positively. The construct includes two items: “banks do not readily give credit to start up companies”, and “it is hard to find capital providers”. The Cronbach alpha of this construct is 0.601.

The perception of entrepreneurship-related barriers persists of three items, e.g., “there are not sufficient subsidies available for new companies”, or “qualified consultant and service support for new companies are not available”. The Cronbach alpha of this construct is 0.692.

General attitudes comprise four constructs, i.e., attitude toward competitiveness (4 items, e.g., “I work harder in situations where my performance is compared against that of others”; the Cronbach alpha of this construct is 0.661), attitude toward autonomy (2 items, e.g., “working for an established employer is more important for me than freedom to pursue my own ideas”; the Cronbach alpha of this construct is 0.668), attitude toward money (2 items, e.g., “if you have a high income, that is a sign that you have had success in your life”; the Cronbach alpha of this construct is 0.759), and attitude toward change (3 items, e.g., “I find working in stable and routinized environments boring”; the Cronbach alpha of this construct is 0.650).

Finally, attitude toward entrepreneurship was measured by two items, i.e. “I’d rather be my own boss than have a secure job” and “I’d rather be my own boss than have a secure job”. The Cronbach alpha of this construct is 0.698.

## **5. Results**

### *Model testing*

First, the assessment of fit of the observed data to the model was tested. A number of global goodness-of-fit measures were employed (Homburg and Giering, 1996): the goodness-of-fit index (GFI), the adjusted GFI (AGFI), the comparative fit index (CFI), and the root mean square error of approximation (RMSEA). All measures reach a satisfied level: GFI=0.95 ( $\geq 0.9$ ), AGFI=0.936 ( $\geq 0.9$ ), CFI=0.933 ( $\geq 0.9$ ), and RMSEA=0.042 ( $\leq 0.05$ ). Therefore, the developed model provides a good fit to the data.



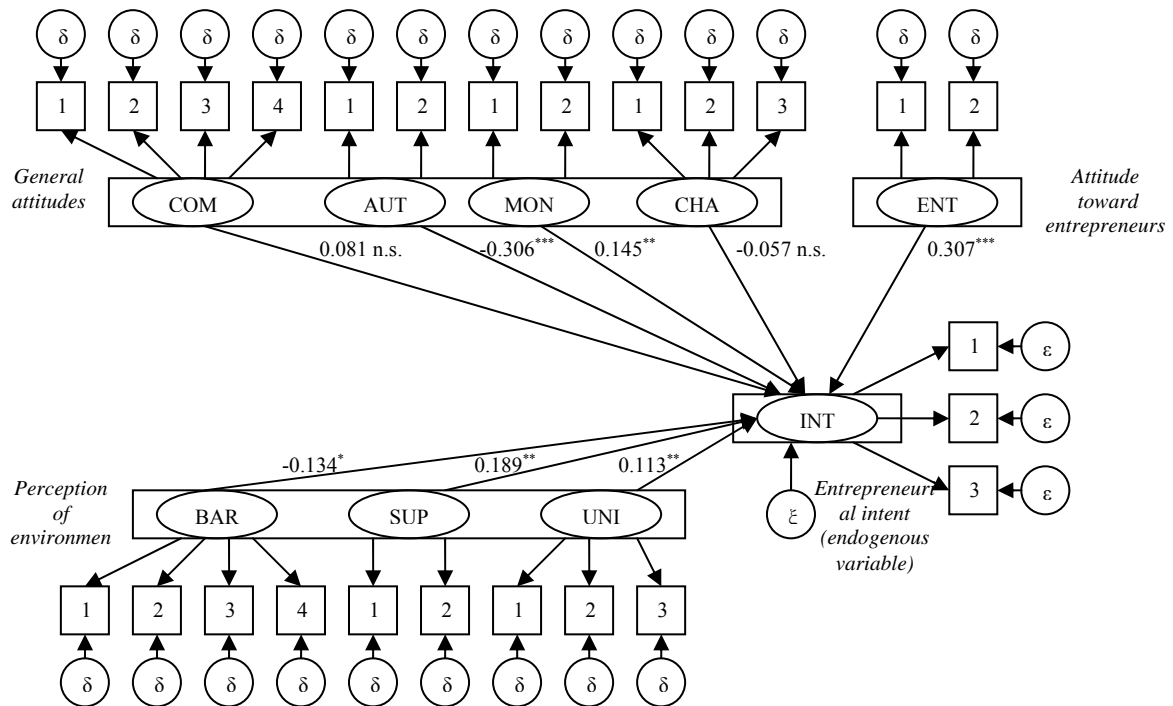
**Table 1 Local fit indices and reliability of scales**

<i>factor</i>	<i>indicator</i>	<i>indicator reliability</i>	<i>Cronbach <math>\alpha</math></i>	<i>factor reliability</i>	<i>average explained variance</i>
university environment [UNI]	ind1	0.505	0.831	0.83	0.55
	ind2	0.573			
	ind3	0.647			
	ind4	0.487			
environment support [SUP]	ind1	0.520	0.601	0.61	0.44
	ind2	0.354			
environment barriers [BAR]	ind1	0.440	0.692	0.70	0.44
	ind2	0.585			
	ind3	0.309			
general attitude t. competitiveness [COM]	ind1	0.315	0.661	0.67	0.34
	ind2	0.526			
	ind3	0.295			
	ind4	0.204			
general attitude t. autonomy [AUT]	ind1	0.439	0.668	0.68	0.51
	ind2	0.582			
general attitude t. money [MON]	ind1	0.652	0.759	0.76	0.62
	ind2	0.581			
general attitude t. change [CHA]	ind1	0.420	0.650	0.70	0.47
	ind2	0.774			
	ind3	0.139			
attitude t. entrepreneurship [ENT]	ind1	0.670	0.698	0.71	0.55
	ind2	0.430			
entrepreneurial intent [INT]	ind1	0.378	0.738	0.76	0.53
	ind2	0.434			
	ind3	0.777			
model fit	GFI=0.95	AGFI=0.936	RSMEA =0.042 CFI=0.933		
	$\chi^2=840.789$ df= 255 p=.000		$\chi^2/df=3.297$		

Subsequently, reliability of the measures used in the model was tested by estimation of two following coefficients (Homburg and Giering, 1996): the factor reliability ( $\geq 0.6$ ) and the average explained variance ( $\geq 0.5$ ). The results of the estimation presented in Table 2 can be considered as satisfying.

### Regression path

The path coefficients were estimated using the maximum likelihood method and are reported in Figure 2.5



Note: level of significance: \*\*\*  $p < 0.001$ , \*\*  $p < 0.01$ , \*  $p < 0.05$ , n.s. = not significant

quadrates encompass the numbers of indicators

**Figure 2 Results of model testing**

The attitude toward entrepreneurship appears as the most relevant predictor of entrepreneurial intent among students ( $\beta=0.307$ ,  $p \leq 0.001$ ). Therefore, the hypothesis H. 2 is supported. Similarly, the attitude toward autonomy has a strong and highly significant impact on students' interest to becoming an entrepreneur ( $\beta=-0.306$ ,  $p \leq 0.001$ ). Due to the application of measures referring to a negative attitude to autonomy in the study (see appendix), the negative sign of the path coefficient indicates that individuals with a high aversion to independence are more likely to have a weaker intention to become an entrepreneur. Therefore, the hypothesis H 1.1 is supported. Further, attitude toward money have a strong positive impact on entrepreneurial intent ( $\beta=0.145$ ,  $p \leq 0.01$ ), thus, providing support for the hypothesis H 1.3. Unexpected, we have found a negative relationship between attitude toward

<sup>5</sup> Path coefficients are the estimated effect size and can be interpreted similarly to regression weights (Seipel and Apigian, 2005).

change and intent ( $\beta=-0.057$ ). However, the results are not significant. Therefore, the hypothesis H 1.2 cannot be supported or rejected. In addition, there is no support for hypothesis H 1.4 because we found no significant results. This may be due to the fact that a positive attitude toward competitiveness is necessary to obtain the success not only for entrepreneurs. This attitude has become also very important for employees since the work environment changed.

**Table 2 Summary of hypotheses tested**

<b>Hypothesis</b>	<b>result</b>
H 1.1 Students with a positive attitude toward autonomy are more likely to have a stronger intention to become an entrepreneur.	supported
H 1.2 Students with a positive attitude toward change are more likely to have a stronger intention to become an entrepreneur.	not supported (not significant correlation)
H 1.3 Students with a positive attitude toward money are more likely to have a stronger intention to become an entrepreneur.	supported
H 1.4 Students with a positive attitude toward competitiveness are more likely to have a stronger intention to become an entrepreneur.	not supported (not significant correlation)
H 2 Students with a favorable attitude toward entrepreneurship are more likely to have a stronger intention to become an entrepreneur.	supported
H 3.1 Students who perceive entrepreneurship-related support (loans of banks, capital providers) positively are more likely to have a stronger intention to become an entrepreneur.	not supported
H 3.2 Students who perceive entrepreneurship-related barriers negatively are more likely to have a weaker intention to become an entrepreneur.	supported
H 3.3 Students who perceive university environment as entrepreneurship-supportive are more likely to have a stronger intention to become an entrepreneur.	supported

Entrepreneurial intent is also predicted significantly by external factors. Precisely, the path coefficient between the perceived support for entrepreneurship and intent to become self-employed is significant ( $\beta=0.189$ ,  $p\leq 0.01$ ). Because that factor was measured in inverse relation to the hypothesis (see appendix), the results indicate unexpectedly that a negative perception of the environmental conditions for entrepreneurship correlates to the higher students' intent to choose a career as an entrepreneur. Therefore, the hypothesis H 3.1 is not supported. Further, the results confirm that a positive perception of the university actions to foster the aspiration to start a business leads to the stronger willingness to become an entrepreneur ( $\beta=0.113$ ,

$p \leq 0.01$ ). Thus, the hypothesis H 3.3 is supported. Finally, the perceived barriers have a strong negative impact on entrepreneurial intent ( $\beta = -0.134$ ,  $p \leq 0.05$ ). If students realize a hostile environment for (nascent) entrepreneur, they are more likely to have a weaker interest in becoming self-employed. Therefore, the results provide support also for the hypothesis H 3.2.

In sum, the students' intent to found their own business is influenced directly both by the general attitudes of an individual and the specific attitude toward entrepreneurship, and by the perception of environment. With the exception of the attitudes toward competitiveness and change, we have found the causal effects of entrepreneurial intent (Table 2).

## 6. Conclusions

In the paper, we have investigated determinants of entrepreneurial intent among students. Attitudes have proven to be important to predict entrepreneurial aspiration. In addition, environment-based factors have been recognized as relevant aspects. Consequently, we have developed a structural model comprising those factors. In particular, we have investigated three constructs, i.e., the general attitudes, the attitude toward entrepreneurship, and the perception of environment conditions. With exception of two factors of the construct general attitudes (i.e., attitudes toward competitiveness and change), all other paths are significant. The attitudes toward entrepreneurship and autonomy emerge as the best predictors of entrepreneurial intent among students. It is also favourable that students perceive their environment, inclusive university environment, as entrepreneurship-supportive.

In order to increase students' intention to become an entrepreneur, several actions can be recommended. The results indicate that entrepreneurial intent is influenced by the perception of a supportive university environment. So, the university should develop and strengthen their support system concerning entrepreneurship activities. For example, an extension of courses in entrepreneurship or the organization of presentations of successful entrepreneurs (role models) could be helpful to spark the interest in founding an own company.

Further, the perception of barriers is an important element to predict entrepreneurial intent. Though in Austria the supporting conditions are well developed for young firms (e.g. university incubators, subsidies, and consulting offered by the chamber of commerce for free), students do not often realize it. Information actions, which enlighten those options, could improve entrepreneurial intention.

A crucial result of this study is that a positive attitude toward entrepreneurship increases the founding tendency among students. Striving for autonomy can be strengthened by assignment of personal responsibility. Long term activities in the educational system are necessary. The possibility of individual composition not only at university, but also in school may be a step in this direction. It is also of importance to set up actions, which advance the image of entrepreneurship in the society in order to strengthen the self-assurance of young people.

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## Appendix: Items in analysis

construct	variable	items
entrepreneurial intent	ind1	How interested are you in setting up your own business?
	ind2	How likely is it that you will set up (another) business during the next two years?
	ind3	How likely is it that you will set up (another) business during the next five years?
university environment	ind1	In my university, people are actively encouraged to pursue their own ideas.
	ind2	The courses provide students with the knowledge required to start a new company.
	ind3	There is a well functioning support infrastructure in place to support the star-up of new firms.
	ind4	The creative atmosphere inspires us to develop ideas for new businesses.
environment support	ind1	Banks do not readily give credit to start up companies.
	ind2	It is hard to find capital providers.
environment barriers	ind1	There are not sufficient subsidies available for new companies.
	ind2	Qualified consultant and service support for new companies are not available.
	ind3	The bureaucratic procedures for founding a new company are unclear.
general attitude toward competitiveness	ind1	I work harder in situations where my performance is compared against that of others.
	ind2	Winning is important in both work and game.
	ind3	It annoys me when other people perform better than I do.
	ind4	Competition is good, since it keeps you alert and more focused on your goals.
general attitude toward autonomy	ind1	Working for an established employer is more important for me than freedom to pursue my own ideas.
	ind2	I prefer employment security, even if I would have less autonomy.
general attitude toward money	ind1	If you have a high income, that is a sign that you have had success in your life.
	ind2	It is important for me to make a lot of money.
general attitude toward change	ind1	I find working in stable and routinized environments boring.
	ind2	I need constant change to remain stimulated, even if this would mean higher uncertainty.
	ind3	When a change occurs, it is more important to consider first the opportunities opened, not the threats caused by it.
attitude toward entrepreneurship	ind1	I'd rather be my own boss than have a secure job.
	ind2	I'd rather found a new company than be the manager of an existing one.





# Owners' residency status as a predictor of growth performance of rural Scottish SMEs: an initial evaluation

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## **Abstract**

It has recently been claimed in the public policy debate on rural entrepreneurship that an area in which the economy is functioning well will attract entrepreneurs, who move there from outside the area. We argue that migrants are unlikely to perform better than local entrepreneurs, reporting on a telephone survey of business owners drawn from rural areas of Scotland. Our findings confirm the hypothesis of no effect, and show that business growth appears to be determined largely by recent business acquisition, external market orientation and ambitions for growth. These tend to be characteristics of businesses owned by migrants, and are sufficient to explain any apparent differences in performance of these businesses.

**Key Words:** rural entrepreneurship, migrants, growth performance, Scotland.

## **1. Introduction**

Within entrepreneurship studies, there is a well-established literature examining business formation and performance among immigrant communities, typically those that constitute ethnic minorities within the countries hosting the migrant business owners. We are unaware of any attempt to date to develop a similar literature in respect of the performance of migrant business owners who share ethnicity with the host population.<sup>6</sup> This paper therefore breaks new ground by examining how inter-regional migration might affect individual business owners' motivations to take control of a business, their ambitions for business growth, and the recent performance of the business. The concentration on motivation and ambitions means that we examine only one element of the determinants of entrepreneurial activity. We intend to develop our ideas in further work that will explicitly examine the social processes associated with entrepreneurship. This would adapt concepts of embeddedness (Granovetter, 1985, Jack & Anderson, 2002, Johannison et al, 2002) and mixed embeddedness (Barrett et al, 2002, Kloosterman, 2003 and Kloosterman et al, 1999) to analyse the interplay between the resources that migrants (both individually and collectively) bring to business activities, and the opportunities and constraints created by social conditions in the receiving regions.<sup>7</sup>

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<sup>6</sup> Recently, Aidis, 2005, has argued the absence of such theory is a substantial barrier to understanding the behaviour of migrants across the unified labour market of the European Union.

<sup>7</sup> In addition, there is a modest literature on the impact of inter-regional migration on employment and earnings (Cooke & Bailey, 1996, Nilsson, 2001, Nivalainen, 2005) in which individual migration decisions tend to be treated as rational choices, with the financial returns to migration the main focus of attention. Such an econometrically intensive approach is very different from the established entrepreneurship

Our research focuses on business activity in rural areas of Scotland. This adds a further dimension to our analysis, since a range of recent studies (Smallbone et al, 2002, Roberts, 2002, Deakins et al, 2004, Stathopoulou et al, 2004) have emphasised the extent to which businesses in rural areas have particular needs, requiring some adaptation of theoretical analysis, and implying differentiation of support policies. The first three of these studies identify specific barriers to individual success in achieving business growth in rural areas, and this paper builds on the analysis of Deakins et al, 2004, in arguing for the importance of individual motivation and ambition in understanding entrepreneurial behaviour. In contrast, Stathopoulou et al, 2004, emphasises the value of embeddedness, found in the relationships between the structure of rural society and the development of entrepreneurial opportunities, as an important conceptual device for exploring rural entrepreneurship systematically. Across all of these studies, however, there is agreement that the processes of entrepreneurial activity do not differ across urban and rural spaces, merely the form of the responses.

Our interest in the impact of migration on entrepreneurship in rural areas was stimulated by the recent claim in Countryside Agency, 2003, that “many new businesses and jobs are being created by in-migrants...who have been attracted...by the qualities of the rural environment and life”. While accepting the truth of this claim, it does not necessarily follow that migrant owners tend to establish entrepreneurial businesses. For example, they might instead have ambitions to create lifestyle businesses. (Reynolds, et al., 2003, and Deakins and Freel, 2005). Thus migrant businesses might remain small, and have only a limited impact on employment. After reviewing in more detail previous analysis that has guided this research (Section 2), we outline the data collection process (Section 3), and then present a descriptive statistical analysis, exploring measurable differences between the migrant and indigenous business owners in our sample (Section 4). We characterise owners’ motives for migration and assumption of control of a business, and also their ambitions for business growth (Section 5). After testing the hypothesis of migration status having a positive effect on business growth (Section 6), we conclude (Section 7), highlighting areas for further work.

## **2. The rural business environment**

There is a considerable body of evidence confirming the extent of structural change experienced in the recent past across rural economies of Europe and North America. In the UK, for example, there has been a shift from the traditional sectors of agriculture and extraction with the establishment of small, often micro, businesses, with some concentration in the provision of consumer services (Smallbone, et al., 2002; Roberts, 2002; Deakins, et al., 2004). However, many of these businesses have been established to provide services to the more traditional sectors, and one way of interpreting the shift towards specialist retail, and hospitality and tourism-related activity, is to see it as extending the value chain of the traditional sectors (Freshwater, 2001; Smallbone, et al. 2002).

It is now recognised that rural areas differ considerably in their ability to adapt to changes in the business environment, with leading areas tending to possess a sufficiently rich mix of institutional capacity, organisational networks and social capital to be able to embrace such change (Terluin and Post, 2000). In Scotland, one of the countries included in the Dynamics of Rural Areas Project (Courtney and Bryden, 2001,

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literature, although the techniques employed there could easily be adapted to examine patterns of business ownership.

Bryden et al, 2004), the importance of entrepreneurship and demography, including migration, in determining this institutional richness has been clearly delineated.

In this paper, a simple conception of rurality, largely as a feature of spatial location is used. As noted by Hoggart, 1990, such a definition is constructed principally in opposition to the classification of some spaces as urban. In suggesting that rural location affects business activity, we should specify the channels through which this occurs, analysing the physical and social properties of rural, as opposed to urban spaces. Specifically rural barriers to successful entrepreneurial development include limited local access to business services. This might be expected to affect both indigenous business owners, who have been raised within the area, and migrants from other (urban) regions of a country. However, we recognise the possibility of at least some migrants being embedded within social networks formed outside the region, obtaining access to services that facilitate their entrepreneurial activity. Equally, 'strong ties' may be typical of local networks, creating barriers for migrants that do not affect indigenous entrepreneurs. This might arise most obviously in the most remote rural areas, where there is both a relatively settled population, and a stronger sense of local identity than would be expected in an urban area.

### *2.1. Growth in Rural Businesses*

The present paper explores some of the factors that contribute to business growth in SMEs located in rural Scotland. Within rural areas, given the nature of the change in the business environment, growth may be the result of diversification activity (Rosa, 2001), or some form of product innovation that extends the value chain. An alternative source of business growth of some importance to rural businesses is external re-orientation of locally dependent enterprises (Mitchell and Clark, 1999), which entails the development of markets some distance away from the region.

The analysis of this paper concentrates on measuring and explaining growth in business turnover and employment (Galloway, et al., 2004). Debate on public policy for rural economies often emphasises the role of employment growth in securing the sustainability of local communities, and so the fostering of entrepreneurial businesses is increasingly regarded as central to successful policy (Vaessen and Keeble, 1995, Mitchell & Clark, 1999). Barriers to the successful implementation of such a policy include the perceived lack of experience, skills and ambitions for entrepreneurial behaviour among rural business owners (Scottish Executive, 2000; PERC, 2000). Certainly, empirical studies (Smallbone, et al., 2002, and Deakins, et al., 2004), have found that many rural businesses might be characterised as 'lifestyle' rather than 'entrepreneurial' (Deakins and Freel, 2005). Such studies indicate that the results of entrepreneurial activity are observable only in a minority of businesses, but that this minority has the capacity to contribute to substantial growth in local economies (Galloway & Mochrie, 2006).

### *2.2. Migration*

An additional factor that is potentially of particular importance to rural areas is the impact of population flows on economic activity. The rural areas of Scotland from which the sample is drawn are among the most peripheral regions of the UK. They have experienced static or declining populations for much of the last two centuries. It is therefore not surprising that policy makers have begun to suggest that the economic well-being of rural areas will be strongly correlated with the inflow of economically active people. We have already noted the argument to this effect in Countryside

Agency, 2003. This argument draws on the work of Keeble and his associates (Keeble et al, 1992, Vaessen and Keeble, 1995, Keeble and Tyler, 1995), in which it is argued that there is evidence of higher rates of innovation among rural businesses (in accessible areas), exploitation of market niches, high levels of external dependence for sales growth. Perhaps most important is the claim in Keeble et al, 1992, that rural entrepreneurs are more frequently migrants in the sense of this paper, than their urban counterparts. In addition, Centre for Rural Economy, 2000, concludes that the activities of migrant business owners are concentrated in the provision of externally oriented services, which have higher growth rates.

However, the argument that migration by itself has a substantial impact on local economic capacity runs counter to some previous analysis of migration in rural areas (e.g., Leatherman, 2000; Courtney and Bryden, 2001). In such analysis, young people tend to migrate out of a rural area to urban centres, while retirees tend to migrate in. This leads to negative effects on economic development, with both flows reducing the proportion of the local population that is economically active. A policy of attracting economically active migrants, who then create employment and wealth, therefore runs against the historical experience of many of the areas included in this study. There are potentially considerable obstacles to changing this well-established outward migration pattern, based firstly upon migrants' perceptions of the nature of rurality, and secondly on the nature of the social relationships required to engage in entrepreneurial activity.

We recognise that migrant business owners have made a substantial contribution to local rural economies across the UK. However, we question whether it is the migrant status of the entrepreneurs, or other explanatory factors, perhaps structural change affecting whole business sectors, or the underlying business model used, that is important in explaining business growth. For example, if developing sales networks beyond the local area is important in explaining business growth, then migrant business owners, because of prior experience, may already possess social capital allowing them to organise such networks at low cost. To the extent that such an explanation holds, it may be more effective to direct policy so that indigenous business owners are able to emulate the characteristics of migrant owners. For the purposes of our research, these considerations provide baseline hypotheses that there are no differences in motivations or attitudes between migrant and indigenous businesses owners, and that migrant status is not related to the achievement of business growth.

### **3. Methodology**

The current study aims to determine factors that affect attitudes to business and business performance within a sample of owners drawn from a large number of rural areas in Scotland. The attitudinal factors investigated include motivations for acquiring ownership of the business and ambitions for future growth. Measures of business performance are turnover and employment growth. The study investigates specifically whether the migration status of a business owner affects either attitudes or performance. For this purpose, owners who grew up in the area of study are defined as indigenous, irrespective of whether or not they have left it for study or to work. Owners who first lived in the area as adults are defined as migrants.

Data was obtained from telephone interviews with business owners carried out in May, 2004, using funding from the Scottish Economics Network. A database of 1440 rural Scottish businesses was compiled, extracting names from a variety of sources including Companies House, the Yellow Pages and the Scottish Business Register. To reduce the number of businesses in the sample that had ceased trading, the business name had to appear in at least two databases. Rural areas were defined by using the

standard postcode definition adopted by the Scottish Executive, excluding any that lie in settlements of more than 10,000 residents (PIU Report, 2000), and the search was limited to nine areas. These included the three island groups of Shetland, Orkney and Eilean Siar, the majority of the Highland region (the area around the city of Inverness was excluded), and Aberdeenshire, Perthshire and Scottish Borders, the last three lying close to large urban centres. These restrictions ensure that the sample is representative of the whole range of experience of rural business in Scotland and also that the 'rural' sample is consistent with previous samples of Scottish rural business owners (e.g., Deakins, et al., 2004, Courtney and Bryden, 2001). There were more difficulties in making contact with business owners than we had anticipated, and so a useable sample of 399 firm owners was generated. Analysis was carried out using SPSS.

#### **4. Descriptive statistical analysis**

Within the sample, it was possible to classify the residency status of 363 respondents. A business owner who first lived in the area in which the business operates as an adult is classed as a migrant. Thus we include as indigenous owners all people who have lived in the area all of their lives, and those who may have moved away from the area for some time, perhaps to complete education, or to enter paid employment, but who have now returned. In the sample, 230 (63.4%) were indigenous, and 133 (36.6%) were migrants. The pattern of migration is not uniform, with indigenous owners predominant in the more remote regions.

##### *4.1. Business Classification*

Within the sample, the largest group of businesses was involved in the provision of consumer services. There are significant differences in the distributions of migrants and indigenous owners across business types, with indigenous owners over-represented in both agriculture and manufacturing. This finding is consistent with earlier work (Centre for Rural Economy, 2000). As discussed below, businesses sampled in these sectors include many family businesses, with ownership often inherited. Aware that there would be a number of long-established businesses in our sample, a question was included that concerned the manner in which the business had been acquired. Of 357 usable answers, 176 (49.2%) indicated that they had started the business, 103 (28.8%) that they had purchased it, and 78 (20.4%) that they had inherited it. Inheritance is of course far more common among indigenous owners than migrants, with 70 of the inheritors being indigenous.

Turning to business performance, there are no significant differences in the size of businesses when measured by employment, but when measured by turnover, there is a significant difference between the means for migrant and indigenous owned businesses (£485,000 vs £661,000). The mean length of control of businesses for the two groups of owners is quite different: for migrants it is 12.3 years, and for indigenous owners, 19.9 years.

Lastly, there are significant differences in the proportions of migrant-owned businesses that rely on markets some distance away from where the business is based. Whereas 52 (22.1%) of indigenous owners identified their largest markets as either national or international, 53 (37.6%) of migrant owners did so. This may be related to the arguments of Vaessen and Keeble, 1995, and Mitchell and Clark, 1999, that engagement in external markets is likely to be an important source of growth for rural businesses.

## 4.2. Owners' Characteristics

The sample does not reveal any substantial differences in the age distribution of indigenous and migrant owners. As is usually the case in such samples, and illustrated in Table 1, there are relatively few young business owners, a preponderance of middle-aged ones, and a relatively high number of quite elderly ones, especially among migrants. However, there is little evidence of this latter group comprising a flow of migrants moving from urban locations into semi-retirement. There is only one recent arrival among the oldest group of business owners, and as shown below, semi-retirement is one of the least common motivations for moving to an area.

**Table 1: Age distribution of business owners**

	Migrant	Indigenous	Total
Under 35	11	28	39
35 - 54	85	155	240
55 or over	42	54	96

As expected, nearly twice as many businesses in the sample have male owners (65.7%) as female ones (34.7%). Among migrants, the proportion of female owners aged in the age range 35 – 54 is significantly higher than for the population as a whole. This is potentially an interesting area for further examination. It may be that female business owners have skills that enable them to exploit obvious market niches in rural areas. Alternatively, it might be that women move to rural areas, perhaps because of family commitments, and either before arriving, or else soon afterwards, either identify an opportunity for business ownership or are pushed into self-employment because of a lack of suitable employment opportunities.<sup>8</sup>

## 5. Motivations and attitudes

Separate sets of questions about initial motivations for acquiring control of the business, and ambitions for business growth were asked. The extent of systematic variation in responses was explored using the method of principal components. From this exercise, two principal components of motivation and ambition were identified. For ease of reference, we refer below to opportunity and necessity motivations, and lifestyle and growth ambitions. While this is consistent with existing terminology in the literature, (e.g. Reynolds, et al. (2003) and Deakins and Freel (2005) respectively), we emphasise the extent to which we are using these terms in this paper largely for convenience. In subsequent analysis, where relationships between the principal component scores and past business growth are examined, this classification allows us to compare our interpretation with arguments already developed in the literature.

There are few significant differences between migrant and indigenous business owners' responses to these questions about motivation and ambition. There is a very weakly significant difference in initial motivations, with migrants slightly more likely to report fitting in with family commitment among these. In addition, while migrants report

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<sup>8</sup> It has been suggested at a presentation of some of this work that the data might be consistent with women establishing businesses that have shorter lives than men. We have examined the data for evidence of this, and acknowledge that it is possible that female migrants do take control of businesses for a relatively short period. Equally, we note that the proportion of business owned by male migrants follows a similar pattern, suggesting that if there is a difference in survival rates of businesses, residency is more important than gender.

the achievement of a less hectic lifestyle significantly more frequently than indigenous owners, the low frequency of such responses (16% of migrant owners and 8% of others) suggests that this difference is unlikely to have a substantial effect in the following analysis. There are no significant differences in the analysis of ambition at all. This is very strong evidence for the hypothesis that there are no differences in motivation or ambition among indigenous and migrant business owners, and so the two groups of owners are pooled together in the analysis of these attitudinal factors.

### 5.1. Motivations and Ambitions

As described above, interview respondents were asked firstly about motivations and then about current ambitions. In both cases, owners were first asked an open question, which invited them to describe their most important motivations and ambitions. Respondents were then asked to indicate which of nine pre-identified motivations and seven ambitions they considered important. Respondents were also given a final opportunity to add any other matters that they considered important. Given that none of the responses to the initial and final questions raised matters that were not included in the pre-identified responses, we are confident that the pre-selected factors have been chosen appropriately.

**Table 2: Distribution of motivations for acquiring business ownership against reported business growth experience in the past three years**

N = 388	21	45	109	113	98		
Combined growth measure	Strongly decreasing	Weakly decreasing	Constant	Weakly increasing	Strongly increasing	Proportion	$\chi^2$
Opportunity	11	18	55	62	70	0.557	14.2* *
Work for self	7	15	40	56	60	0.458	16.5* *
Enjoy	7	16	34	43	55	0.399	13.8* *
Challenge	5	12	37	38	45	0.353	7.03
Flexibility	5	8	31	35	40	0.307	8.34
Family	4	14	23	25	27	0.240	2.746
Employment	2	11	10	22	17	0.160	7.916
Lack of other prospects	2	7	20	13	19	0.157	3.505
Less hectic	3	1	11	16	12	0.111	5.083

Responses are coded in binary form in questionnaire records, recording only whether owners reported a factor as being important, rather than the perceived importance of ranking of individual factors for individual respondents. Hence the distribution of response factors is reported over the measure of recent business growth in Table 2. Broadly, the five most frequent responses indicate positive motivations for taking control of the business appear consistent with business ownership being a vehicle for the achievement of personal goals. In addition, the table also reports significant differences in the frequency of positive responses to the three most common responses across the distribution of owners' reports of business growth, with business owners reporting growth also more likely to report these motivations. To the extent that

the participants' responses reflect their initial motivations correctly, they suggest a positive association between owners' growth orientation and recent business performance.<sup>9</sup>

It is acknowledged that in reporting responses to questions about growth ambition separately from the questions about motivations the pattern of responses to both sets of questions might be coloured by growth experience. However, the data reported in Table 3 suggest that differences in growth history are not associated with significant differences in the frequency of reports of achieving a working income and a comfortable lifestyle. The relative frequency of such responses suggests that growth ambitions are not predominant among the sample. Nonetheless, it is possible that positive responses to these questions might mask substantial differences in ambitions. One respondent, who has largely achieved income and lifestyle goals, might be largely content with maintaining business turnover and profits: a different respondent, in order to realise income or lifestyle ambitions, might also have to realise substantial growth ambitions.

**Table 2: Distribution of ambitions for business against reported business growth experience in the past three years**

N = 388 Combined growth measure	21 Strongly decreasi ng	45 Weakly decreasi ng	109 Constan t	113 Weakly increasi ng	98 Strongly increasi ng	Proporti on	$\chi^2$
Working income	10	29	52	58	63	0.546	7.60
Lifestyle	9	16	43	49	54	0.441	6.30
Growth	2	3	31	50	71	0.405	75.6* *
Create employment	4	3	24	34	48	0.291	32.0* *
Exploit niche	4	7	25	29	44	0.281	18.6* *
Pass on to children	5	6	19	21	34	0.219	12.5* *
Grow and sell	1	2	13	15	20	0.131	8.54*
Second income	3	4	5	9	23	0.113	20.2* *

Such an explanation appears to be consistent with the data in Table 3. Classifying respondents by their businesses' growth record, there are significant differences in the frequency of responses to questions that more clearly address ambitions for business growth, including preparation for potential sale, and achieving a second income. These particular responses are consistent with pluriactivity, serial entrepreneurship, and diversification of business, but the very small numbers of respondents indicating prior

<sup>9</sup> However, since we are using a cross-sectional approach, we carry out this investigation cautiously. It may be that owners respond to questions about initial motivation and current ambition that is consistent with behaviour and business outcomes. Consider someone who moves to a rural area relatively late in life and decides to start a business to provide additional income in retirement. Suppose also that the business is successful. Such a respondent might claim to have been seeking business opportunities and record a strong business motivation. Had it been unsuccessful, the respondent might well have claimed that the business existed only to generate a second income, and so appear as a necessity entrepreneur.



or multiple business ownership prevents us from exploring the extent and nature of such phenomena more fully.

### 5.2. Derivation of Principal Components

The first two principal components for both initial motivation and current ambition explain a little more than half of the variation in responses across the sample. Only the first two eigenvalues are considered, since the others take a value of less than one, and hence have only limited explanatory power. In the analysis of initial motivations, eigenvalues for the first two principal components of 3.67 and 1.36 are obtained, with these principal components accounting for 55.9% of the variation in responses. Applying varimax rotation to ensure the orthogonality of these components, the first rotated component explains 35.9% of the variation, and the second component 20.0%. These rotated components are shown in Table 4.

The first component is largely determined by evidence of the business owners wishing to work for themselves, believing that business ownership would be enjoyable and increase flexibility, and seeking out opportunities and challenges. Given that the degree of correlation among these responses to questions is very high, this result is not surprising. This component is interpreted as representing positive motivations for acquiring ownership of the business, or, using the term most familiar in the literature, opportunity motivation.

Factors including lack of alternative employment and familial reasons seem to be important in the second component. These motivations are more negative than the others, driving, rather than attracting, respondents towards business ownership. This component is thus characterised as a measure of necessity motivation.

**Table 4: Rotated principal components for initial motivations and current ambitions**

Initial motivations	Current ambitions	
	Opportunity	Necessity
Work for self	0.811	-0.167
Enjoy	0.795	0.209
Flexibility	0.792	0.285
Opportunity	0.772	-0.167
Challenge	0.644	0.445
Need	-0.202	0.783
employment		
Family	0.207	0.710
Lack of	0.330	0.395
prospects		
Less hectic	0.338	0.399

Turning to the principal components of variation in current ambitions, the critical value of the eigenvalues for inclusion is set to one, and, again, two principal components survive, which in this case are able to explain 56.4% of the variation within responses. Upon application of varimax rotation, the first component accounts for 30.5% of the variation, while the second component accounts for 26.0% of it.

The important elements in the first principal component are the achievement of a working income, which may be a second income within the household, the achievement of lifestyle goals, and the creation of a business that can be left to children, or which generates employment locally. All of these ambitions emphasise business as an activity that does not necessarily require sustained growth for achievement. Within the second component, the achievement of growth, possibly with the intention to sell the business on, job creation and the exploitation of a local niche are seen as being important. The ambitions underlying this component seem to be relatively transparent, and it is thus suggestive of growth ambition. It is perhaps sensible, given the responses to other questions in the sample that growth should not be the first component of ambition. Seeking some consistency with the existing literature, the suggestion is that such ambitions are typical of what would be expected within a lifestyle business. It is important to remember that while adopting this nomenclature, lifestyle and growth ambitions are not defined in opposition to each other, but rather as two distinct measures of ambition.

The data permits the generation of two measures of motivation and of ambition for each business owner. It is possible to place a reasonable interpretation upon each of these. By using a principal components' approach, it is possible to analyse the determinants of variation in component scores, and also to use the scores as explanatory variables in the analysis of growth performance.

## **6. Explaining business growth**

Factors affecting responses to the questions about motivations and ambitions, and then the determinants of business growth were analysed, and Table 5 shows results of OLS regressions on the scores generated from the principal components. Dummy variables are included for location and sector to capture the background business environment. In addition, characteristics of the business owner, such as age, migration status and gender are also included, as are dummies for being an inheritor, prior business ownership and recent business acquisition. Lastly, two characteristics of the business, total employment and external market orientation, are included.

As expected with cross-section data, results are weak, but generally plausible. Considering the effects of environment first, they suggest that motivation component 1 is significantly greater in Orkney and Shetland and Scottish Borders than in other rural areas, although this is not associated with a substantially higher level of ambition factor 2 (growth). The data do not permit further analysis of these findings, which suggest that in some areas people are able to identify business opportunities more easily than in others, but the scale of the ambitions of business owners shows no systematic regional variation. Consistent with the results of Galloway & Levie (2001), relatively high rate of business ownership in these areas is found in areas where there is a high motivation to ownership. The current study also suggests that growth rates in individual businesses tend to be modest, and the emergence of larger businesses in rural areas is a relatively rare event.

A positive coefficient appears on the manufacturing sector dummy in the regression on motivation factor 2 (necessity). This is likely to be related to the large negative coefficients on inheritance in the regressions on motivation factor 1 and ambition factor 2. Manufacturing businesses tend to be larger than other businesses in the sample. Their owners also tend to be older and many have owned their businesses for longer than average.

**Table 5: Explaining motivations and ambitions**

	Motivation 1	Motivation 2	Ambition 1	Ambition 2
	0.127	0.169	-0.268	-0.791
Constant	0.320	0.328	0.329	0.325
	0.526*	0.224	0.271	0.162
Orkney and Shetland	0.174	0.179	0.179	0.177
	0.380*	0.043	0.240	0.102
Borders	0.169	0.174	0.174	0.172
	-0.001	0.627*	-0.111	-0.018
Manufacturing	0.176	0.180	0.181	0.179
	-0.027	0.073	0.119	-0.122
Business Services	0.138	0.142	0.142	0.140
	0.005	-0.004	-0.001	0.011*
Employment	0.004	0.004	0.004	0.004
	-0.006	-0.190	0.059	0.027
Exporter	0.128	0.132	0.132	0.131
	-0.001	0.006	0.006	0.176
Own less than 2 yrs	0.182	0.187	0.187	0.185
	-0.210	0.084	-0.128	0.017
Own less than 10 yrs	0.134	0.137	0.137	0.136
	-0.659*	0.144	0.309	-0.297*
Inherited business	0.142	0.145	0.146	0.144
	-0.056	-0.158*	-0.102	0.186*
Prior business	0.067	0.069	0.069	0.068
	0.334	0.019	0.619	0.682*
Age less than 35	0.212	0.218	0.218	0.216
	0.169	0.219	0.297	0.305
Age 36 - 55	0.134	0.138	0.138	0.137
	-0.138	-0.138	-0.198	0.329
Female migrant owner	0.171	0.175	0.176	0.174
	-0.103	-0.213	0.034	-0.016
Male migrant owner	0.154	0.158	0.158	0.156
Indigenous female owner	0.076	-0.052	0.159	0.141
	0.160	0.164	0.164	0.162

Acquiring ownership by inheritance seems more likely in such a situation, but inheritors do not have to identify a business opportunity in the same way as business founders, only having to respond to changes in market circumstances, but generally having already acquired business capital and expertise. It is perhaps reasonable that they should not be so strongly motivated to achieve business growth, given that they have acquired a mature business that has already exploited many of the opportunities open to it. The large positive coefficient on employment in the regression on ambition factor 2 (growth) suggests that owners of large businesses are more likely to be oriented towards business success, and wish to expand their businesses further.

Prior experience of business ownership is also a significant regressor in the equations for motivation factor 2 and for ambition factor 2. In these cases, prior ownership experience appears as a sign of the respondent being positively motivated by business objectives. Youth also appears to be strongly significant in the both regressions on ambition. This might simply reflect the lower probability of younger owners having experience of setbacks in their operations, and innocently believing that they will be able to achieve greater growth than more experienced owners in their industries. Lastly, neither recent acquisition of the business, nor residency and gender enter into

the equations as significant regressors, although an interaction between gender and migration status is weakly significant in the regression on ambition factor 2, suggesting that this is higher among female migrants than among the population as a whole.

### 6.1. Business growth

Owners' motivations or ambitions might be expected to feed into the growth performance of their businesses, along with many other factors. Table 6 illustrates logistic regressions on employment and turnover growth. These results suggest that our characterisation of the motivation and ambition factors is broadly correct. Motivation factor 1 is significant in the regression on employment growth, but not with turnover growth, while ambition factor 2 is significant in both regressions. Including these factors is somewhat problematic. Even though they are attempts to create instruments, given that they are attitudinal variables, there is a very real possibility that they are endogenous. Specifically, it is possible for a business owner to claim to have had motivations for business growth because of the achievement of it, and it is also possible for a business owner to have ambitions for future growth because growth has been achieved in the past. The use of cross-sectional data here makes this very difficult to avoid, however.

The results provide further evidence that external orientation is associated with business growth, and that recent acquisition is also important. While no significant effects from migration are observed, the relationship between external orientation and business growth perhaps indicates mechanisms by which migrant entrepreneurs have an immediate effect on the local economy. Firstly, by taking control of a business, they might initiate a period of expansion. Secondly, through membership of external networks, they might be more likely to achieve business growth. However, neither of these are characteristics of migrant owners specifically, and we should not be surprised, given the similarity in responses of migrant and indigenous owners to questions about attitudes that there are no significant differences in growth performance.

**Table 6: Determinants of business growth**

	Employment growth	Turnover growth
Business Services	0.275	0.531
	0.424	0.429
Consumer Services	-0.173	-0.147
Employment	0.383	0.384
	-0.054	0.152
Exporting	0.103	0.112
	0.831*	0.248
	0.292	0.302
Own less than 2 yrs	0.863*	1.646*
	0.414	0.637
Own less than 10 yrs	0.664*	0.175
	0.290	0.303
Inherited business	0.311	-0.605*
	0.327	0.334
Age less than 35	0.382	0.568
	0.468	0.519
Age 35 – 54	0.034	0.297
	0.304	0.310

Gender (Male)	0.210	0.186
	0.266	0.290
Migrant	0.219	-0.153
	0.270	0.295
Motivation factor 1	0.303*	-0.154
	0.146	0.166
Motivation factor 2	-0.027	-0.057
	0.128	0.131
Ambition factor 1	0.132	-0.020
	0.134	0.144
Ambition factor 2	0.323*	0.751*
	0.133	0.169
Log likelihood	527.225	478.994
Pseudo R <sup>2</sup>	0.081	0.121

## 7. Conclusion

Consistent with our original hypothesis, no evidence of differences in motivation, ambition, or the achievement of business growth appear when comparing migrant and indigenous business owners. There is little evidence of ‘third age’ business, where migrant owners would choose to move to either a more pleasant, or indeed less stressful, environment in semi-retirement. Instead, the data suggest migrant business owners are typically younger, more frequently female compared with the sample of indigenous owners, and generally have positive (opportunity) motivations for engaging in business ownership, but only modest ambitions for business growth. These last factors mean that the only mechanism through which we have been able to identify positive effects on growth of specifically migrant status is the apparent willingness of migrant owners to engage in trade beyond the immediate locality.

The other purpose of our research was to determine how business motivations and ambitions affected growth performance, and our interviews have allowed us to identify the main elements of these attitudinal factors. Our convenient nomenclature, in which these elements represent opportunity and necessity motivations, and social and growth ambitions, receives some support from analysis of the relationship between these factors and business growth. This suggests that business owners are more likely to achieve growth, and to develop entrepreneurial businesses, if they have ambitions for growth. However, given the cross-sectional data that we use, we believe that further research is needed to probe the robustness of this finding.

Positive motivations and ambitions that are likely to lead to business growth seem to be especially pronounced among younger business owners, as might be expected, and to be less common among those owners who have inherited their businesses. It is not clear from our discussion whether members of this relatively large group of inheritors are reporting lower ambitions because of lack of motivation, or because they realise that they have taken control of mature businesses, possibly in declining industries, with few prospects for expansion. Again, we consider that the role of inheritance to have been under-researched in the rural business literature. Understanding its effects more clearly will also be important in understanding more fully the relationship between business activity and economic development in rural areas.

There are many other directions for further research. There is some suggestion of regional differences in ownership patterns (a high proportion of female owners in the Scottish Borders, relatively few migrant owners in the island groups, and very strong

motivation for ownership in Orkney, for example). It would be very interesting to explore differences in the institutional context of these areas in order to understand better the extent to which differences in aggregate economic performance across these areas might be attributed to differences in individual business performance, rather than to, say, a higher density of businesses across the population. The data presented here does not allow estimation of the net additional employment associated with migrant businesses, or even the relative propensity of migrants to engage in business ownership. It could also be very instructive to examine the question of whether there are substantial social barriers to business growth, resulting from such factors as 'thick' ties in local networks that exclude migrants. It would also be valuable to understand whether migrant business owners are able to exploit membership of networks beyond the local area to create new business opportunities.

The analysis of migration itself could go much further. There is some evidence of the achievement of lifestyle being important in motivating migration among business owners, and perhaps surprisingly little evidence of migrant business owners in the sample either moving to an area to establish a business, or of migration as a response to critical events, especially marriage, in our respondents' lives. There is also some evidence of migrant business owners taking control of a business shortly after arriving in the area. This might be the result of both positive motivations, such as identifying an opportunity, or negative ones, such as the lack of employment opportunities. There seems to be an important role of gender as a determinant of ownership patterns, with migrant female owners in the 36 – 55 age range significantly over-represented in this data. In other work, Galloway and Mochrie, 2005, the proposition is advanced that female migrant owners have had particularly beneficial effects on the rural economy through acting as role models of women who are economically independent in non-traditional ways. The possibility that migration might be associated with a deep transformation of social attitudes seems especially interesting.

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