



**ISCE 2006**



## International Survey on Collegiate Entrepreneurship 2006

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## **Preface**

**ISCE** stands for »**International Survey on Collegiate Entrepreneurship**« – an international research project examining Academic Entrepreneurship. The goal of this project is to examine, explain and discuss the behaviour and intentions of students with respect to their decision to engage in entrepreneurial activities and to establish a business.

The project is coordinated on an international level by the Swiss Research Institute of Small Business and Entrepreneurship at the University of St. Gallen (KMU-HSG) together with the KfW-Endowed Chair for Entrepreneurship at the European Business School (ebs).

We are very grateful to our partner Universities, which were responsible for the inquiry at a national level. Without the effort put in by all national teams, the project would not have been realized up to the current level. Furthermore, we are also very grateful to our two main sponsors. Firstly, the Research Commission of the University of St. Gallen, which has provided financial support for the project (see: [www.foko.unisg.ch](http://www.foko.unisg.ch)). Secondly, we would also like to thank Information Factory GmbH for their support, as well as taking care of the technical side of our web-based questionnaires, and for hosting the data set (see: [www.information-factory.com](http://www.information-factory.com)). Further details about ISCE 2006 can be found on the project website [www.isce.ch](http://www.isce.ch).

This study presents a wide range of useful information in relation to Academic Entrepreneurship. On the one hand, there is a significant amount of entrepreneurial potential amongst students. On the other hand, however, we see that there is still room for improvement in some areas, such as training and further education, at different levels.

We hope that students, authorities, professors and teachers as well as service providers will be able to develop their ideas, urges and motivation, so as to contribute to developing a real entrepreneurial spirit amongst academics.

St. Gallen and Oestrich-Winkel, September 2006

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## **1 Introduction**

### **1.1 Research background and objectives**

In recent years, entrepreneurship has become a topic that has encouraged a large number of researchers to examine it from various perspectives and with various aims in mind. As a result, findings from several interesting research projects are currently available. In addition to a significant number of theoretical and more conceptual studies, there is also a large amount of empirical works dealing with a wide diversity of issues within the field of entrepreneurship.

Most of the time, the key question in such research is what specifically makes a person, or economy, entrepreneurial, or – for example – what type of conditions need to be in place in order to contribute to, or limit, the development of entrepreneurial potential. The fact that such forces are becoming increasingly more significant within a globalised market is no longer questioned.

One of the possible responses to the challenges provided by entrepreneurship lies with the targeted encouragement of educational institutions in general, as well as in higher education, science and research in particular. The main reason for this is that new ideas, technologies, and therefore products, predominantly emerge within innovative contexts. It should thus come as no surprise that students at universities and higher education colleges are often the subject of research on entrepreneurship. As a result, a strand of research has developed under the heading of 'Academic Entrepreneurship', which explicitly tries to examine and clarify the significance, structures, as well as causes, of establishing a business. One of the objectives of such research is to improve in a targeted manner the situation in which such entrepreneurial activities can take place.

Most research findings involve valuable individual studies. However, the disadvantage of such research until now has been that it does not allow for much comparison, due to the wide variety of research questions, methods, and/or scales, used. It is for this reason that we decided to establish the 'International Survey on Collegiate Entrepreneurship – ISCE' research project.

The first objective of this research project has been achieved with the current study, which consists of making a comparison of the entrepreneurial potential of students at international level. The second, middle to long term objective of the project is to make a comparison at regular intervals of changes in relation to entrepreneurial potential on the one hand, as well as the general conditions at universities on the other, which is why the survey is carried out every two years. The third objective of this project is to ensure that individual aspects of entrepreneurship can be examined in a more in-depth manner, thereby creating opportunities for further development. Against this background, it should be clear why the ISCE will take several years.

## **1.2 Aim of final report**

The aim of this study is to compare the entrepreneurial activities and intentions of students in an international context. In order to achieve this aim, a questionnaire consisting of several parts was developed on the basis of existing studies.

The first major part of the questionnaire examines the entrepreneurial potential of students on a comparative basis at an international level. In this context, the first step is to identify students' professional expectations. In addition, various stages of activities are identified through questioning how many students have already established a business, or are interested in doing so. On the one hand, the quality of established businesses should be examined in more detail. On the other hand, the performances of those students intending to establish their own business should be differentiated. This part of the questionnaire ends with a question concerning the obstacles students perceive and which may be a decisive reason for them not to establish their own business.

The second step will be to provide a more detailed record of the (potential) obstacles perceived by students in relation to potentially establishing a business. To this end, obstacles will be examined on a general basis, as well as a more specific basis by means of an international comparison, as well as an examination of possible correlations.

The third step involves a closer examination of the entrepreneurial conditions at universities by means of a comparison at international level, prior to deducing any practical and research implications by way of conclusion.

## **1.3 Project coordination and methodology**

The 'International Survey on Collegiate Entrepreneurship 2006' is based on voluntary cooperation between representatives from different countries. The initiative arose as a result of the efforts of the Swiss Research Institute of Small Business and Entrepreneurship at the University of St. Gallen, as well as the KfW-Endowed Chair for Entrepreneurship at the European Business School. This core team is responsible for developing the questionnaire, international coordination in relation to carrying out the survey, as well as the publication of the findings of this study. The questionnaire was prepared in five languages (English, French, German, Finnish and Hungarian). The survey itself took place via the Internet, whereby a link to the questionnaire was emailed to students. On completion of the survey, all data was processed by the core team and provided to the various national representatives so as to produce the national results.

Each country had one representative. All 14 representatives were responsible for contacting students in their own countries. The representatives were asked to email the link to the questionnaire to as many students as possible, encouraging them to participate in the survey. Prize draws amongst participants were used as an incentive in some countries, so as to increase students' participation in the survey. In addition to this international report, with its key focus on a comparison between the various participating countries, country representatives will also prepare national reports containing more detailed findings.



## 1.4 Significance of the study

The sample on which this study is based consists of 37,412 questionnaires for analysis, coming from the 14 participating countries. The distribution across the various countries shows that some distinctions can be made (see also Figure 1).

country	code	number of interviewed universities	population	number of completed questionnaires	response rate (in %)
Switzerland	SUI	26	55'105	8'825	16.0
Liechtenstein	LIE	1	570	200	35.1
Germany	GER	9	111'474	3'189	2.9
Austria	AUT	23	122'600	8'857	7.2
France	FRA	1	2'500	67	2.7
Belgium	BEL	5	21'954	1'612	7.3
Ireland	IRL	4	37'000	248	0.7
Finland	FIN	8	45'400	1'566	3.4
Norway	NOR	6	38'125	1'086	2.9
Hungary	HUN	8	100'205	3'346	3.3
New Zealand	NZL	2	27'353	7'970	29.1
Australia	AUS	3	52'536	67	0.1
South Africa	RSA	1	12'600	25	0.2
Singapore	SIN	1	3'500	354	10.1
<b>International</b>	<b>Intern.</b>	<b>93</b>	<b>630'922</b>	<b>37'412</b>	<b>5.9</b>

**Figure 1: Participating countries and response rate**

The largest number of students who returned the questionnaire was found in Austria, Switzerland and New Zealand. The population indicated in the fourth column relates to the number of universities effectively questioned. These figures were obtained as a result of adding up the number of students enrolled at the universities questioned for each country at the time the survey was held. This means that not every university was questioned. The population therefore shifts accordingly between 122,600 students in Austria and 570 students in Liechtenstein. The fifth column shows the number of questionnaires that were in effect completed for each country. The last column shows the resulting response rates. The highest response rates were achieved in Liechtenstein (35.1%), New Zealand (29.1%), and Switzerland (16.0%). The lowest response rates were obtained in Australia (0.1%), South Africa (0.2%), and Ireland (0.7%). The international average is 5.9%.

In addition to a quantitative description of the sample, its internal structure must also be taken into account. Figure 2 therefore identifies 5 criteria in relation to the qualitative characteristics of the sample. In the second column, we have correlated the average to the duration of students' course of study so far. The average number of study years is 3.15 years. France is at the lower end with a value of 1.0 and must therefore be treated as an outlier. The second criterion is the stage of the course of study. 56.2% of all those questioned were at BA (Bachelor's) or an equivalent level and 38.1% were at MA (Master's) or equivalent level. The remaining 5.7% were at PhD (doctoral) or equivalent level. In the samples for France, Australia, and Singapore, there was an overrepresentation of the number of students at BA level. The third criterion relates to the type, as well as the way in which, the course of study was structured. 86.6% of all students questioned, indicated that they are in full-time education, whereas 13.4% stated that they were in part-time, or vocational, education. If we examine the national sample in this respect, then once again we can see an overrepresentation of full-time students in the samples for France and Singapore. In relation to the

average age, which was 24.2 years at international level, the youngest students appear in the sample for France, as can be expected and in line with what has already been said previously. Students in Singapore, South Africa, and New Zealand can be described as relatively young.

code	study year (average)	under-graduate, BA-level	Graduate, MA-level	doctoral program, PhD	full time	part time	average age	male	female
SUI	3.10	56.4	34.9	8.7	84.4	15.6	24.8	62.8	37.2
LIE	2.31	67.5	31.5	1.0	65.0	35.0	26.3	71.5	28.5
GER	3.23	42.9	52.9	4.2	96.9	3.1	24.0	48.7	51.3
AUT	3.64	40.2	52.8	7.0	74.7	25.3	25.3	47.7	52.3
FRA	1.00	94.0	6.0	0.0	100.0	0.0	21.0	37.3	62.7
BEL	2.75	40.7	48.1	11.2	92.7	7.3	23.0	51.9	48.1
IRL	3.11	91.5	6.1	2.4	95.6	4.4	23.8	48.0	52.0
FIN	2.48	79.4	20.2	0.4	85.8	14.2	25.5	48.3	51.7
NOR	3.06	30.5	67.2	2.3	97.2	2.8	24.4	60.0	40.0
HUN	3.19	40.2	58.6	1.2	90.6	9.4	23.3	51.6	48.4
NZL	2.91	84.1	11.4	4.5	93.7	6.3	22.8	46.8	53.2
AUS	2.28	97.0	0.0	3.0	79.1	20.9	23.2	44.8	55.2
RSA	3.68	12.0	84.0	4.0	96.0	4.0	22.9	60.0	40.0
SIN	2.18	98.9	1.1	0.0	98.3	1.7	22.5	49.4	50.6
Intern.	3.15	56.2	38.1	5.7	86.6	13.4	24.2	52.2	47.8

**Figure 2: Structure of the samples in country comparison (n=37,412)**

A final criterion is the composition of the national samples in relation to the specific field of study (see also Appendix under 6.1, on p. 31). On average, 25.7% of all those questioned studied business studies, followed by classical social sciences (9.9%)<sup>1</sup>, such as sociology and psychology, natural sciences (9.8%)<sup>2</sup>, mathematical sciences (9.5%)<sup>3</sup>, engineering and electrical science (9.3%), medicine or pharmacy (6.2%), or economics (5.7%). The remaining 32.9% consisted of various smaller fields of study. In view of the country-specific distribution, we note that, in particular, in Liechtenstein, France, Australia, South Africa, and Singapore, the subject of business studies is significantly overrepresented.

We can assume that the easiest way of contacting students is via a web-based questionnaire. One advantage of such an approach is that most students now have internet access, either at university or at home. A further advantage is that students can complete the questionnaire in their own time without a set time limit and we are not bound to lecture or seminar times. The risk that not all students can be reached in this way is minimum. When we checked with our country representatives, we concluded that most students have an email address.

<sup>1</sup> Subjects such as sociology and psychology are included here

<sup>2</sup> Subjects such as chemistry, biology, earth sciences, geography, are included here.

<sup>3</sup> Subjects such as mathematics, IT, astronomy, physics, are included here.

The real challenge is obtaining access to these email addresses. Most universities had email distribution lists that could be used as a basis for sending out emails. However, from an organisational point of view it was not self-evident that such email distribution lists could be used. On the one hand, those responsible for individual universities would not give their permission to use such distribution lists, since such institutions in principle do not allow the sending out of mass emails. On the other hand, there were also some universities where we were unable to complete the permission process for sending mass emails within the time scheduled for the study.

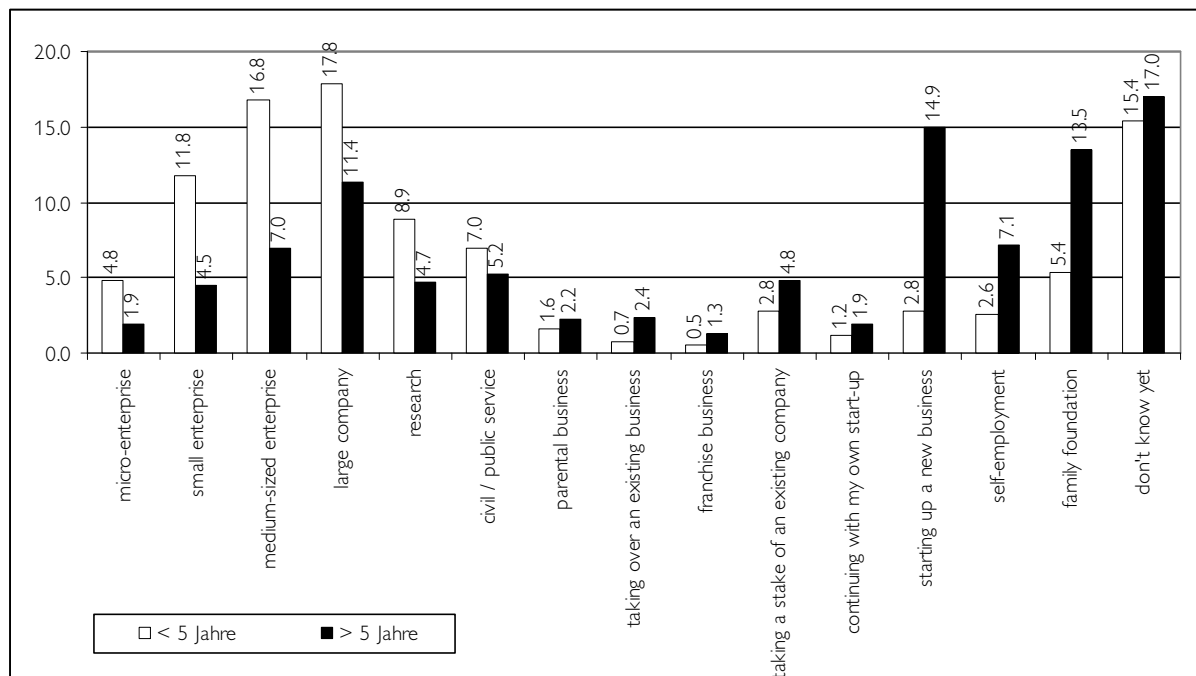
Notwithstanding small differences between the various countries in relation to the structure of the samples, as well as the risks faced in relation to web-based questionnaires, we found that the significance of the findings of this study can be rated quite highly, with the exception of France, Australia, and South Africa. As a result, we will not include these three countries in our analyses. Hence, most analyses in this report are based on the total sample. In some instances, we will focus on the subjects of business studies, economics, information systems management, as well as law, in order to increase the level of comparability – insofar as corresponding effects can be expected from such study areas.

## 2 Entrepreneurial activities of students

### 2.1 General ideas about the future

#### 2.1.1 General professional expectations of students

The aims of students in relation to their professional expectations can be quite diverse. At the same time, however, it must also be said that the first job that students obtain immediately following graduation, does not necessarily correspond with their actual job status several years later. We can assume that many students view their first job following graduation as a question of finding their way around the job market, as well as a first step towards further training and education. As a result, we make a distinction between two question categories in what follows. In the first category, we asked students what their job expectations were for the first 5 years following graduation (< 5 years). The second category represents the time after students' first professional occupations (> 5 years after graduation).



**Figure 3: International average of job expectations following graduation** (indications in %, n=37,412)

As can be seen from Figure 3, the international averages for students who intend to enter the job market after graduation are as follows: entry into a large company (17.8%), a medium-sized company (16.8%), or a small company (11.8%).<sup>4</sup> Students see additional important activities in research (8.9%), public service (7.0%), as well as small and micro businesses (4.8%). This overview clearly shows that two-thirds of all students expect to get their first job through being employed by someone else (total = 67.1%). In addition, 15.4% of students asked were unable to state their preferences at present.

<sup>4</sup> Definition: micro-enterprise = 1-9 employees; small enterprise = 10-49 employees; medium-sized enterprise = 50-249 employees, large company = more than 250 employees; SME = small and medium-sized companies = 0-249 employees.

However, potential job aims, albeit only in a small way, also include wanting to become an entrepreneur. These ranged from participating in a business and establishing one, to taking over a business. A total of 12.1 % of all students asked, expressed the intention of entering the job market as entrepreneurs following graduation. This percentage consists of a range of variants, e.g. establishing a business, participating in a business, taking over a family business, or opening a franchise. On the other hand, the remaining 5.4% wanted to start a family or to continue with their family lives.

As can be expected, students' professional expectations change over time. For example, more students intend to become an entrepreneur after having gained several years of professional experience, rather than intending to do so directly after graduation. In this context, establishing a business (14.9%), as well as being a freelancer (7.1%), are accorded the highest preference. These options are preferred to a potential job in someone else's employment, e.g. in small and medium-sized businesses or large companies. The preference for raising a family is also quite significant. Finally, there is no significant increase in the number of students who still have no specific job expectations after their first few years in a professional position.

### 2.1.2 International comparison of students' professional expectations

When compared internationally, there is considerable variation in students' expectations with respect to becoming an entrepreneur. Figure 4 sets out rankings which present an overview of students' expectation of becoming an entrepreneur. Percentages set out in parentheses refer to students who study business-related subjects (business studies, economics, information systems management, as well as law). The other percentages are based on the total sample. This ranking shows that the larger picture does not change significantly, with the exception of Norway.

Looking at the numbers of students intending to become entrepreneurs immediately after graduation of the total sample, we can see that Australia (18.0%), Belgium (16.7%), Hungary (16.0%), and Ireland (15.7%), have the highest percentages. The lowest percentages are given for Germany (7.9%), Switzerland (9.6%), and Finland (9.7%). If we would look at those studying business-related subjects within the same time period, then we can see that the ranking stays roughly the same. The highest-ranking countries are once again Australia, Belgium, and Hungary, but with Norway coming third this time. Germany, Switzerland, and Finland still remain at the lower end.

Directly after graduation (< 5 years)			5 years after graduation (> 5 Jahre)		
country	value in %	rank	country	value in %	rank
AUS *)	18.0 (18.8)	1 (1)	RSA *)	52.0 (52.0)	1 (1)
BEL	16.7 (17.8)	2 (2)	AUS *)	50.8 (51.6)	2 (2)
HUN	16.0 (15.5)	3 (4)	SIN	46.8 (47.4)	3 (3)
IRL	15.7 (13.7)	4 (7)	IRL	44.7 (46.3)	4 (5)
AUT	14.2 (14.4)	5 (6)	BEL	44.6 (47.0)	5 (4)
LIE	13.0 (13.0)	6 (8)	LIE	37.5 (37.5)	6 (9)
NZL	12.5 (15.1)	7 (5)	NZL	37.4 (42.7)	7 (6)
SIN	12.4 (12.7)	8 (9)	HUN	35.7 (35.8)	8 (11)
NOR	12.2 (16.9)	9 (3)	AUT	35.5 (38.1)	9 (8)
RSA *)	12.0 (12.0)	10 (10)	FRA *)	34.4 (34.8)	10 (12)
FRA *)	10.4 (10.4)	11 (12)	NOR	33.9 (40.6)	11 (7)
FIN	9.7 (11.1)	12 (11)	SUI	32.5 (37.7)	12 (10)
SUI	9.6 (10.2)	13 (13)	FIN	29.1 (29.4)	13 (14)
GER	7.9 (8.9)	14 (14)	GER	26.8 (31.9)	14 (13)
Intern.	12.2 (13.3)		Intern.	34.6 (38.5)	

**Figure 4: Rankings of expected entrepreneurial position** (\*= not representative)

More detailed information can be seen in the graphic and corresponding data tables in the Appendix (see also Chapter 6.2 and 6.3, on p. 32 and onwards). Contrary to students' expectations of becoming an entrepreneur, this information shows that students from the following countries mostly prefer to secure a job as an employee: Switzerland (74.4%), Singapore (73.4%), France (71.7%), and Germany (72.1%). The preference for family life following graduation is clearly above average for Finland (11.6%) and Hungary (11.0%). A further observation that can be made in relation to entry into the job market is that larger companies are primarily seen as potential employers in Liechtenstein (30%) and Singapore (43.2%). The highest preference for public service employment is in New Zealand (9.5%) and Belgium (8.9%). Based on an international comparison, Finland and Norway can be viewed as SME countries, since employment in SMEs is the main preference of students following graduation, as well as after several years of professional experience.

This ranking also does not change when students were asked about their expectations in the longer term. The ranking in relation to the expectation of becoming an entrepreneur is led by South Africa, Australia, Singapore, Ireland, and Belgium. There are problems with such ranking in relation to the first two countries, since the sample size for these two countries was too small. In this context, the percentage of students preferring to become an entrepreneur ranges between 45% and 52%. Germany, Finland, Switzerland, and Norway, are at the lower end of the rankings, with percentages ranging from 27% to 34%. The maximal difference between the percentage sizes of individual countries is therefore one of factor 2.

Regarding the development of expectations, we can see for each country that the preference of students to become an entrepreneur in the longer term is higher than immediately after graduation.

## 2.2 Current entrepreneurial activities and intentions of students

Our comments have so far focused on the general professional objectives or expectations of students. In the following section, we will specifically discuss students' activities in relation to their entrepreneurial activities, as well as their intention of establishing a business.

### 2.2.1 Entrepreneurial activities of students

Firstly, we will look at all students across all disciplines. Figure 5 shows that when compared internationally, an average of 3.2% of all students has already established a business. This group can be divided into 2.0% of students who are still actively involved in the business, and 1.2% who are no longer actively involved in the business, even though they established it. These entrepreneurial activities are examined in more detail in Chapter 2.3. Compared internationally, Liechtenstein (7.0%) shows the highest level of entrepreneurial activities amongst students, followed by Singapore (4.8%), Austria (4.7%), and Finland (4.4%). Belgium (1.4%), Switzerland (2.4%), Hungary (2.4%), Germany (2.7%), and Norway (2.8%) appear at the lower end.

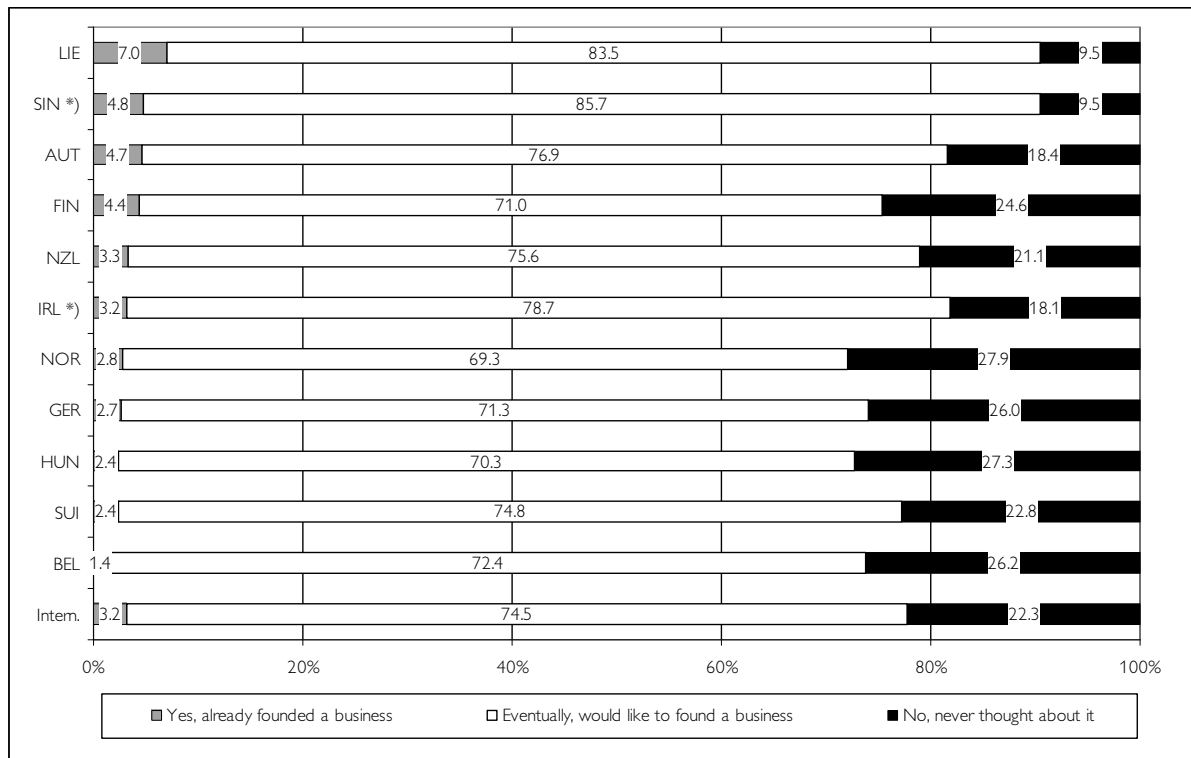
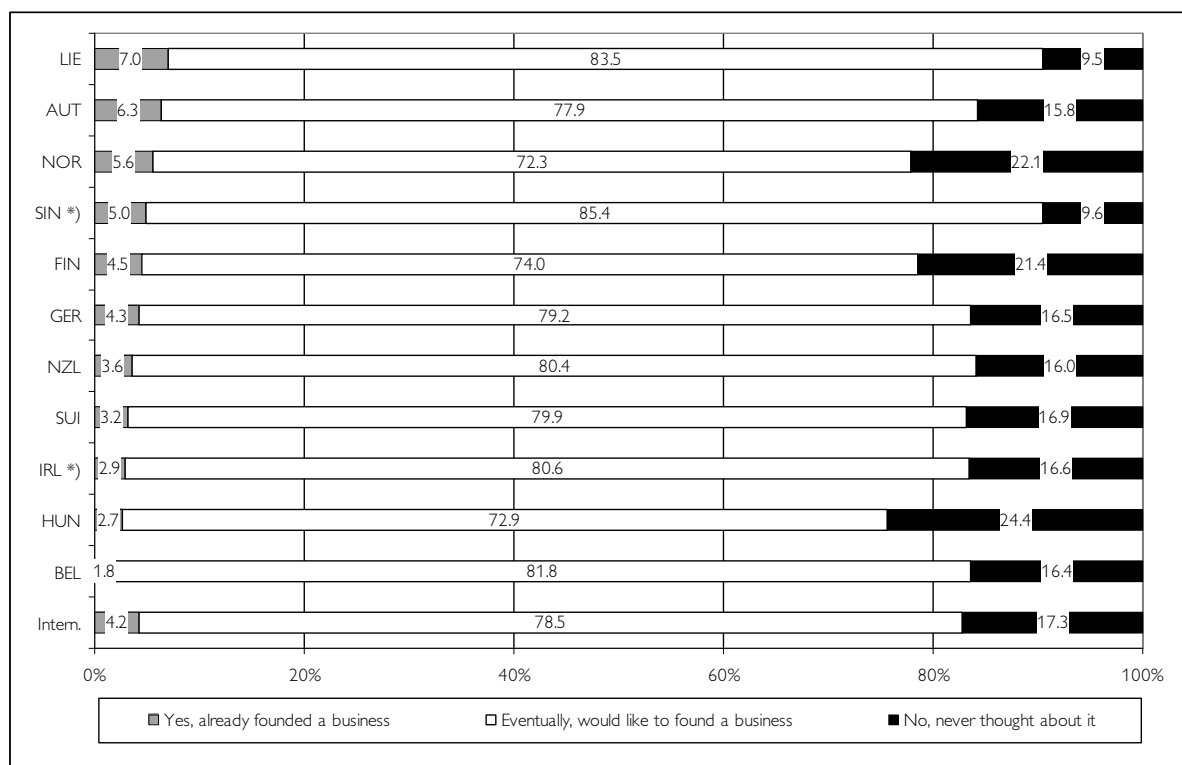


Figure 5: Entrepreneurial activities and intentions of all students (n= 37,412)<sup>5</sup>

Secondly, we will consider all students taking business-related subjects, so as to obtain a higher degree of comparability (see Figure 6). The first thing that we find, is that the percentage of those students who actually establish a business increases for each country by 0.4 to 1.6 percentage points. Compared internationally, Liechtenstein remains at the top with 7.0%, Austria shows an increase (6.35%) with second place, followed by Norway (5.62%) in third position. Belgium (1.79%) and Hungary (2.71%) remain at the lower end in relation to the percentage of students who established a business.

<sup>5</sup> \* = not representative for the whole country.



**Figure 6: Entrepreneurial activities and intentions of students in business-related studies (n=15,789)<sup>6</sup>**

### 2.2.2 Adverse reasons and potential reasons

The large majority of students have still not established a business. Firstly, we considered all students across all disciplines (see also Figure 5). Compared internationally, 22.3% of all students indicate that they have never considered becoming an entrepreneur. In this study, we refer to this group of students as 'non-founders'. Compared internationally, Norway (27.9%), Hungary (27.3%), Belgium (26.2%), and Germany (26.0%) lead the list. This means that 1 out of 4 of all students asked in these countries have no entrepreneurial potential. The lowest percentage here by far is that of those students asked in Liechtenstein and Singapore (9.5% each).

The remaining 3 out of 4 students in the study (74.5%) would like to establish a business in the near, or not so near, future or at least considered doing so. However, looking at this latter bit of information in more detail shows that the majority of students has not given serious thought to this option (45.5%). 11.5% of all students asked considered it seriously. An additional 7.2% had considered this option, but decided to abandon the idea. The level of serious thought for remaining students can be set slightly higher, since 7.7% indicate that they have made the firm decision to become entrepreneurs. A further 2.2% have already begun to take specific steps to realise their plans. Compared internationally, the range of those students asked who considered it at least sketchily, ranges from 70% in Norway to 85.7% in Singapore. This issue is examined in more detail in Chapter 2.4, p. 13.

<sup>6</sup> \* = not representative for the whole country.



Secondly, we will have a look at all students taking business-related subjects (see also Figure 6). On an international level, 17.3% of all students asked showed no entrepreneurial potential, since they had not yet considered the matter at all. Similar to the number of students with entrepreneurial intentions, we find that students who take business-related studies show an increased entrepreneurial potential. Compared internationally, the lowest percentages for students with no entrepreneurial potential were found in Hungary (24.4%), Norway (22.1%) , and Finland (21.4%). As expected, the percentage of potential business founders is higher here than in the sample covering all disciplines. The difference between the various countries as such are rather insignificant and are therefore not discussed in more detail here.

### 2.3 Businesses established by students

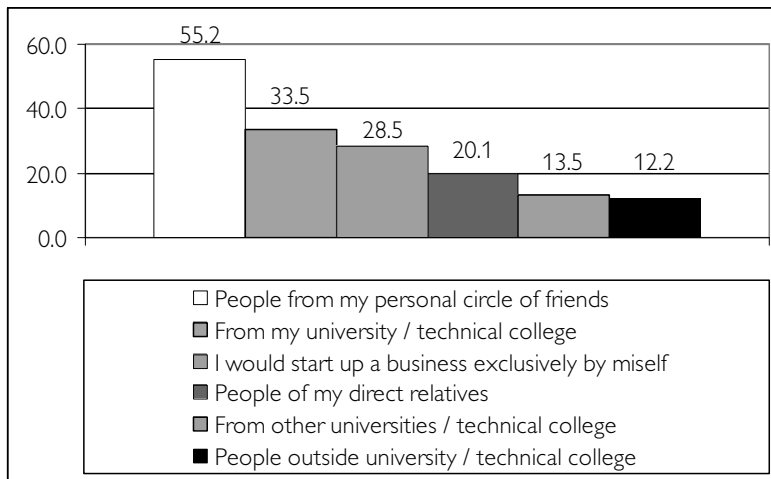
Establishing a business as such may be interesting, but the added value it implies is often questioned at societal level. It is for this reason that we will now have a closer look at businesses already established by students. The most important findings can be found in the overview presented in Figure 7. It is important to note, however, that the significance of some of the findings needs to be treated with caution, in particular for such countries as Liechtenstein, Singapore, Ireland, and Belgium, since the sample size for these two countries is too small. Data for France, South Africa, and Australia was not analysed.

code	n=	rate of founders <sup>7</sup>	founded ... years ago	number of employees	number of founders	average age of the founders
LIE *)	14	7.0 (7.0)	4.2	2.5	2.8	31.9
SIN *)	17	4.8 (5.0)	2.5	2.4	2.3	24.1
AUT	424	4.7 (6.3)	5.0	4.1	1.6	30.8
FIN	68	4.4 (4.5)	5.2	1.8	1.6	29.1
NZL	260	3.3 (3.6)	5.3	4.1	1.8	30.6
IRL *)	8	3.2 (2.9)	8.2	1.3	2.4	35.3
NOR	31	2.8 (5.6)	4.4	2.0	1.8	28.9
GER	84	2.7 (4.3)	3.3	1.9	1.8	26.0
HUN	81	2.4 (2.7)	3.6	3.5	2.0	27.9
SUI	210	2.4 (3.2)	4.4	4.1	2.3	28.2
BEL *)	22	1.4 (1.8)	7.1	4.3	2.1	29.8
Intern.	1'224	3.2 (4.2)	4.8	3.7	1.9	29.6

**Figure 7: Businesses established by students** (\* = findings needs to be treated with caution)

As mentioned previously, the international average percentage for establishing a business was 3.2%, or 4.2% when taking into account business-related subjects. On average, such businesses were established 4.8 years ago. Taking into account the age of students at the time when they established their business (29.6 years), we can see that it is significantly higher than the average age of all students (24.2 years). This leads to the conclusion that such businesses were either established very early on during their studies, or that students did so prior to commencing their studies.

<sup>7</sup> Percentages in parentheses are those for students who study business-related subjects.



**Figure 8: International averages for partners of business founders**  
(indications in %, multiple options possible)

In addition, we also asked business founders who formed part of their team when they established their business, allowing for multiple answers (see also Figure 8). More than half of the students included persons from their immediate circle of friends or acquaintances, followed by 33.5% of persons from their own university. Almost one-third of those asked indicated that they established the business on their own (28.5%). One-fifth of those asked had a close relative, e.g. sibling, parent, uncle, as a co-founder of their business. There is significantly less cooperation with persons from other universities.

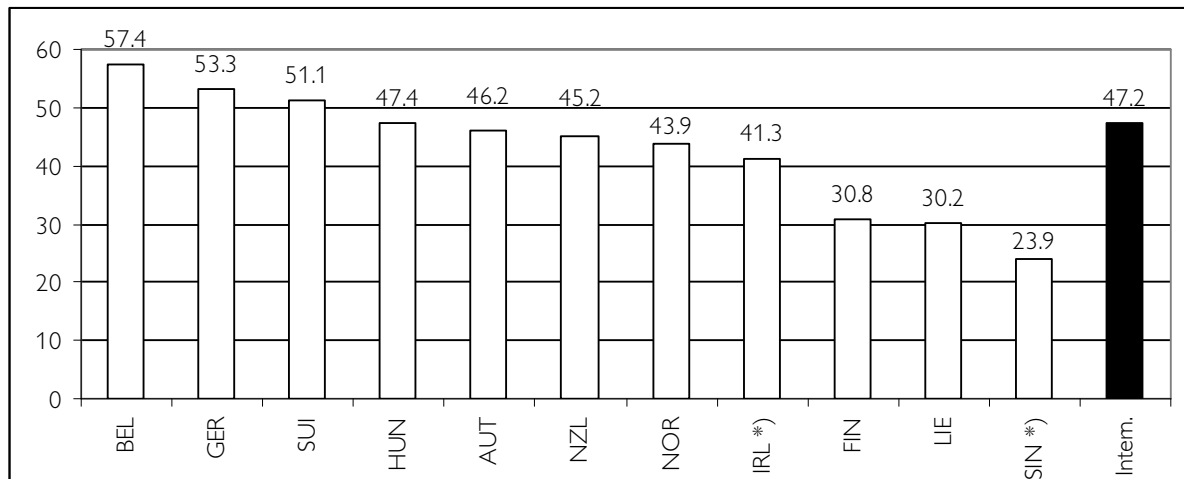
Since the amount of data collected for most countries is too small, we have not provided an analysis or commentary at international level.

## 2.4 Intention of students to establish a business

### 2.4.1 Activities in relation to establishing a business

Following our closer examination of students who already established a business, we will now turn to potential founders of businesses. The key focus for this analysis follows on from all those students who have at least considered establishing a business (see also Chapter 2.2, on p. 9). In order to identify how serious these students were in this regard, we asked a series of questions in relation to potential steps that could lead to establishing a business, allowing for multiple answers.

The international average showed that 47.2% of all students had not yet carried out any specific steps in order to establish a business (see Figure 9). This means that although students had already thought of establishing a business, half of them had not taken any serious steps towards becoming entrepreneurs. Compared internationally, Belgium (57.4%), Germany (53.3%), and Switzerland (51.1%), lead the list. This means that students in these countries are the least likely to establish their own business. Conversely, students are more likely to do so in Singapore (23.9%), Liechtenstein (30.2%), and Finland (30.8%).



**Figure 9: Students taking no specific steps to establish a business (n=27,909)<sup>8</sup>**

The first thing that can lead to establishing a business is the gathering of information, as well as non-binding contemplation of the topic in general (see also Fig. 10). Another significant number of students (46.3%) indicate that they have at least thought carefully about their initial business ideas. A significantly smaller percentage of students has put such considerations into writing (14.2%). Accordingly, 13.1% of all students gathered information that specifically related to establishing a business, and 6.9% indicate that they have attended one or more events inside or outside the university in relation to establishing a business. Once again, we can see that when compared internationally, primarily students from Singapore, Liechtenstein, and Finland, have taken the first steps towards becoming an entrepreneur. A second tier is formed by Ireland, Norway, New Zealand, and Austria. Belgium, Germany, Switzerland, and Hungary form the bottom tier.

<sup>8</sup> \* = not representative for the whole country.

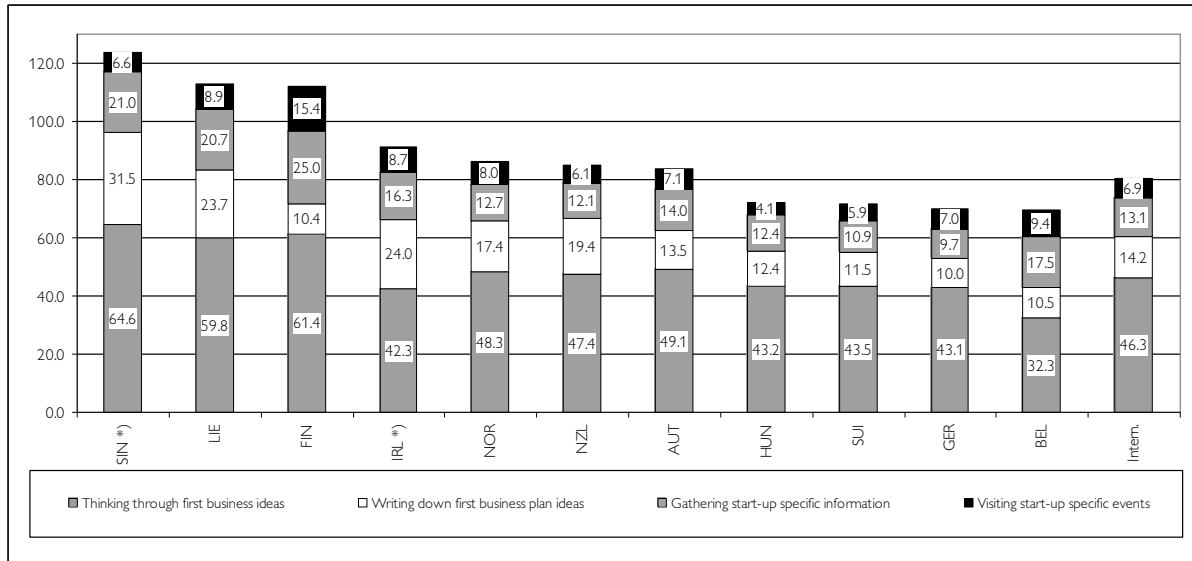


Figure 10: Information gathering for establishing a business (n=27,909)<sup>9</sup>

Finally, there are the preparatory activities, which already point specifically and in a goal-oriented way to the intention of establishing a business (see also Figure 11). These 'preparatory activities' refer to the availability of prototypes of products or services (5.0%), preparation of a business plan (7.4%), talks with possible sources of financial support (3.7%), and/or agreeing on specific time lines in relation to establishing the business (1.7%). Compared internationally, students from Singapore, Ireland, and Liechtenstein show the most progress. The least progress is shown by students from Germany, Austria, and Switzerland.

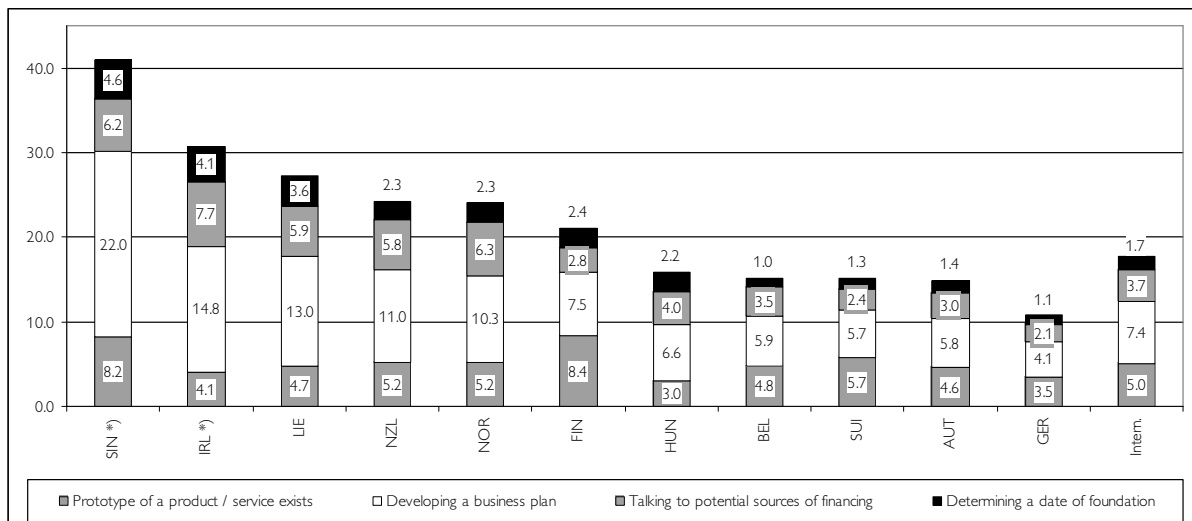


Figure 11: Preparatory steps for establishing a business (n=27,909)<sup>10</sup>

We conclude that only a small percentage of students who intend to establish their own business have taken any concrete steps in that direction with a specific time frame in mind (see also Figure 12, on p. 15).

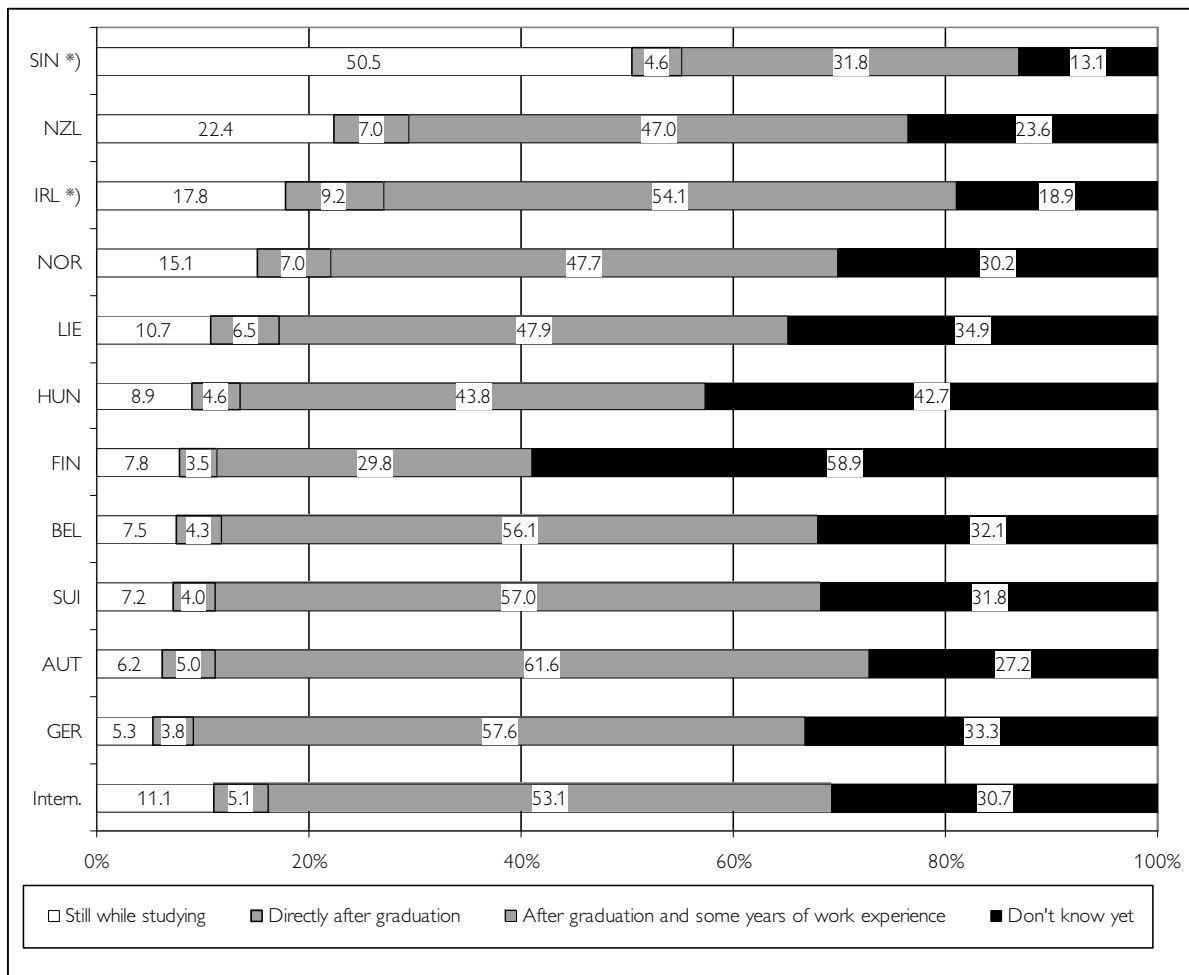
<sup>9</sup> \* = not representative for the whole country.

<sup>10</sup> \* = not representative for the whole country.

Since a differentiation between the various study disciplines would not show any significant results, we will not provide a more detailed analysis here.

#### 2.4.2 Possible time frame for establishing a business

We also asked potential business founders for the potential time frame of establishing their business. Compared internationally, this matter has already become an issue during their studies for 11.1% of those asked. For 5.1% of students, it is an issue to be considered after graduation. Almost half of all potential business founders make the conscious decision to first gather several years of professional experience (53.1%), prior to taking steps to establish their own business. This corresponds with our analysis in Chapter 2.1, on p. 6 and onwards. Almost one-third of all students (30.7%) remain uncertain as to when to establish their own business.



**Figure 12: Time frame for establishing a business<sup>11</sup>**

Compared internationally, we see that many students in Singapore (50.5%) indicate that they already want to establish a business during their studies, followed by those in New Zealand (22.4%, Ireland (17.8%), and Norway (15.1%). The students most unlikely to do so are those from Germany (5.3%), Austria

<sup>11</sup> \*)=not representative for the whole country.

(6.1%), Switzerland (7.2%), and Belgium (7.8%). The differences are smaller in relation to students establishing their own business immediately following graduation, showing the highest percentage for Ireland (9.2%). The lowest percentages are to be found in Finland (3.5%), Germany (3.8%), and Switzerland (4.0%). The highest level of uncertainty in this respect can be found amongst students in Finland (58.9%) and Hungary (42.7%).

### 2.4.3 Details of potential business establishments

Similar to examining in more detail the businesses already established as we did above, we will now do the same for potential business formations (see Figure 13). The analysis per sector shows that an insignificantly small percentage of students intends to become active in the primary sector (agriculture, hunting, fishing, forestry, and mining). Contrary to findings in relation to actual business founders, potential business founders are slightly more interested in the secondary sector. As expected, the tertiary sector (75.4%) is the most dominant area for entrepreneurial activity. Compared with actual business founders, the percentage is slightly lower for potential business founders. The most important industries within the tertiary sector once again include the provision of company-related services (15%) and communication (10%), followed by the health and social sectors (11%), as well as the provision of social or personal services (10%).

Compared internationally, not many significant distinctions can be identified. However, one noteworthy finding is the quite significant interest in the primary and secondary sectors in Norway. Most of the interest in relation to potentially establishing a business relates to the areas of agriculture, hunting, fishing, and mining. In order to increase comparability, we have also indicated for each sector and country in parentheses the percentages of students who study business-related studies, which shows a shift towards the service sector.

code	n=	1. Sector	2. Sector	3. Sector	with experience	number of founders
LIE	167	1.2% (1.2)	15.6% (15.6)	83.2% (83.2)	0.0%	2.1
SIN *)	303	0.7% (4.1)	18.8% (19.4)	80.5% (76.5)	13.2%	2.5
AUT	6'800	1.5% (1.5)	19.5% (19.5)	79.0% (79.0)	34.0%	2.0
FIN	1'112	1.9% (1.5)	30.5% (20.5)	67.6% (77.9)	49.5%	2.0
NZL	6'028	4.1% (2.6)	19.4% (21.4)	76.5% (76.0)	26.5%	2.1
IRL *)	195	1.5% (3.5)	20.5% (18.5)	77.9% (77.9)	46.8%	2.1
NOR	752	7.5% (1.9)	42.7% (30.5)	49.8% (67.6)	23.2%	2.2
GER	2'277	1.3% (1.3)	25.4% (25.4)	73.2% (73.2)	23.8%	2.1
HUN	2'352	2.6% (7.5)	21.4% (42.7)	76.0% (49.8)	23.5%	2.4
SUI	6'601	1.4% (1.4)	24.3% (24.3)	74.3% (74.3)	36.0%	2.3
BEL	1'167	3.5% (3.5)	18.5% (18.5)	78.0% (78.0)	29.8%	2.1
Intern.	72'885	1.4% (0.7)	22.3% (18.8)	75.4% (80.5)	30.7%	2.2

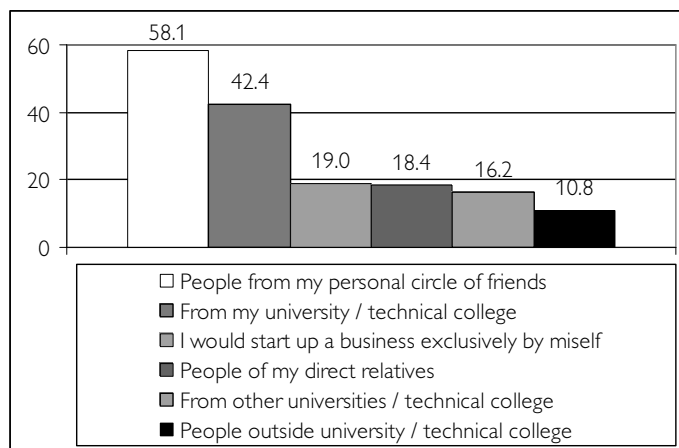
Figure 13: Potential business formations by students <sup>12</sup>

Almost one-third of potential business founders indicated that they already have professional experience in their preferred sector. In this context, it is interesting to note that amongst the many students in Liechtenstein who indicated that they were potential business founders, none of them already had any professional experience in the relevant area. Conversely, students in Finland (49.5%) and Ireland (46.8%) already have such experience. As a result, we could hypothesize that practical experience can put into

<sup>12</sup> FRA, RSA, and AUS are excluded. \* = not representative for the whole country.

perspective students' intention of potentially wanting to establish their own business. Unfortunately we cannot examine this hypothesis in more detail here.

The average size of the desired team for establishing a business indicated by those asked was 2.2 persons. Closer examination reveals that cooperation across several universities also comes last for potential business founders (see also Figure 14 on p. 17). For almost 16.2% of potential business founders, partners should come from other universities. The percentage of students who exclusively want to establish a business on their own is quite low as well at 19.0%. Similarly to actual business founders, potential business founders prefer to involve persons from their own immediate circle of friends or acquaintances, followed by persons from their own university.

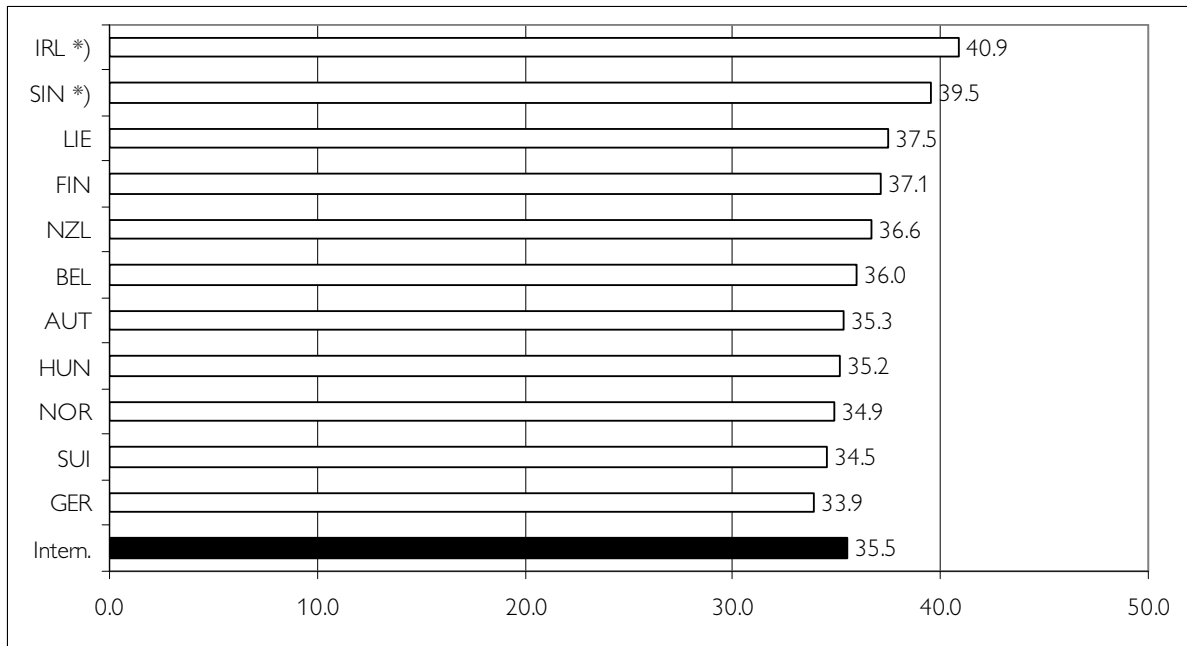


**Figure 14: Partners for potential business founders** (indications in %, multiple options possible)

## 2.5 International comparison of the entrepreneurial Power

The previous analyses of particular aspects of the study showed that there are significant differences between the various countries in relation to the entrepreneurial potential of students. In order to quantify such potential, we have developed an index.

The index construction can be found in the Appendix, on p. 35 The index takes into account how many students had already established a business and those who had not done so. For potential business founders, we also took into account whether or not they had already taken any specific steps to realise their plans. The minimum number of points that a student could get was 1 (for 'non-founders', i.e. students who had never considered establishing their own business). The maximum number of points was 10 (for students who had previously established their own business). In order to make a comparison between individual countries, we developed the index in such a way that 100% equals the maximum number of points that could be achieved.

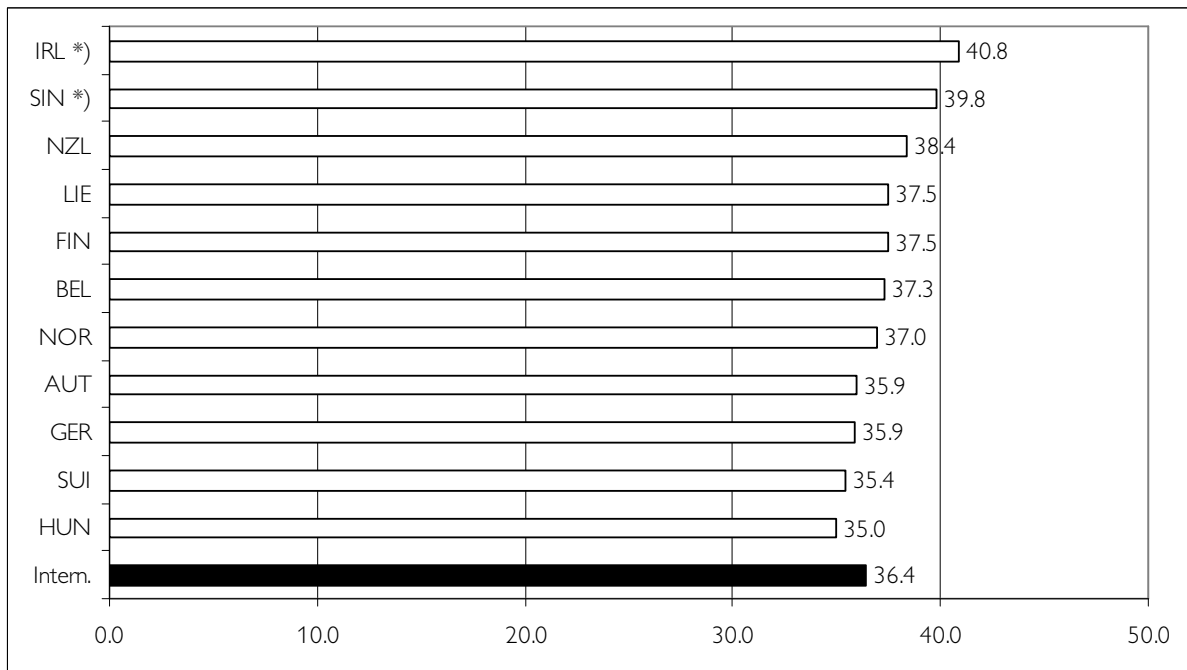


**Figure 15: International comparison of entrepreneurial power**

Looking at the total sample, we can see that the international average for the entrepreneurial potential of students is 35.5%. The highest percentages are to be found in Ireland (40.9%), Singapore (39.5%), and Liechtenstein (37.5%). The lowest percentages are to be found in Germany (33.9%), Switzerland (34.5%), and Norway (34.9%). Together with Hungary, the entrepreneurial potential of students in these countries is below the international average.

Because of the unequal distribution of study disciplines across all countries, we also calculated the index for all students undertaking business-related studies (see Figure 15). We can see that the international average is 36.4%. This indicates that students undertaking business-related studies show a slightly higher level of entrepreneurial potential when compared to the total sample, where the entrepreneurial potential was at 35.5%.





**Figure 16: International comparison of entrepreneurial power of students undertaking business-related studies**

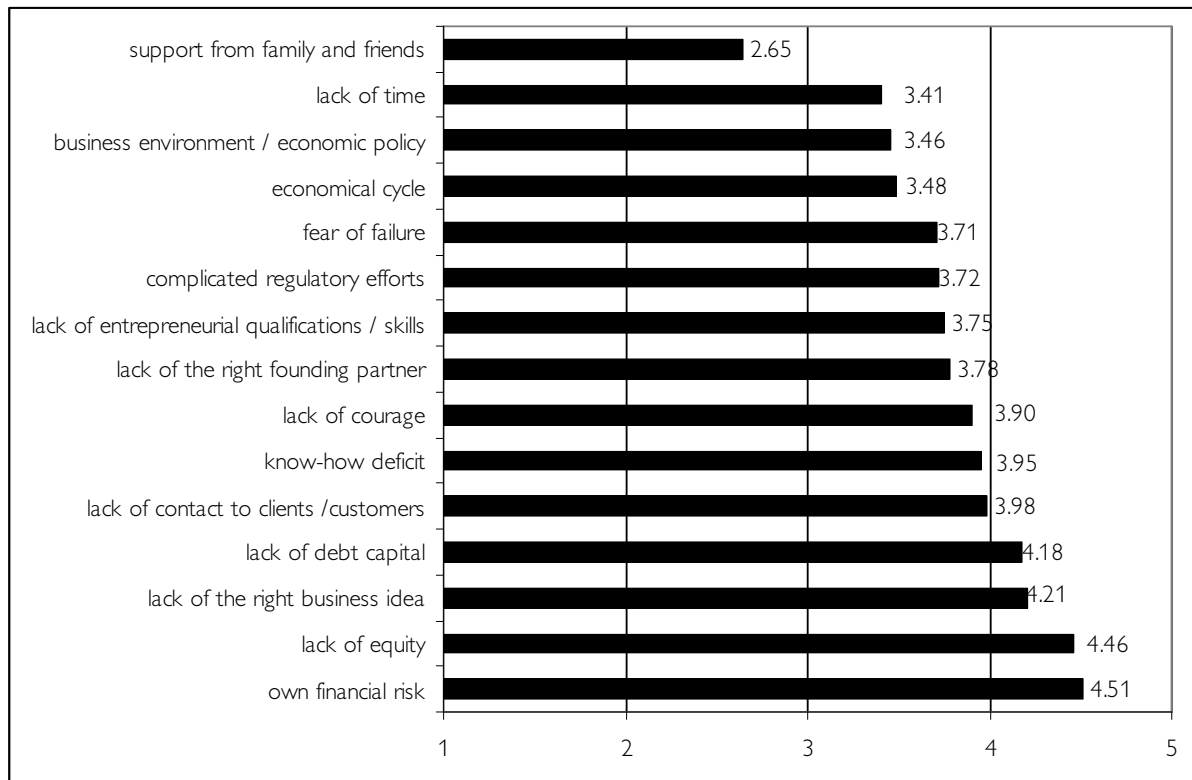
Once again, Switzerland (35.4%), Germany (35.9%) and Hungary (35%) are at the lower end. This clearly indicates that the entrepreneurial potential of students in Switzerland and Germany is below the international average. Conversely, the highest percentages are to be found in Ireland (40.8%), Singapore (39.8%), and New Zealand (38.8%).

In summary, we could say that the difference between countries ranges from 5.8 to 7 percentage points. In this context, it is interesting to question what type of obstacles students experience that could prevent them from establishing a business, or which make it more difficult for them to do so. This issue will be the subject of the next chapter.

### 3 Obstacles for establishing a business

#### 3.1 Obstacles in general

The process of establishing a business may present several difficulties. It is for this reason that we have asked students what type of obstacles they might encounter, and to rate those on a scale. The results show that when compared internationally, financial support is seen as the biggest problem (see also Figure 17). Comparison of average values shows that personal financial risk (4.51), lack of private capital (4.46), or foreign capital (4.18), are seen as the main obstacles. In relation to establishing one's own business, the main obstacles were perceived to be the lack of a good business idea (4.21), followed by the lack of client contacts (3.98). The lack of a suitable business partner, as well as the cumbersome official administrative process of establishing a business, were seen as less significant obstacles.



**Figure 17: Obstacles for establishing a business (6 = very significant obstacle, 1 = very insignificant obstacle)**

As already mentioned previously, most students perceived taking personal financial risks as the biggest obstacle. Similarly, we can observe on an individual basis that some students lack the courage to take such risk (3.90), or do not have the required know-how (3.95), which were indicated as obstacles in relation to the legal and financial requirements involved in establishing one's own business. The lack of entrepreneurial skills (3.75) and fear of failure (3.75) were rated similarly as well. No time (3.41), economic situation (3.48), as well as business environment (3.46), was seen to be rather less critical obstacles. It is encouraging to see that sufficient support by family and friends was available (2.65).

By means of a factor analysis and reliability test, we have identified three factors for further analysis. We will consider such factors as obstacles in what follows. The first obstacle may be referred to as '*economic*

*conditions*'. This factor includes the following two items: business environment and economic situation.<sup>13</sup> The second factor can be referred to as '*financial resources*', which includes the following three items: lack of private capital, lack of foreign capital, as well as personal financial risk.<sup>14</sup> The third factor can be referred to as '*personal engagement*', and consists of the following three items: lack of courage, fear of failure, and lack of a good business idea.<sup>15</sup> In this way we have defined three potential factors, in three different areas, which may have an effect on whether or not students decide to establish a business. The first area deals with an estimation of the economic conditions, which involves the environment in which the business was, or would have been, established. The financial perspective provides an essential overview of resources and relates to the financial strength of the business established or to be established. Finally, the last factor relates to the particular person who decides to establish a business and serves as a reference point for the entrepreneurial potential, as well as the ability to handle risk, of the (potential) business founder.

### **3.2 Obstacles compared internationally**

Compared internationally, we can see that financial resources are seen as the biggest obstacles in all countries, ahead of personal engagement and economic conditions.

Financial resources are seen as the main obstacle in Germany, Austria, and Hungary, followed by Switzerland, Liechtenstein, and Singapore. In comparison, the lack of financial resources is seen as a relatively minor obstacle in Norway, New Zealand, and Belgium. At the same time, we can observe a weak, but highly significant, negative correlation between students' potential to establish their own business and financial resources (correlation =  $-.132^{**}$ ).<sup>16</sup> This means that the higher the level of access to finances is seen as an obstacle, the lower the level of students' potential to establish their own business.

There is even less of a correlation between students' potential to establish their own business and economic conditions (correlation =  $-0.107^{**}$ ). This correlation means that the less economic conditions are seen as an obstacle, the more likely (albeit only to a small degree) it is that the entrepreneurial potential of young people will develop. As expected, such economic conditions are seen as less of an obstacle amongst students in Liechtenstein, contrary to those in Germany, where the economic situation is seen as quite a significant obstacle.

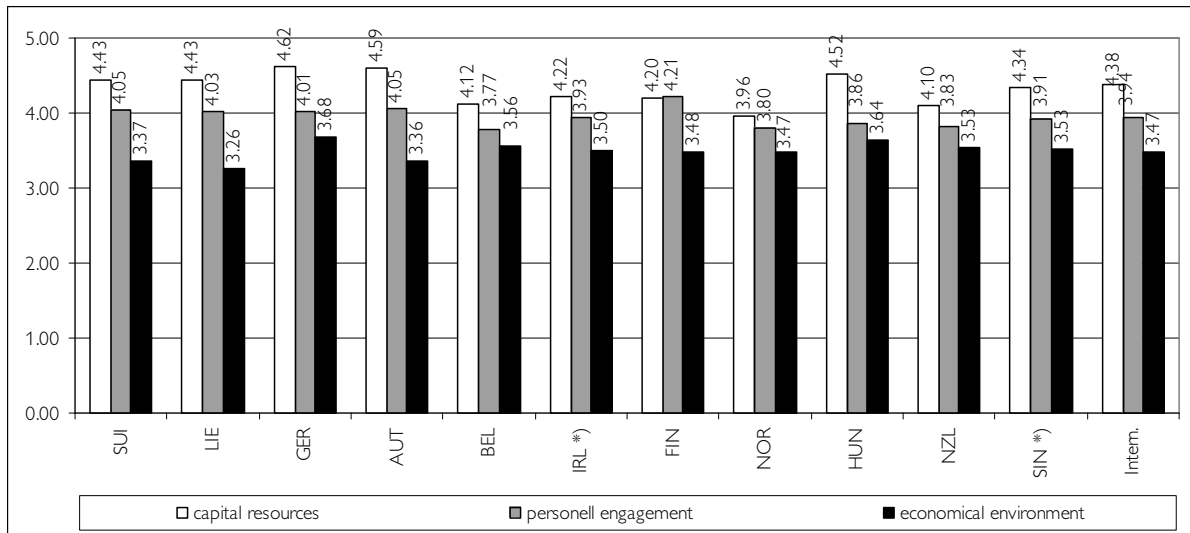
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<sup>13</sup> Alpha: 0.8207; Standardized item alpha = 0.8207.

<sup>14</sup> Alpha: 0.7502; Standardized item alpha = 0.7492.

<sup>15</sup> Alpha: 0.6295; Standardized item alpha = 0.6301.

<sup>16</sup> Correlations were calculated for students studying business-related subjects, so as to increase comparability.



**Figure 18: Obstacles compared internationally<sup>17</sup>**

Finally, we will consider personal engagement, such as the lack of courage, or the lack of business ideas, which is most remarkable, given its correlation of  $-0.193^{**}$ . This means that the higher the level of students' potential to establish their own business, the less they perceive themselves as an obstacle. On the basis of these findings we can conclude that the personal characteristics can be seen as the most important factor in establishing a business. However, the effect on an individual basis is still relatively small in order for it to be the sole factor in explaining the entrepreneurial potential of students at international level.

<sup>17</sup> \* = not representative for the whole country.

#### 4 Conditions at universities

To carry out the 'International Survey on Collegiate Entrepreneurship 2006' in a university setting was a conscious decision. Hence, it is very important that we also examine the conditions at university-level. In what follows, we will look at three different aspects.

##### 4.1 Entrepreneurial environment

Students were asked to rate their university in terms of entrepreneurial environment. To this end, we used a scale ranging from 1 (very bad) to 6 (very good). The international average showed that the entrepreneurial environment at universities was perceived as 'rather good' (4.06). The differences are very small when compared internationally. However, it is quite remarkable that the entrepreneurial environment at the universities in Liechtenstein is perceived to be the best (4.59). The other averages per country range between 3.92 and 4.20 (see also Figure 19). At the same time, we can see that there is no relevant correlation between entrepreneurial environment and entrepreneurial potential.

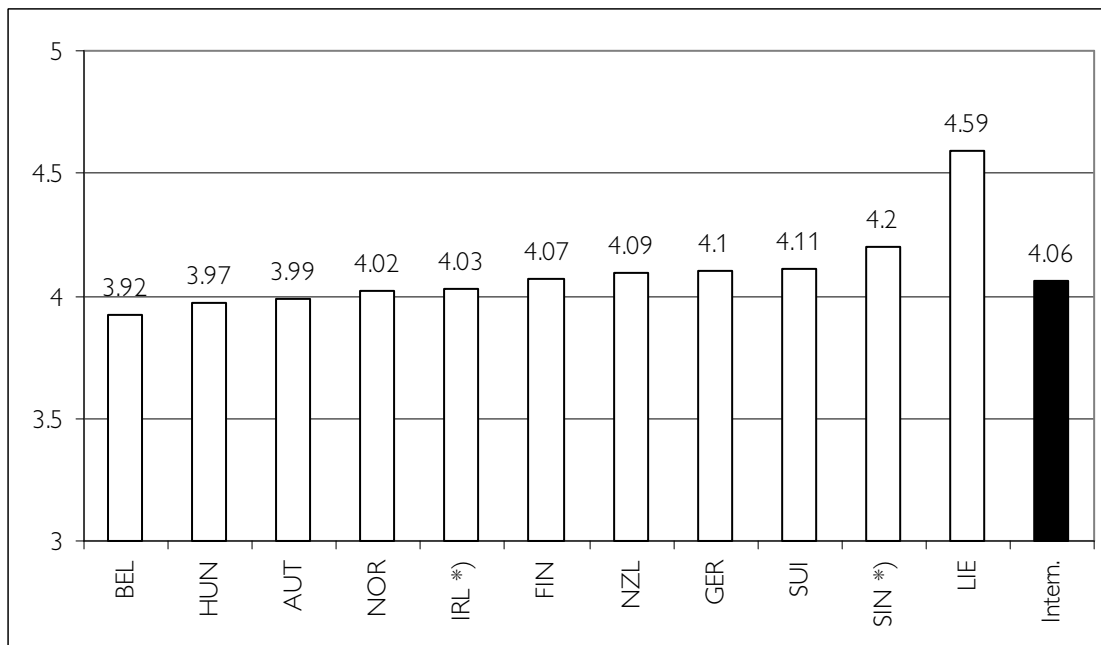
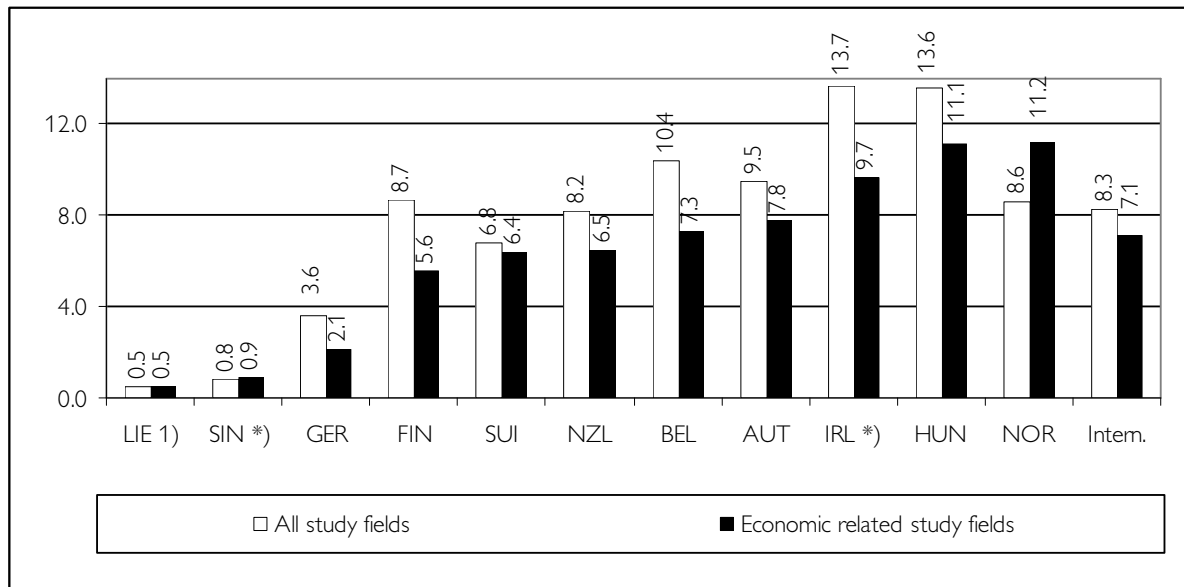


Figure 19: Entrepreneurial environment at universities (1=very bad; 6=very good)

## 4.2 Business-oriented studies

The excellent entrepreneurial environment in Liechtenstein can be easily explained with the diagram below, since almost all students from Liechtenstein indicate that entrepreneurship-related courses are available at their universities. In addition, a conducive environment means that many students attend such courses. The same holds true for students in Singapore. At the same time, however, we should keep in mind that only students at business-related universities, or higher education colleges, were asked to participate in the survey. Figure 20 shows the number of students who believe that no entrepreneurship-related courses are offered at their universities. Compared internationally, we can see that the availability of such courses is very much below average in Norway, Hungary, and Ireland. This applies to students asked across all study disciplines, as to the ones undertaking business-related studies.



**Figure 20: No entrepreneurship-related courses are offered<sup>18</sup>**

When compared internationally, it is interesting to see that entrepreneurship-related courses are offered at universities and higher education colleges in both Germany and Switzerland, but that the entrepreneurial index for these countries still remains rather low. This leads to the conclusion that merely offering entrepreneurship-related courses to students do not necessarily lead to an increase in students' entrepreneurial potential.

<sup>18</sup> \*)not representative for the whole country; 1= there exists only one university with a strong entrepreneurial orientation.

Even if entrepreneurship-related courses are offered by universities, this does not mean that they are also attended by many students. Figure 21 shows the percentage of students who do not attend any entrepreneurship-related courses, even though such courses are available at their universities. Once again we can see that when compared internationally, primarily students from New Zealand and Switzerland tend to not take such courses in large numbers. The same observation can be made when taking into account the difference between students across all study disciplines and those who undertake business-related studies. Most students attending entrepreneurship-related courses can be found in Ireland, Hungary, and Liechtenstein.

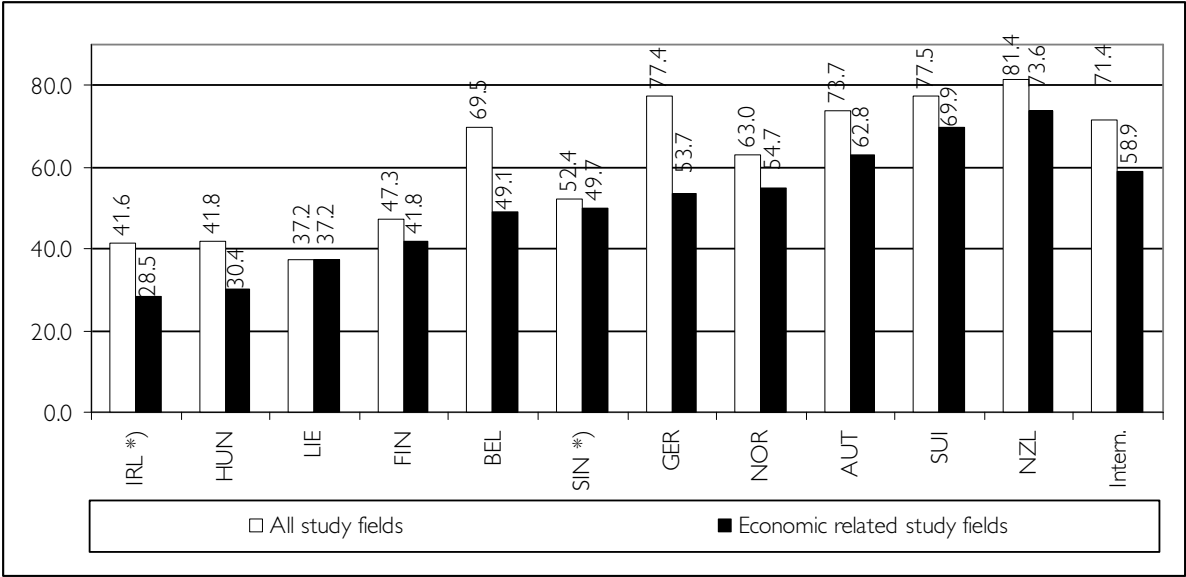
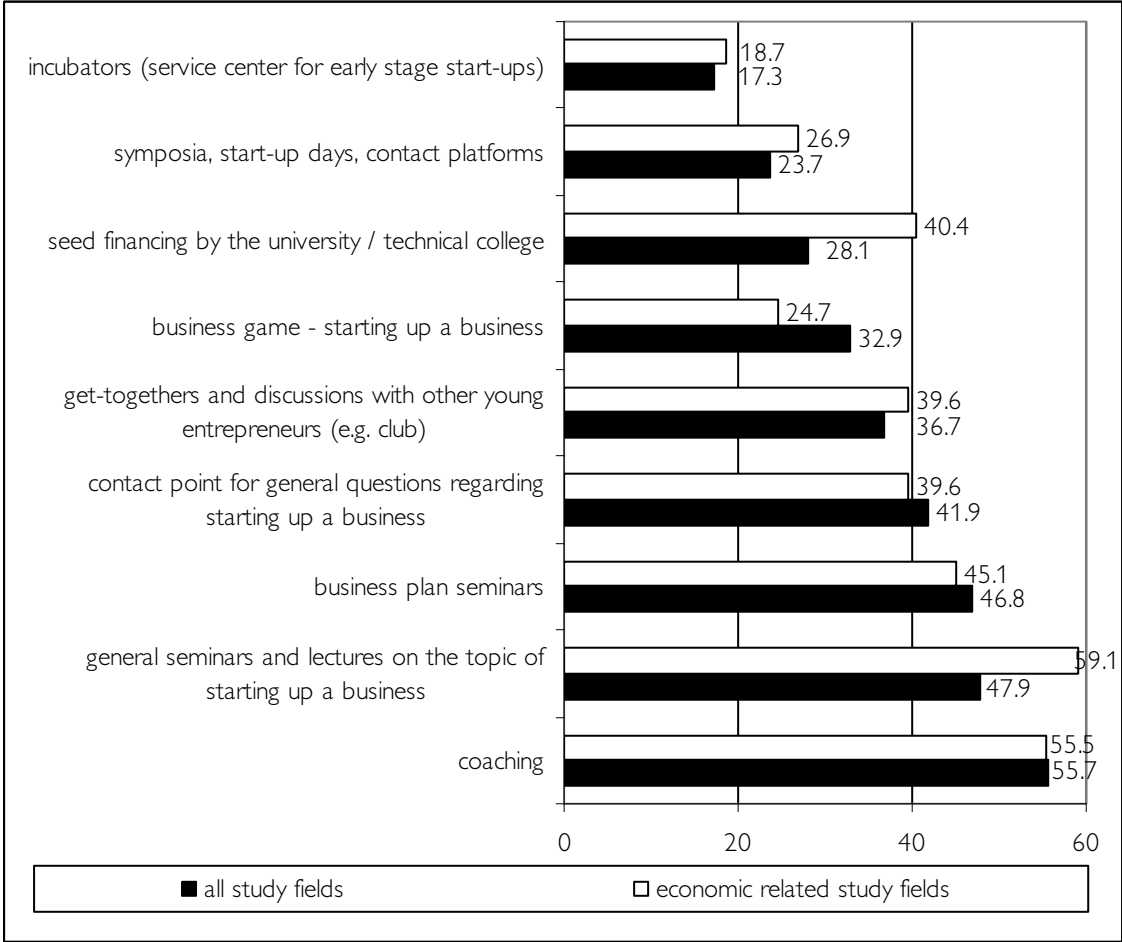


Figure 21: Attendance of entrepreneurship-related courses

**4.3 Activities students would like to see offered at universities**

Finally, we asked students what activities they would like to see offered by their universities, as well as any other sources of support, which would offer them a better chance to establish their own business during their studies, or immediately after graduation.

The international average shows that most students would like to see coaching courses on offer (see Figure 22). Students undertaking business-related studies showed a higher level of interest in more courses being offered, as well as information on initial financial support, than in comparison to students across all disciplines.



**Figure 22: Support students would like to see offered at universities**

One way of interpreting the findings is to say that students may still show an interest in business planning seminars or simulations, which may provide entrepreneurial encouragement, even though they do not directly study business-related subjects. We will not provide an analysis for individual countries here for two reasons. On the one hand, the differences are too small. On the other hand, more specific questions could be asked at the level of individual universities, or higher education colleges, since it would involve a kind of market analysis, which would be more suited to the national reports for each country.



## **5 Practical implications and summary**

### **5.1 Summary**

The aim of the ISCE project is to undertake an international comparison of the entrepreneurial potential of students in the area of 'Academic Entrepreneurship', as well as to examine changes in their entrepreneurial potential and the conditions at universities over time, and to provide a basis for further research into specific individual aspects. As part of the project, more than 37,000 students in 14 countries were questioned in the ISCE 2006 Survey and various analyses were performed in relation to the behaviour, intentions, and activities, of students seeking to establish a business.

The majority of students questioned were in full-time education at the time the survey was conducted, 24 years of age, and had on average already been studying for just over three years. Although there was an almost equal representation of both genders (52% men, 48% women), the survey was dominated by students undertaking business-related studies (26%), and to a lesser degree by students of social sciences (9.9%) or natural sciences (9.8%).

When asked about their professional expectations, most students indicated that they intended to find employment in a company following graduation. Employment in large (17.8%) and medium-sized businesses (16.8%) were the most popular choices. Becoming an entrepreneur, ranging from participating in, and establishing, to taking over a company, was only indicated as a career preference by 12.1% of all students. However, such preferences changed over time. When asked for their professional expectations five years after graduation, more students preferred to be entrepreneurs. The most popular choices were establishing a business (14.9%), as well as being a freelancer (7.1%). There are significant differences within the countries surveyed in relation to the professional expectations and aims students expressed for the long term, as well as directly following graduation. Students in Australia, Belgium, Hungary, and Ireland more often preferred entrepreneurship than students in countries such as Germany, Switzerland, or Finland, who were very much less inclined to do so.

The ISCE 2006 Survey also indicates future entrepreneurial potential in relation to the specific activities and intentions of students wishing to establish their own business. As an international average, 3.2% of all students had already established their own business, 11% had already seriously considered doing so, and 7.7% indicated that they had made a firm decision to become entrepreneurs. Approximately 3 out of 4 students had at one time or another considered entrepreneurship, albeit not to a serious degree. When comparing individual countries in relation to entrepreneurial activities, we see that Liechtenstein shows the highest percentage of students who had established a business, followed by Singapore and Austria. Belgium, Switzerland and Hungary appear at the lower end.

In relation to the entrepreneurial activities and intentions of students in this survey, there is quite a significant difference between students undertaking business-related studies and those who do not. In this context, the percentage of students undertaking business-related studies is much higher than for those who undertake other studies. When students who undertake business-related studies are taken into account on their own, the percentage of students who established a business increases by 0.4% to 1.6% for each country.

Students who had already established a business, had on average already managed it for more than four years, had three members of staff, and were on average significantly older (29.6 years of age) than the group of students taken as a whole (24.2 years of age). For the majority of students who had already established a business, the team they used for doing so included persons from their own immediate circle of friends or acquaintances.

When looking at potential business founders, i.e. those students who at one time or another had considered entrepreneurship, we can see that the majority only undertook quite general activities with a view to realising such plans. Only a minority of such students had actually taken specific steps to establish their own business. Compared internationally, Singapore and Liechtenstein once again appear at the higher end, and potential business founders in Belgium, Germany, and Switzerland are at the lower end and the least likely to take any specific steps in such direction.

Compared internationally and in line with the preferences students indicated in relation to their professional intentions, potential business founders on average preferred to gain several years of professional experience prior to establishing their own business. Only 11% of those asked would have liked to establish their business while studying, and approximately 5% would do so directly following graduation. In this context, the significant difference between individual countries is quite remarkable. In Singapore, more than 50% of potential business founders intended to establish their business while studying, whereas only 5.3% intended to do so in Germany.

The areas in which most students preferred to establish a business are quite similar when compared internationally, focusing mainly on the tertiary sector, in particular, the provision of company-related, social, or personal services, communications, as well as the health and social sectors. Nearly one-third of potential business founders already had professional experience in their preferred sector.

Combining the analysis performed in an index that takes into account the various percentages in relation to students who had already established their own business, intended to do so, had taken specific steps in this regard, etc., shows Ireland, Singapore and Liechtenstein at the higher end. The lower end is made up of Germany, Switzerland, and Norway, which show the least entrepreneurial potential for their students.

If we focus instead on the potential obstacles students face when intending to establish their own business, we can see that when compared internationally, financial resources are viewed as the biggest obstacle across all countries, ahead of personal engagement and economic conditions. In particular, personal financial risk and lack of private or foreign capital are seen as the main obstacles by students, followed by the lack of a good business idea, as well as the lack of client contacts.

Conversely, the conditions and entrepreneurial climate at universities are on average valued as 'rather good', or better, across all countries. Compared internationally, we can see that the availability of entrepreneurship-related courses is very much below the international average in the case of Norway, Ireland, and Hungary. Conversely, such courses are more widely offered in Germany and Switzerland, which interestingly were not the countries that fared well in the entrepreneurial index. First and foremost, students would also like to see more coaching made available at universities in addition to the existing courses on offer. Students undertaking business-related studies also indicated that they wanted to receive more information on initial financial support, as well as additional courses.

## 5.2 Practical Implications

The entrepreneurial potential that is revealed in the significant findings of the ISCE 2006 Survey gives us cause for optimism, but it is also clear that there is still room for improvement at international level in various areas, such as training, research and encouragement. Students establishing businesses provide an important contribution to national economic growth and should therefore be supported as much as possible.

There is also clear evidence that there is room for improvement in entrepreneurial education in relation to the type of relevant courses on offer, in particular, for students undertaking non-business-related studies. The lack of availability in these areas is quite evident, as is the significant need for students to receive specific coaching in the relation to establishing their own business.

The survey further shows that establishing your own business is an interesting career choice for students, even though it is not always something they aim for directly following graduation. Many prefer to gain several years of professional experience prior to establishing their own business. The time scale for establishing one's own business should also be closer taken into account, in addition to entrepreneurial research and encouragement in entrepreneurial education. Following graduation, universities should consider how they will try to keep in touch with students who intend to establish their own business, so students could make contact when they wish to realise their entrepreneurial intentions. Consideration should also be given as to whether or not training courses for potential business founders could also be successfully offered at certain times in the years following graduation.

This aspect is closely related to the important issue of making available information, as well as infrastructures, in relation to establishing one's own business. A significant finding of the survey showed that although many young persons are interested in establishing their own business, they generally fail to take specific steps in such direction, as well as the absence of a targeted provision of information. This is another challenge for universities. Through special presentations, given by, or at, entrepreneurial institutes at universities, or elsewhere, as well as by taking other similar measures, universities should make it easier for students to obtain access to the required information during the course of their studies.

Contact with students who intend to establish their own business enables universities and other entrepreneurial institutes to focus their research on several interesting findings from this survey. The effectiveness of courses, as well as the correlation between the offer of entrepreneurship-related courses on the one hand, and the percentage of students intending to establish their own business or entrepreneurial potential on the other, could be used as a basis for addressing the question whether entrepreneurs 'can be made'. The answer to that question could have a significant impact on how entrepreneurial education is structured. The clear majority of students working in teams to establish their business in the surveyed data sample also provides a good indication that educational institutes and researchers should pay more attention to this area.

In relation to the encouragement of entrepreneurial ambitions, this survey clearly shows that there is a significant demand for new ideas and ways of offering encouragement that could assist students in becoming entrepreneurs. For the majority of students questioned in all countries and across all study

disciplines in the survey, personal financial risk, as well as access to personal and foreign capital, provided the most significant obstacles to establishing their own business.

### **5.3 Conclusion:**

In accordance with the aims of the current ISCE 2006 Survey, the data presented, as well as the illustrated rankings, provide a good basis for making an international comparison of the entrepreneurial activities and intentions of students.

With the findings from this survey, our aim is to contribute to encouraging the entrepreneurial spirit in the academic field, as well as to inspire students, educators, researchers, as well as other interested parties to give more serious consideration to the issue of 'Collegiate Entrepreneurship'. As a result, we look forward to discussing the contents of this survey, as well as further in-depth examination of the issues raised by it. We are also already looking forward to the next International Survey on Collegiate Entrepreneurship to be conducted in 2008.

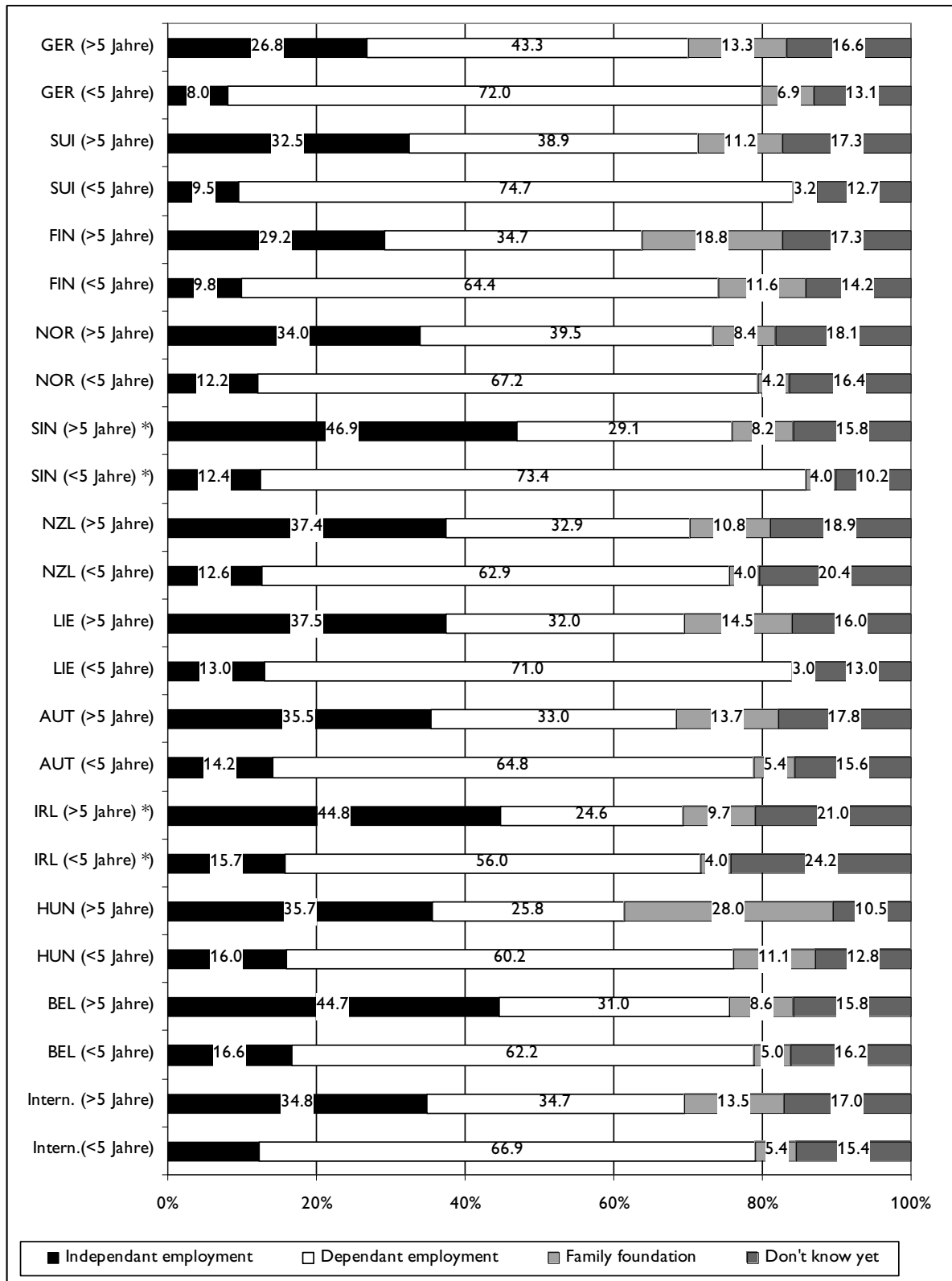
## 6 Appendix

### 6.1 Main subject studied by students

	business studies	classical social sciences (ex. sociology and psychology)	natural sciences	mathematical sciences	engineering and electrical science	medicine or pharmacy	economics	others <sup>19</sup>
SUI	24.2	5.3	11.4	10.9	11.2	6.9	4.1	26.0
LIE	74.0	0.0	0.0	0.0	0.0	0.0	1.0	25.0
GER	20.5	11.6	11.2	10.0	16.6	4.1	2.4	23.6
AUT	36.5	12.0	7.2	9.1	7.0	1.6	1.4	25.2
FRA	97.0	1.5	0.0	0.0	0.0	0.0	1.5	0.0
BEL	23.3	11.8	8.4	4.8	3.0	15.0	15.3	18.4
IRL	53.6	2.4	5.6	2.8	5.6	5.2	9.3	15.5
FIN	36.2	2.2	5.1	14.4	22.1	4.0	2.7	13.3
NOR	9.9	0.7	12.4	14.3	14.2	5.1	12.2	31.2
HUN	30.3	5.1	7.1	16.3	8.6	0.7	16.7	15.2
NZL	11.1	17.3	13.4	5.7	6.0	12.9	6.1	27.5
AUS	68.7	1.5	0.0	0.0	1.5	0.0	11.9	16.4
RSA	72.0	0.0	0.0	0.0	0.0	0.0	24.0	4.0
SIN	63.0	6.8	0.0	1.7	0.0	0.0	12.7	15.8
Intern.	25.7	9.9	9.8	9.5	9.3	6.2	5.7	23.9

<sup>19</sup> Subjects such as Law, theology, agricultural and forestry science, philology and literary studies, science of history and cultural studies, sports or military sciences.

## 6.2 Activities after graduation – bar chart



Desired main activity directly after graduation (< 5 years) and 5 years after graduation (>5 years) (n=37,412;

\*) = not representative for the whole country)

### 6.3 Activities after graduation – data table

We decided not to include the values for France, Australia, and South Africa in the table below, since the number of questionnaires for analysis was too small.

	dependent activity				independent activity								family foundation	don't know yet
	small and medium-sized enterprise	large company	research	civil / public service	parental business	taking over an existing business	franchise business	taking a stake of an existing company	continuing with already founded start-up	starting up a business	self-employment			
Intern. (<5 years)	33.3	17.8	8.9	7.0	1.6	0.7	0.5	2.8	1.2	2.8	2.6	5.4	15.3	
Intern. (>5 years)	13.4	11.4	4.7	5.2	2.2	2.4	1.3	4.8	1.9	14.9	7.1	13.6	17.1	
BEL (<5 years)	27.0	15.0	11.4	8.9	2.0	0.9	1.1	6.6	0.6	2.5	3.1	5.0	16.1	
BEL (>5 years)	10.3	9.9	3.8	6.9	2.8	3.9	1.7	5.0	1.5	17.1	12.6	8.6	15.9	
HUN (<5 years)	27.1	19.3	6.9	6.9	3.4	1.3	0.9	2.3	1.4	5.6	1.1	11.0	12.8	
HUN (>5 years)	8.7	10.5	2.7	3.9	1.7	1.5	1.1	3.5	2.8	22.9	2.2	28.0	10.5	
IRL (<5 years)	27.0	18.6	4.4	6.0	4.0	0.4	0.4	0.8	1.2	6.5	2.4	4.0	24.3	
IRL (>5 years)	10.1	7.7	2.4	4.4	1.2	3.6	3.2	3.6	2.8	20.6	9.7	9.7	21.1	
AUT (<5 years)	33.8	15.8	9.3	5.9	1.5	0.6	0.2	3.0	1.7	2.5	4.7	5.4	15.6	
AUT (>5 years)	10.8	11.5	5.4	5.3	2.2	2.1	0.6	5.1	2.2	14.5	8.8	13.7	17.9	
LIE (<5 years)	34.5	30.0	4.0	2.5	1.5	1.0	0.5	1.5	2.5	3.5	2.5	3.0	13.0	
LIE (>5 years)	10.5	17.0	2.5	2.0	3.5	3.0	0.5	5.0	5.5	16.0	4.0	14.5	16.0	
NZL (<5 years)	34.1	12.5	6.9	9.5	2.1	1.2	0.9	1.7	1.3	3.4	1.9	4.0	20.4	
NZL (>5 years)	13.9	8.9	4.9	5.3	2.3	3.3	2.7	4.5	2.0	15.2	7.4	10.8	18.8	
SIN (<5 years)	24.3	43.2	1.7	4.2	0.8	0.6	0.6	1.1	1.4	7.1	0.8	4.0	10.2	
SIN (>5 years)	5.4	16.1	3.1	4.5	2.5	0.8	1.7	7.6	4.2	25.8	4.2	8.2	15.9	
NOR (<5 years)	39.4	21.4	3.7	2.7	1.9	0.4	0.7	2.5	1.7	3.6	1.4	4.2	16.4	
NOR (>5 years)	21.9	12.1	3.3	2.2	5.5	2.6	2.0	3.4	1.9	15.2	3.3	8.4	18.2	
FIN (<5 years)	44.0	14.4	1.7	4.3	1.7	0.3	0.3	1.1	1.5	3.4	1.4	11.6	14.2	
FIN (>5 years)	17.3	12.6	1.3	3.6	2.5	0.7	0.5	3.4	2.6	16.1	3.3	18.8	17.3	
SUI (<5 years)	35.4	22.0	10.8	6.4	0.7	0.4	0.4	3.7	0.8	1.6	2.0	3.2	12.7	
SUI (>5 years)	17.0	11.9	4.7	5.3	2.2	2.4	1.0	5.9	1.4	12.6	7.0	11.2	17.4	
GER (<5 years)	27.8	21.3	14.9	8.2	0.5	0.4	0.1	2.3	0.4	1.2	3.0	7.0	13.1	
GER (>5 years)	12.3	15.5	7.9	7.5	1.3	1.6	0.5	4.3	1.2	9.9	8.0	13.3	16.7	

## 6.4 Preparatory measures

	No steps taken	Thinking through first business ideas	Writing down first business ideas	Developing a business plan	Gathering start-up specific information	Visiting start-up specific events	Talking to potential sources of financing	Determining a date of foundation	A prototype of the product / service exists
SIN	23.9	64.6	31.5	22.0	21.0	6.6	6.2	4.6	8.2
LIE	30.2	59.8	23.7	13.0	20.7	8.9	5.9	3.6	4.7
FIN	30.8	61.4	10.4	7.5	25.0	15.4	2.8	2.4	8.4
IRL	41.3	42.3	24.0	14.8	16.3	8.7	7.7	4.1	4.1
NOR	43.9	48.3	17.4	10.3	12.7	8.0	6.3	2.3	5.2
NZL	45.2	47.4	19.4	11.0	12.1	6.1	5.8	2.3	5.2
AUT	46.2	49.1	13.5	5.8	14.0	7.1	3.0	1.4	4.6
HUN	47.4	43.2	12.4	6.6	12.4	4.1	4.0	2.2	3.0
SUI	51.1	43.5	11.5	5.7	10.9	5.9	2.4	1.3	5.7
GER	53.3	43.1	10.0	4.1	9.7	7.0	2.1	1.1	3.5
BEL	57.4	32.3	10.5	5.9	17.5	9.4	3.5	1.0	4.8
Intern.	47.2	46.3	14.2	7.4	13.1	6.9	3.7	1.7	5.0



## 6.5 Index construction

The index construction is based on two questions used in the questionnaire.

Firstly, we asked whether or not students had ever considered establishing their own business. The answers to this question were measured in accordance with the following table, allowing for multiple answers.

Possible answer	Points	Type of business founder
No, never	1	No business founder
Yes, sketschily	3	Potential business founder
Yes, rather concretely	3	Potential business founder
Yes, but I turned away from it	3	Potential business founder
Yes, I am bound and determined to work self-employed	5	Advanced potential business founder
Yes, I already started with the realisation	5	Advanced potential business founder
Yes, I am already self-employed	10	Business founder
Yes, I was self-employed, but no longer am I	10	Business founder

Secondly, we asked potential business founders which specific steps they had already taken in order to establish their own business. In this context, and similar to our findings in Chapter 2.4 on p. 13f., we made a distinction between committed and less committed activities, allowing for multiple answers. The rating of possible answers can be seen in the table below.

Possible answer	Points
No steps taken	0
Thinking through first business ideas	0.25
Writing down first business ideas	0.25
Developing a business plan	0.25
Gathering start-up specific information	0.25
Visiting star-up specific events	0.75
Talking to potential sources of financing	0.75
Determining a date of foundation	0.75
A prototype of the product / service exists	0.75

The minimum number of points that a student could get was 1 (for 'non-founders', i.e. students who had never considered establishing their own business). The maximum number of points was 10 (for students who had previously established their own business). The index was then calculated on the basis of the averages obtained for the various countries, as well as the international average.



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