



# Global Entrepreneurship Monitor Luxembourg 2016/2017

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# Executive summary

In recent years, governments have become increasingly active in designing policies to encourage and support entrepreneurial efforts. This development originates from the recognition that successful entrepreneurship is a crucial source of job creation and economic growth. Theoretical and empirical studies have shown that entrepreneurship is an important contributor to innovation and technological progress, it is thus a driver of productivity and ultimately of economic growth. In this context, the Global Entrepreneurship Monitor (GEM) initiative was launched to study entrepreneurship, to assess the evidence on links between entrepreneurship and growth, and to provide support to policy actions. In particular, GEM aims to collect internationally comparable data to deepen the understanding of entrepreneurial activities and their link with countries' economic performances. Data are collected on an annual basis and harmonised to enable international comparisons. The GEM country report for Luxembourg presents figures and provides essential information on entrepreneurship in this country. The GEM datasets combine data from two surveys. The first one is the National Expert Survey –NES- which collects experts' evaluation on the socio-economic context that shapes entrepreneurial abilities and aspirations. The second survey is the Adult Population Survey -APS- which collects information on the characteristics of individuals and their involvement in entrepreneurial activities over the different stages of venturing, from start-up firms to established businesses.

**Main Results** The most important indicator of entrepreneurship produced by GEM is Total Early-Stage Entrepreneurial Activity (TEA). TEA measures the share of the active population that are nascent entrepreneurs or are leading new businesses. Fluctuating around 9%, data show an overall increase in Total Early entrepreneurship Activity –TEA- between 2013 and 2016. TEA measured 8.7% in 2013, 7.1% in 2014, 10.2% in 2015 and 9.2% in 2016. In 2016, the proportion of entrepreneurs in Luxembourg is 9.2%, higher than the European average (8.6%). Luxembourgish early-stage entrepreneurial activity is confirmed to be one of the highest among other developed countries. In 2016, Canada ranks the highest (16.7%) and Italy ranks the lowest (4.4%). For this edition of the GEM report a special focus was put on barriers and enablers of the national entrepreneurship ecosystem and the link between policies and perception of entrepreneurship.

**Barriers and enablers** National experts and the adult population are in concord that infrastructures and governmental policies are the main strengths of the Luxembourgish system of entrepreneurship. Results show that financing and availability of key resources such as office space and qualified human resources are the major barriers to entrepreneurship in Luxembourg.



**Policies and entrepreneurship** Government schemes aimed at fostering entrepreneurship in the country have been set up in the last years. These policies aim to raise the interest of the public in entrepreneurship careers and provide training and funding to entrepreneurs. Initiatives and institutions promoting entrepreneurship have raised the interest in entrepreneurship in 11 % of the whole population. The proportion of entrepreneurs is higher among individuals that attended an entrepreneurship training at secondary school, (32%) or after (45%) than among those who did not (20% at secondary school and 18% after high school). **These figures suggest a positive *association* between entrepreneurial trainings and starting a new business.** However, this does not necessarily mean that entrepreneurial trainings *cause* new business. It may be that individuals that are willing to start a business are more motivated to learn skills about entrepreneurship.

**Traits of entrepreneurs** Efficient policies aiming to promote entrepreneurship require knowledge of different typologies of entrepreneurs. The main traits of entrepreneurs and start-ups emerging from the GEM surveys are summarized and presented below:

*“Gender”*: In 2016, the share of early entrepreneurs among males (10.9%) is higher than the share of young entrepreneurs among females (6.2%). This difference is relatively stable during time.

*“Immigrant”*: Immigration is confirmed to be an important source of entrepreneurship. First generation immigrants play a major role in entrepreneurial activity (13.2% of first generation immigrants are engaged in entrepreneurship, against 8.1% of non-immigrants and 8.5% of second generation).

*“The cherry-picking”*: Residents in Luxembourg are risk adverse and opportunity driven (nearly 10% of Luxembourgish entrepreneurs are motivated primarily by a lack of other options for making a living compared to the 21% of European entrepreneurs).

*“Dissatisfied”*: on average, entrepreneurs describe themselves more often as dissatisfied with their lives (18%) than others (10%). Dissatisfaction is more common among female entrepreneurs (25%) than male entrepreneurs (10%).

# Introduction

In recent years, governments have become increasingly active in designing policies to encourage and support entrepreneurial efforts. This development originates from the recognition that successful entrepreneurship is a crucial source of job creation and economic growth. Theoretical and empirical studies have shown that entrepreneurship is an important contributor to innovation and technological progress, it is thus a driver of productivity and ultimately of economic growth [Schumpeter, 1934, Wennekers and Thurik, 1999]. In this context, the Global Entrepreneurship Monitor (GEM) initiative was launched in 1999 to study entrepreneurship, assess the evidence on links between entrepreneurship and growth, and to provide support to policy actions. In particular, GEM aims to collect internationally comparable data to deepen the understanding of entrepreneurial activities and their link with countries' economic performances. Data are collected on an annual basis and harmonised to enable international comparisons. Additionally, GEM complements register data on new ventures by collecting information about the individual characteristics and perception of entrepreneurs. Luxembourg joined the Global Entrepreneurship Monitor (GEM) consortium in 2013. A first data collection exercise was launched in 2013. Further exercises have been run by STATEC in 2014, 2015 and 2016. Since its inception, the GEM country report for Luxembourg has presented figures and provided essential information on entrepreneurship in this country. GEM data have also opened new research opportunities to inform on the link between entrepreneurship and the immigration background of Luxembourg's residents [Peroni et al., 2016], their well-being [Sarracino and Gosset, 2016], as well as methodological issues concerning statistical surveys [Sarracino et al., 2017]. The GEM dataset combines data from two surveys. The first one is the National Expert Survey –NES– which collects experts' evaluation on the socio-economic context that shapes entrepreneurial abilities and aspirations. The second survey is the Adult Population Survey –APS– which collects information on the characteristics of individuals and their involvement in entrepreneurial activities over the different stages of venturing, from start-up firms to established businesses. Results of the Luxembourgish survey are integrated in the GEM global report [GEM, 2017]. This report presents the GEM framework and gives a detailed account of the information contained in the survey data collected in 2016. It also exploits data from previous waves of the survey to analyse the evolution of entrepreneurship over time. The report is organized as follows: Section 3 outlines the methodology and framework adopted by GEM researchers; it describes the main features of the Adult population survey (APS) and of the National Expert Survey (NES). Section 4 reports on entrepreneurial activities in Luxembourg from the Adult Population Survey in 2016. The analysis focuses on the individual characteristics of entrepreneurs, such as age, gender, skills and immigration background. It also describes the attributes of new businesses, such as proprietorship, economic activity, and innovation behaviour. In addition, the analysis compares Luxembourg to other European countries and the newly collected data to those from the 2013 to 2015 waves. Section 5 presents results of the National Expert Survey. This helps

to identify features of the Luxembourgish institutional context. This year, the experts' survey is complemented with national-specific questions on barriers and enablers of the national entrepreneurship ecosystem as perceived by the general population. Section 6 overviews special topics of particular relevance to Luxembourg: immigration, subjective well-being and the association between entrepreneurship policies and the perception of entrepreneurship in the general population.

Finally, Section 7 summarises results and gives concluding remarks.

# The GEM research Project

The Global Entrepreneurship Monitor (GEM) research aims to create a cross-national harmonised dataset to study the role of entrepreneurship in fostering national economic growth. In doing so, GEM emphasises the role played by new and small businesses in economic growth, which contrasts with the traditional analysis focusing on the contribution of large corporations [Reynolds et al., 2005]. To improve the understanding of the relationship between entrepreneurial activities and economic growth, GEM sets the following objectives:

- Determine the extent to which entrepreneurial activity influences economic growth within individual economies;
- Identify factors which encourage or hinder entrepreneurial activity;
- Identify policy implications for enhancing entrepreneurial capacity in an economy.

The programme was initiated in 1999 as a joint venture between academics at London Business School and Babson College in the United States. In 1999, ten participating countries conducted the first GEM study. Since then, GEM has grown into a consortium of more than 400 researchers. GEM is now regarded as a prominent longitudinal study of entrepreneurship. In 2016, the 66 participating countries provided insights on entrepreneurship across a large sample of economies, spanning several geographic regions and levels of economic development. Luxembourg joined the consortium in 2013 and, since then, the Adult Population Survey (APS) and the National Experts Survey (NES) have been administered to samples of the country's residents every year. The data collection exercise for this report took place in the spring/summer of 2016. The sample included 2024 individuals for the APS; the NES consisted of 36 interviews. The basic APS questionnaire is made up of a core questionnaire and additional questions. The latter includes special topics for all GEM countries, and groups of specific questions for Luxembourg. Since 2013, Luxembourg APS has included questions on immigration and well-being, as these issues are particularly relevant for Luxembourg's business community and policy makers. In addition, this year we also report the perception of the population on two major issues: the Luxembourg entrepreneurship ecosystem (barriers and enablers) is analysed in the NES chapter and the influence of entrepreneurship policies on the perception that people have on entrepreneurship is investigated the APS chapter.

## 3.1 The GEM conceptual model: taking contexts seriously!

The GEM'S conceptual framework allows to measure outcomes of entrepreneurial activities, either in terms of Total Early-stage Entrepreneurial Activity (TEA), Social Entrepreneurial

Activity (SEA) or Employee Entrepreneurial Activity (EEA). It also takes into account the internationalization aspects of entrepreneurship, high growth and innovative potentials for the economy, as well as more traditional outcomes such as the creation of new jobs and gains in value added. It is important to note that GEM directly collects data closely related with entrepreneurship and relies on other data sources (for example official statistic for GDP) to complement the conceptual framework. The specificity of the GEM Conceptual Framework is to take into account the environment and interactions with economic outcomes (see Figure 3.1). The main idea is that social-cultural and political contexts, entrepreneurship and socio-economic development are all connected and their interaction may help to explain cross-national differences and national evolutions. The GEM framework adopts two complementary views on the environmental context. On the one hand, the National Framework Conditions reflect the social, cultural, political and economic context that impacts the advancement of the society as a whole. On the other hand, the Entrepreneurial Framework Conditions capture the policy environment as well as the general cultural environment with respect to entrepreneurship. GEM does not directly collect data on National Framework conditions but adopts the twelve pillars defined by the World Economic Forum for profiling economic development phases when surveying competitiveness [World Economic Forum, 2016]. The 12 pillars are: Institutions; Infrastructure; Macroeconomic stability; Health and primary education; Higher education and training; Goods market efficiency; Labour market efficiency; Financial market sophistication; Technological readiness; Market size; Business sophistication; and Innovation.

The Entrepreneurial Framework Conditions include the following dimensions: entrepreneurial finance, government policy; government entrepreneurship programs; entrepreneurship education; research and development (R&D) transfer; commercial and legal infrastructure; internal market dynamics and entry regulation; physical infrastructure; and cultural and social norms. National and Entrepreneurial framework Conditions influence directly and indirectly the entrepreneurial activities and their outcome. The indirect impact is mediated by social values about entrepreneurship and individual attributes of the people. If society values entrepreneurship as a good career choice, if entrepreneurs have high societal status, and if media positively represents entrepreneurship, this may profoundly shape entrepreneurship. Individual attributes of people such as gender, age, self-perceptions (perceived capabilities, perceived opportunities, fear of failure), and those conditions that lead to the choice of starting a business (i.e., necessity vs. opportunity- driven entrepreneurs) are important drivers of entrepreneurship. Overall, **the GEM model emphasises how the entrepreneurial process produces new jobs and new value added, thus contributing to the socio economic development given the social, political and economic contexts and unearths possible feedback effects.**

## 3.2 GEM as dynamic measures of entrepreneurship: When perceptions matter!

Another important feature of GEM is that it represents entrepreneurship as a dynamic process rather than a static phenomenon. Figure 3.2 depicts the entrepreneurial process and the corresponding GEM operational definitions adopted at each stage. The most important indicator of entrepreneurship produced by GEM is Total Early-Stage Entrepreneurial Activity (TEA). TEA measures the share of people in the active population (between 18 and 65 years old) that are nascent entrepreneurs or are already leading new businesses. In other words, TEA reflects the

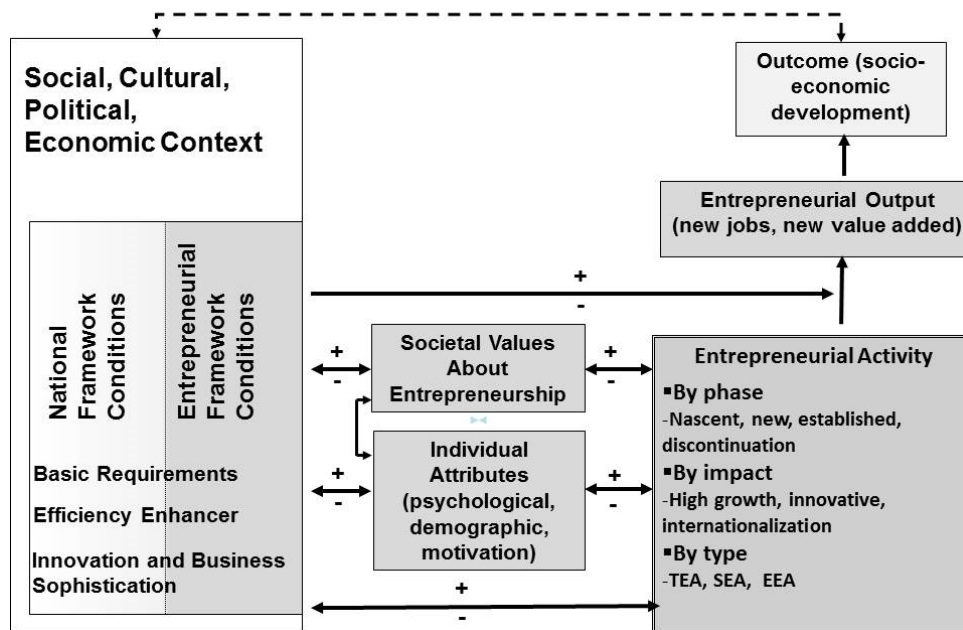


Figure 3.1: The GEM Conceptual Framework

level of dynamic entrepreneurial activity in a country. Every person engaged in any behaviour related to the creation of new business, albeit modest, is regarded as having an impact on the national level of entrepreneurship. In addition, GEM also measures the intentions of becoming entrepreneur and profiles potential entrepreneurs.

This permits to collect information on entrepreneurial attitudes, activity and aspirations at different phases of entrepreneurship, from general intentions through early-stage entrepreneurial activity to status as established firms. GEM surveys collect data on people in the process of setting up new businesses as well as on those who own and run businesses. For these reasons, GEM constitutes a complement to the information provided by official data from business surveys and administrative firm registers. Business register data stay at firm-level and do not allow to fully capture the entrepreneurship phenomenon, not measuring attitudes and perceptions of entrepreneurs and potential entrepreneurs. Another limitation of these data is that official firm-level data are often not fully comparable across countries because of the differences in countries' laws and institutions (e.g. mandatory incorporation with different turnover thresholds). GEM is a global project that includes countries with different informal business activities. Direct comparability of business register data may be difficult because informal business activities are not fully captured by register data [Driver et al., 2001]. The Adult Population Survey (APS) focuses on individuals, and adopting a common and consistent definition of entrepreneurship allows better cross-country comparison. Another primary objective of GEM is to explore cross-country differences in the motivations of entrepreneurs, and to link these differences to job creation and economic growth. To this purpose, survey respondents are interviewed about their motivation for starting a business. An important distinction is made between *necessity-driven entrepreneurship* and *opportunity-driven entrepreneurship*. The first refers to individuals who are motivated primarily by a lack of other options for making a living,

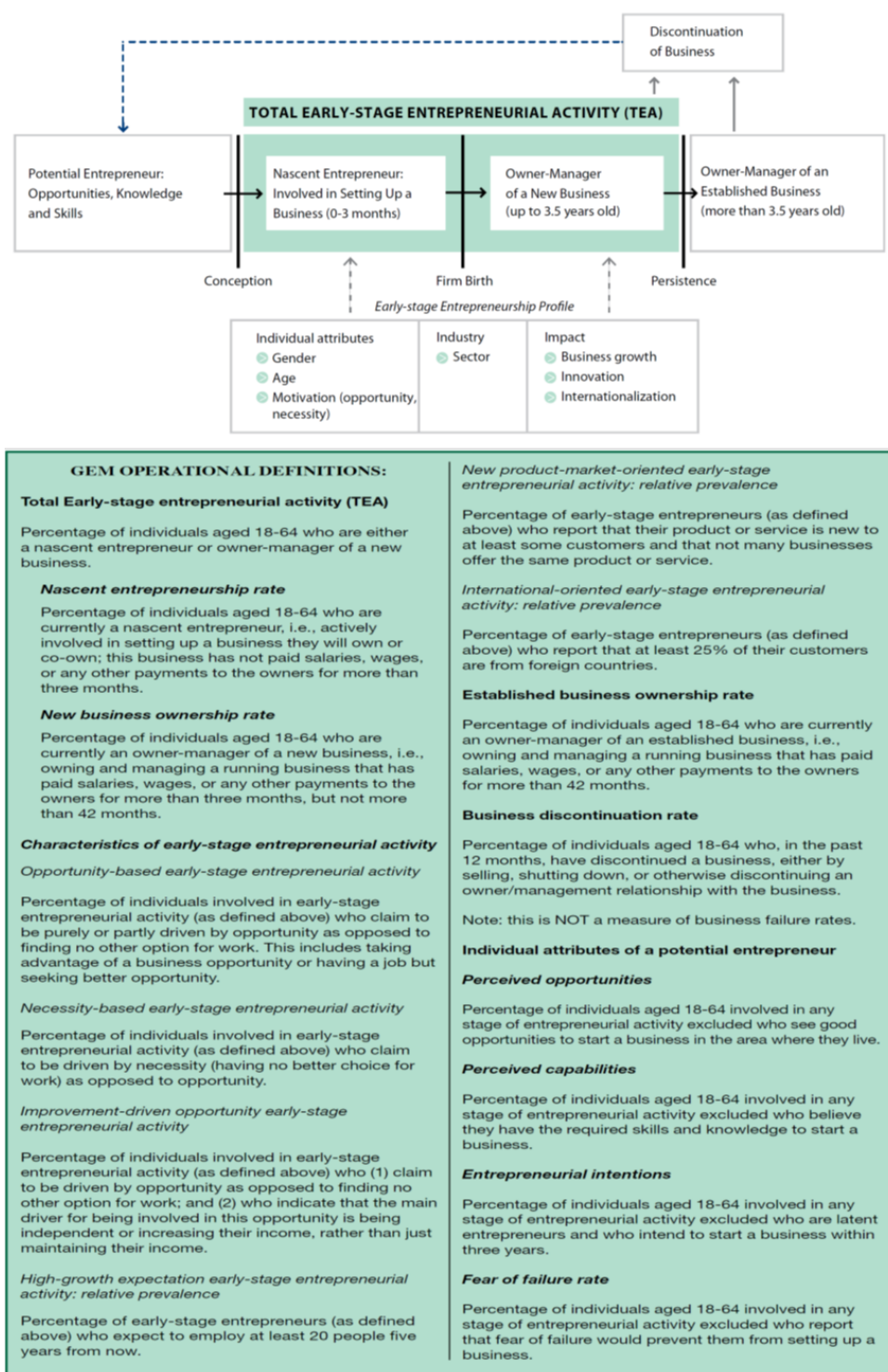


Figure 3.2: The entrepreneurial process and GEM operational definitions

while the latter refers to those who are starting a business to take advantage of an opportunity. Opportunity entrepreneurs are those individuals who wish to maintain or improve their income, or those who aim to increase their independence. In line with this approach, respondents are also asked questions on market innovativeness of the product they offer and on expected employment growth from their business.

### 3.3 GEM surveys

The research design of the GEM surveys is harmonised over all participating countries for the sake of comparability. The data is collected yearly from two main sources:

#### 3.3.1 Adult population survey (APS)

The APS is a survey of the adult active population, namely people at least 18 years old but younger than 65. Each of the participating countries conducts the survey among a representative sample of at least 2000 adults (2024 in Luxembourg). The survey for Luxembourg is conducted during the spring/summer of each year using a standardised questionnaire provided by the GEM consortium. In 2016, the GEM Luxembourg team has decided to keep some questions administered in previous years as special topics of the global questionnaire. These questions focus on the immigration status of respondents and on their subjective well-being. This decision was made because of the relevance of such questions to Luxembourg. To ensure consistency, the international GEM data team supervises the data collection process. Waves of raw data are sent regularly during the survey to the GEM data team for quality checking before being made available to the participating countries. To increase the reliability of the figures, the observations are weighted to ensure that the joint distribution of the gender and age of the respondents is equal to the distribution of the reference population as recorded in official registers.

The questionnaire is made of ten blocks of questions to collect information on the whole population and on different types of entrepreneurs. The descriptions of the blocks of questions are as follows:

1. Nascent entrepreneurs
2. Owner-managers
3. Potential and discontinuing entrepreneurs
4. Informal investors
5. Employment + entrepreneurial employee activity
6. Entrepreneurship policies (Luxembourg specific questions)
7. Barriers and enablers (Luxembourg specific questions)
8. Well-being (Luxembourg specific questions)
9. Demographics of respondents
10. Immigration (Luxembourg specific questions)



### **3.3.2 National experts survey (NES)**

The national experts' survey is an important component of the GEM project as it provides insights into the entrepreneurial start-up environment in each country. National experts inform on the Entrepreneurial Framework Conditions that influence entrepreneurial activities. Four experts from each of the nine entrepreneurial framework condition categories are interviewed, summing up to a total of 36 experts per country. (The categories are listed in Table 5.1, in Section 5)

# Luxembourg 2016 Adult Population Survey

This section overviews the entrepreneurial activity in Luxembourg using information from the Adult Population Survey (APS). The report focuses on the last wave of data, collected in 2016, while previous surveys (from 2013 to 2015) are used for comparative purposes. Section 4.1 focuses on individual traits of respondents and compares characteristics of respondents with those of the overall resident population. Section 4.1.1 presents the measurement of entrepreneurship at the various stages of the entrepreneurial process, focusing on the crucial TEA indicator. Section 4.1.2 overviews the individual characteristics of the entrepreneurs in Luxembourg. Section 4.1.3 analyses the characteristics of new ventures in Luxembourg. The section investigates ownership structure, types of activities in which new firms are created, ownership structure, and sources of funding for Luxembourgish start-ups. Finally, Section 4.1.4 compares Luxembourg data to those of other E.U. countries.

## 4.1 The characteristics of respondents

The GEM target population is composed of individuals between 18 and 64 years of age who are residents in Luxembourg. From this, a sample of 2016 individuals is interviewed using telephone interviews (40% of respondents) and on-line questionnaires (60%). The use of online surveys is motivated by the fact that internet connections are covering nearly 97% of the Luxembourgish population [STATEC, 2015] and that older respondents are often over-represented in telephone samples [Roster et al., 2004]. The representativeness of the sample is a crucial factor that affects the interpretation of results from statistical surveys. In practice, representativeness informs on whether results are generalizable to the full population or are valid only for a subset of the population under investigation. Unweighted data shows an under-representation of respondents in the age group of 18-34 years and a corresponding over-representation of those aged 45 and above. Therefore, in GEM, observations are weighted to ensure that the sample distributions of the gender and age variables are identical to those of the same characteristics in the overall population. In other words, this procedure tries to ensure that the characteristics of the sample are as close as possible to those of the overall population. Table 4.1 describes age, gender, income, and place of residence of respondents. In line with the overall population proportion, Table 4.1 reveals that slightly more men than women (51% versus 49%) were interviewed; about half of the interviewed were 35 to 54 years old (47%). One third of the respondents declared an upper secondary education level, and one in four an income between 40.000 and 60.000 €. Finally, Table 4.1 shows that the majority of respondents live in the South and in the Centre regions of Luxembourg (respectively 38% and 34%).

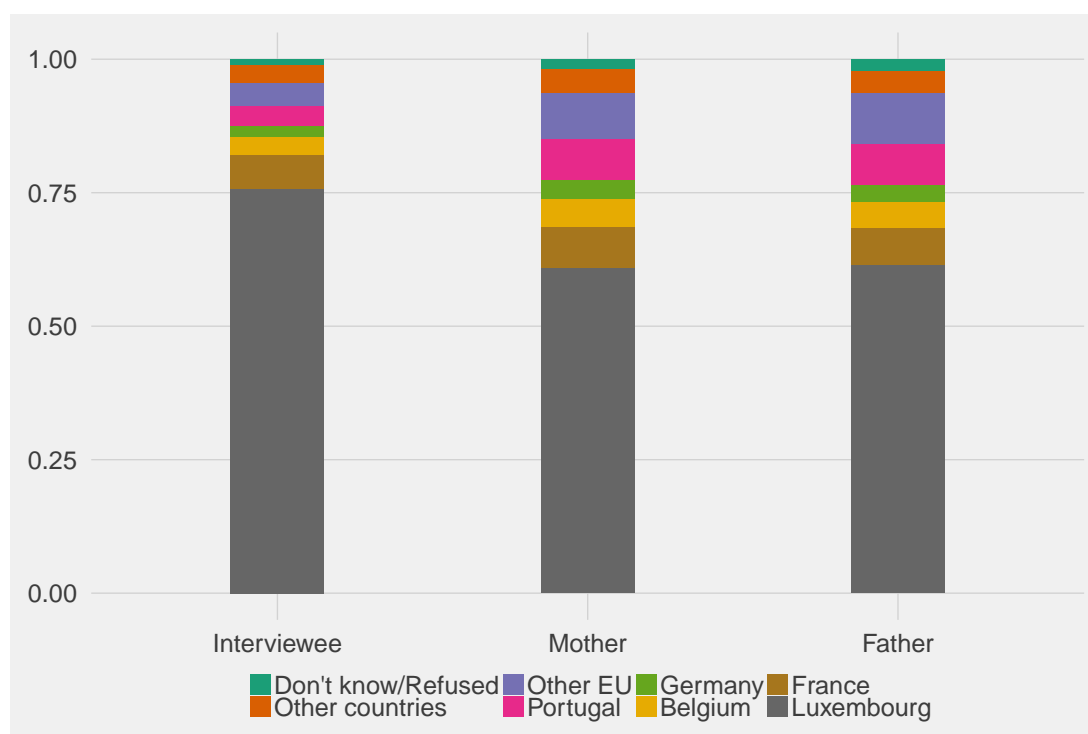


Figure 4.1: Respondent's country of birth

Figure 4.1 presents the breakdown by country of birth for the respondents and for their parents. To define the migration background of the participants, the APS survey asks to state

their country of birth, rather than the nationality. This measurement is less sensitive to possible changes of nationality or naturalizations. 75% of respondents were born in Luxembourg. Interestingly, about 60% of these respondents have at least one parent that was not born in Luxembourg. Finally, Figure 4.2 depicts the employment status of the respondents. The most commonly reported employment status is: “full time employed” and “part-time” (56% and 14% respectively). Only 9% of respondents are self-employed.

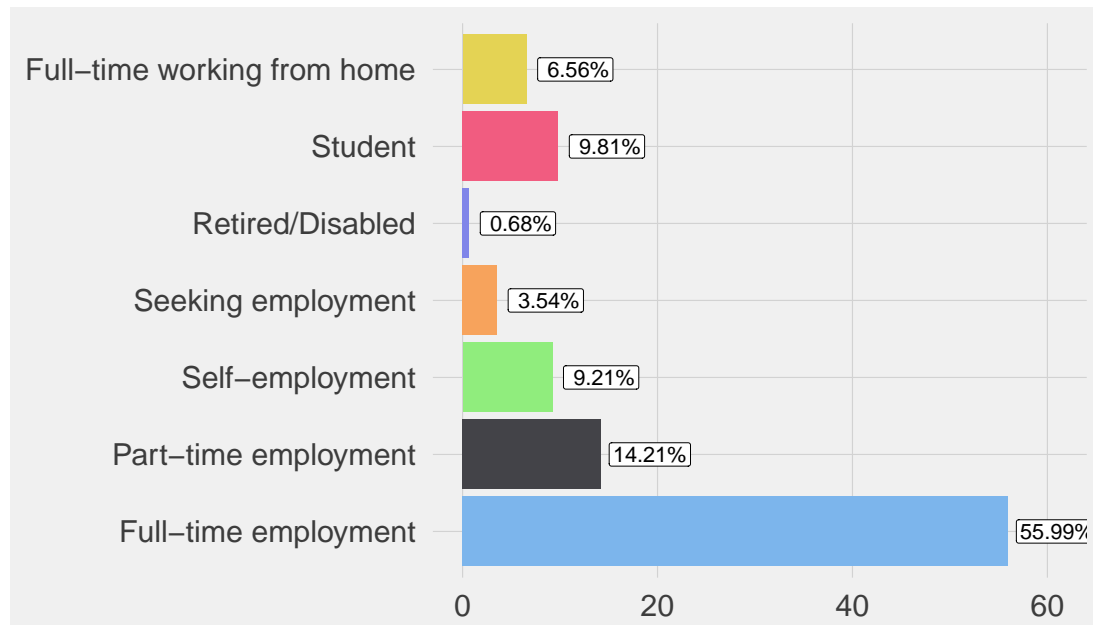


Figure 4.2: Respondents employment status

### 4.1.1 The evolution of entrepreneurship indicators

As described in 3.1, the GEM framework models entrepreneurship as a process that comprises four consecutive stages, namely:

1. Potential entrepreneur: an individual who plans to start a new business in the next three years;
2. Nascent entrepreneur: an individual involved in setting up a new business, and who has paid wages (to employers or to himself) for less than three months;
3. New entrepreneur: an owner-manager of a firm that has paid wages for a period of time of between 3 and 42 months;
4. Established entrepreneur: an owner-manager of a firm that has paid wages for a period longer than 42 months.

Total Early-Stage Entrepreneurial Activity (TEA) is a crucial indicator in GEM studies. It estimates the percentage of individuals that are either nascent or new entrepreneurs, so they belong to stage 2 or 3. Figure 4.3 shows TEA between 2013 and 2016. TEA measured 8.7% in 2013, 7.1% in 2014, 10.2% in 2015 and 9.2% in 2016. A statistical analysis is performed to verify whether the level of TEA in 2015 is statistically different than TEA in 2014 and 2013. Results show that TEA is significantly higher in 2016 than in 2014 but there is no statistical difference between 2016, 2015 and 2013. **Overall, results suggest that TEA in Luxembourg fluctuates around the 9% value.**

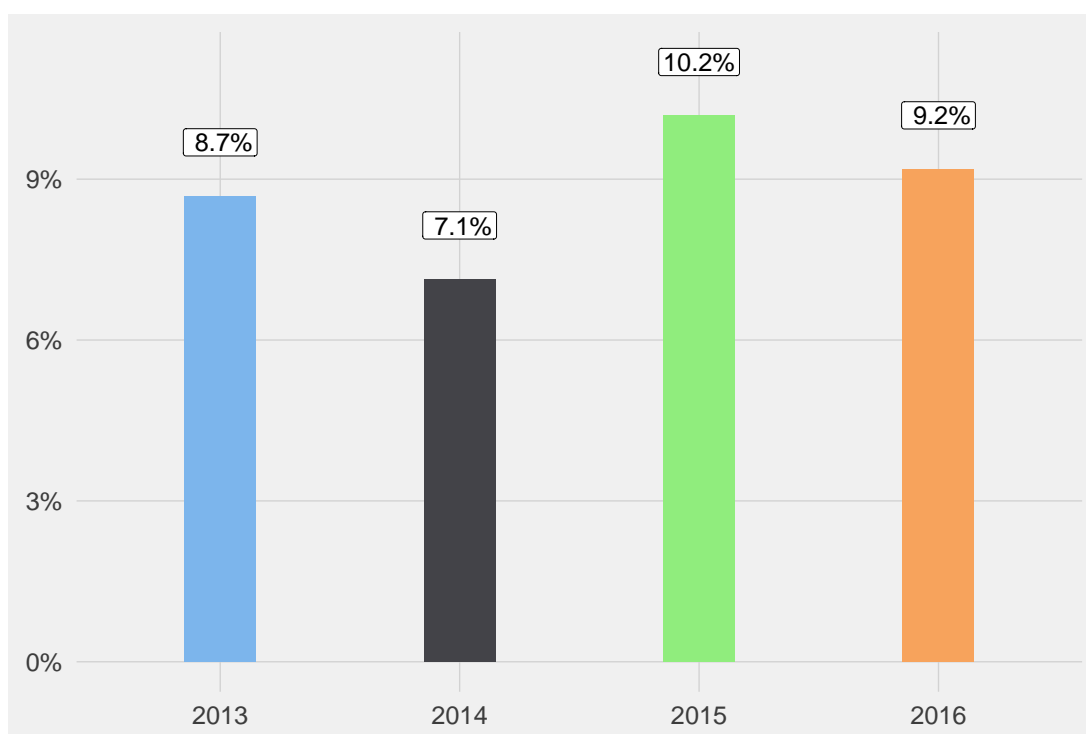


Figure 4.3: Total Early-Stage Entrepreneurial Activity (TEA) 2013-2016

Figure 4.4 looks at all stages of the entrepreneurial process. The figure shows how many respondents have achieved a specific entrepreneurial stage in each wave of the survey. It is

important to note that some individuals may be engaged in several entrepreneurship stages at the same time (i.e. owning a business and starting another start-up). In 2016, nearly 20% of respondents are potential entrepreneurs, 11% have engaged in some form of entrepreneurial activity (nascent, new or established), 6% are new entrepreneurs and around 4% are established entrepreneurs. In 2016, all four indicators have slightly decreased compared to the previous year. **The econometric analysis shows that the proportion of potential entrepreneurs is significantly lower in 2016 in comparison to 2015.** Differences in the other stages of the entrepreneurial process are not statistically significant.

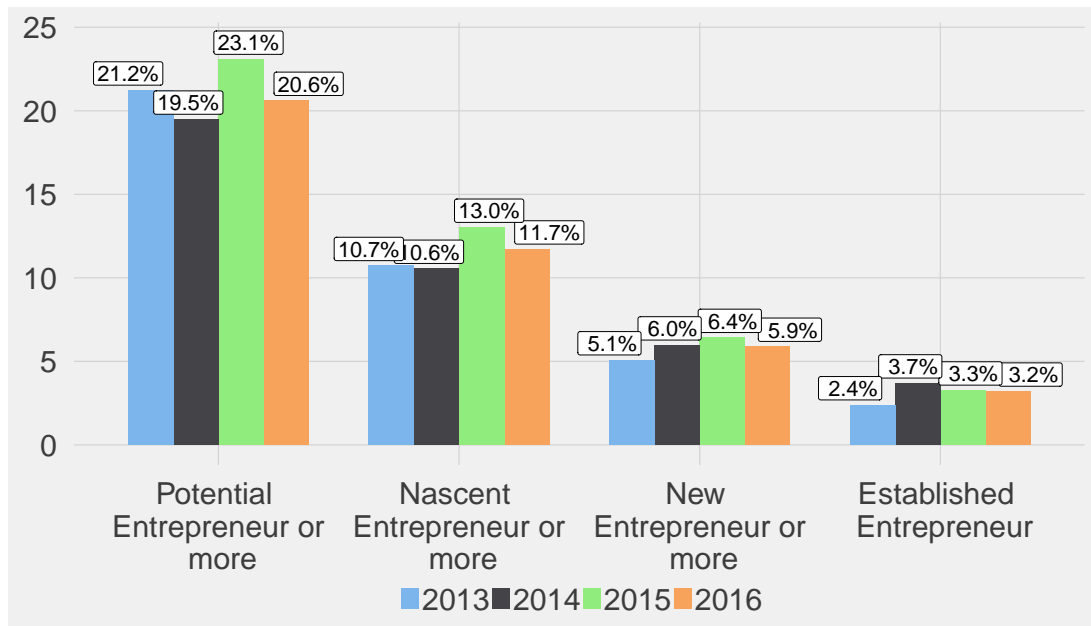


Figure 4.4: Entrepreneurship stages indicators 2013-2016

### 4.1.2 Attributes of entrepreneurs in Luxembourg

This section focuses on the individual attributes of entrepreneurs at the various stages of the entrepreneurial process. It also shows how such traits evolved over time. The aim of this exercise is to “profile” entrepreneurs. This information can help to identify individuals who are most likely to become successful entrepreneurs. Figure 4.5 presents the percentages of the respondents who declared to expect to start a business in the next 3 years by gender, age, and education level. The data suggest the existence of a gender, age and education “gap” in entrepreneurial intentions. In 2016, out of all people interviewed in the male category, 23% declared that they intended to start a business vs. only 13% in the female category. With respect to age, individuals between 18-34 years old are the more prone to engage in entrepreneurial activities (24% in this group expect to start a business). Among higher educated individuals 22% expect to start a business compared to 16% among less educated individuals. The High Education category includes individuals that successfully concluded short-cycle tertiary education, bachelor, master or doctoral studies. One can also see that the overall figures of potential entrepreneurs are generally similar in 2016 and in previous years.

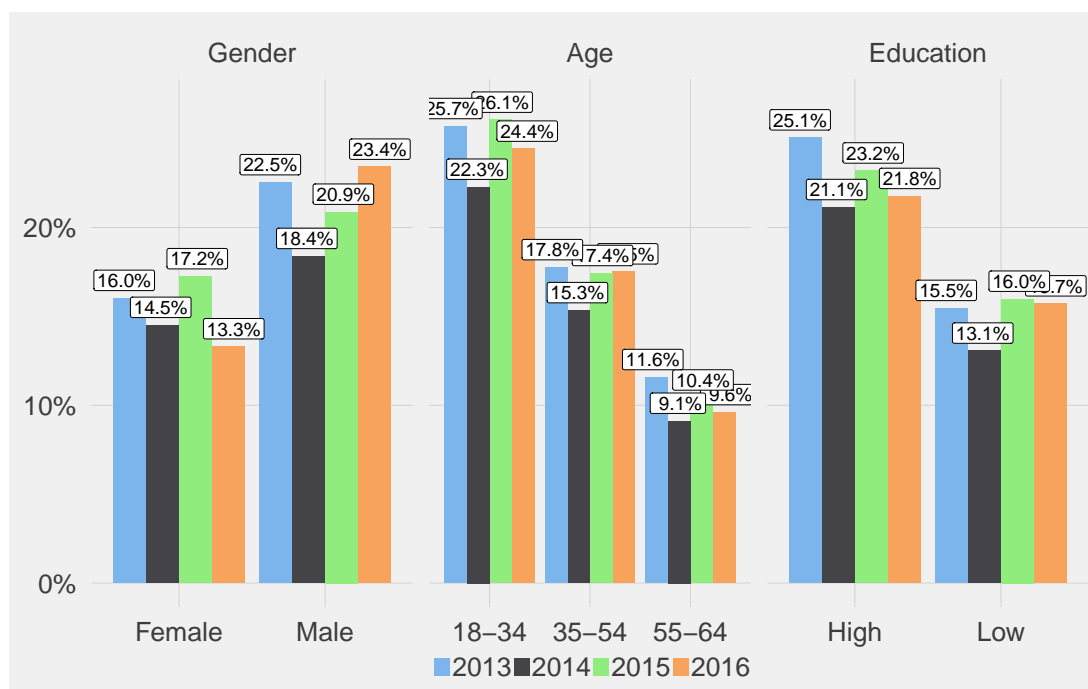


Figure 4.5: Potential entrepreneur by gender, age and education level 2013-2016

Figure 4.6 moves on to the creation stage, and displays the percentage (total and by gender) of the respondents that declare to be involved in setting up a business. One can see that 13% of all respondents are trying to start a new business. Interestingly, nearly 5% of respondents are setting up a new business as part of their normal work as employees (Entrepreneurial Employee Activity) meaning that one third of the entrepreneurial activity in Luxembourg is taking place in established firms. Similar figures are observed in other developed countries such as Germany and France (5.1% and 3.6%, respectively). These figures emphasise the importance of Entrepreneurial Employee Activity. **In Luxembourg more than one third of the entrepreneurial activity is taking place in established firms.**

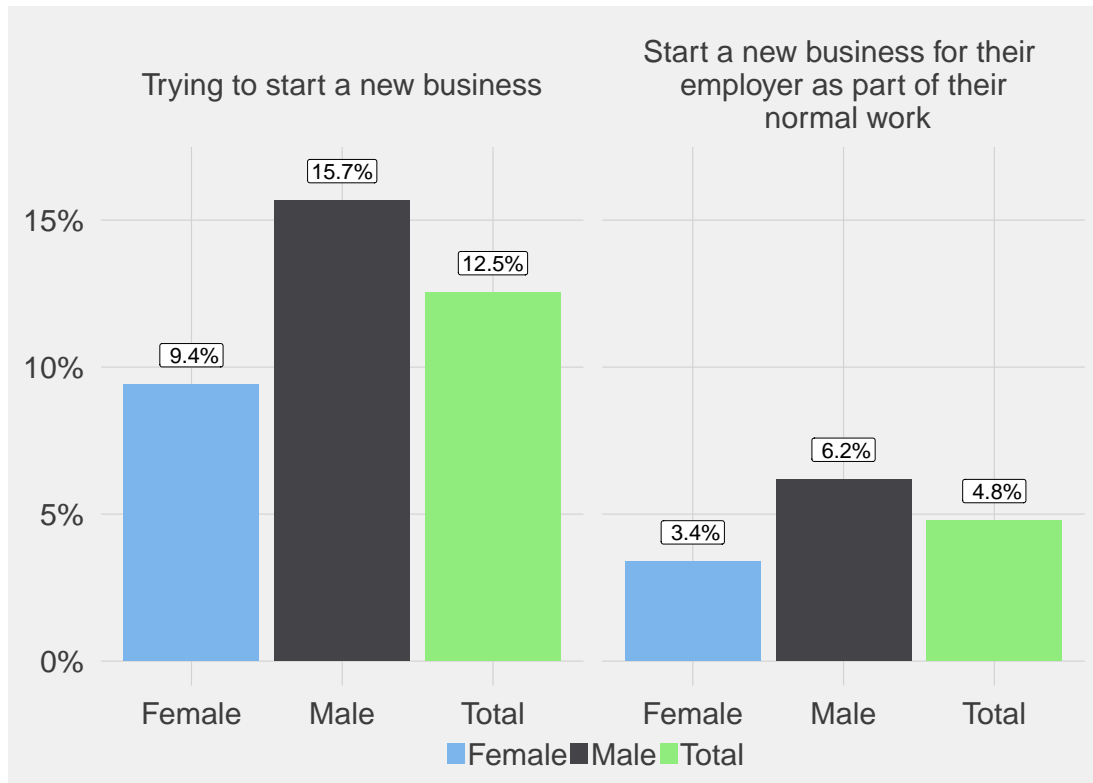


Figure 4.6: Share of respondents involved in setting up a business 2016

Figure 4.7 shows the percentage of males and females that are entrepreneurs of a new business (TEA) and of an Established Business from 2013 to 2016. The number of female entrepreneurs has decreased from about 9% in 2015 to 6.5% in 2016 close to the 5% level reported in 2013 and 2014. For every year the proportion of entrepreneurs among females remains lower than the proportion of entrepreneurs among males. 11.7% of the male active population (10-64 years) is involved in TEA compared with the 6.5% of females. The number of established businesses owned and run by women only marginally increased in 2016 from 1.9% to 2.3% near the level that is reported in 2013 and 2015.



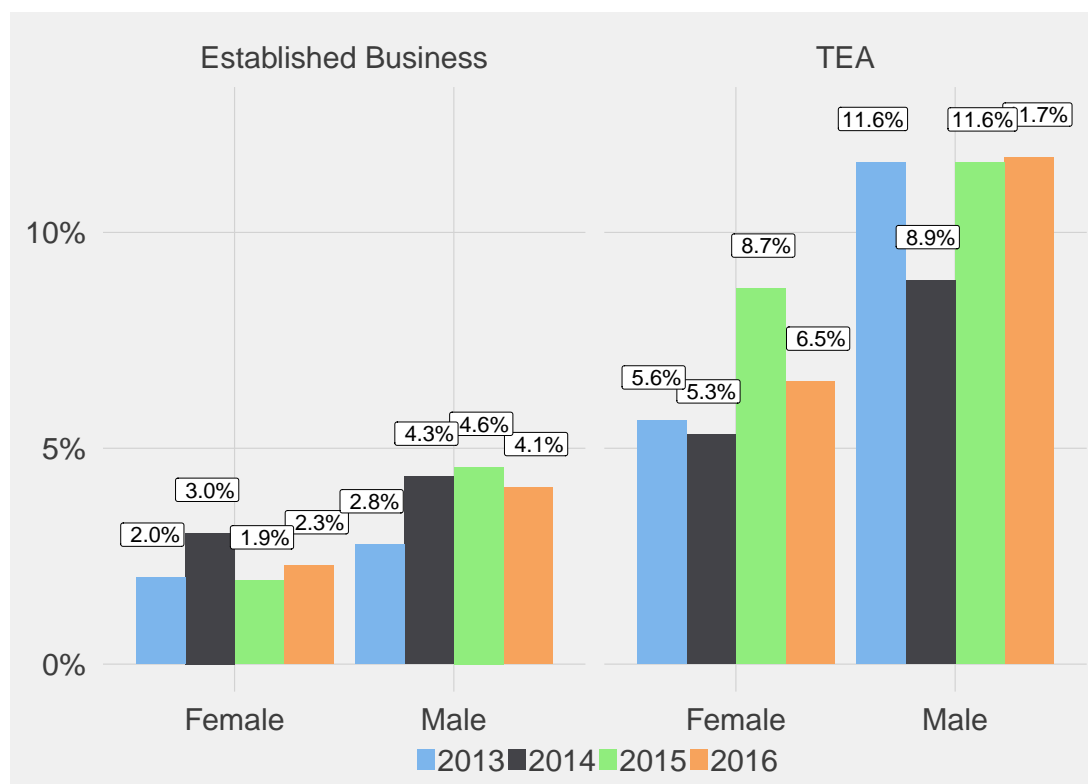


Figure 4.7: TEA and Established Business by gender 2013-2016

### Entrepreneurs' motivations

Some questions are designed to examine the reasons that drive people's engagement in entrepreneurship. As explained in section 3.2, GEM distinguishes between entrepreneurs that are motivated primarily by a lack of other options for making a living (necessity entrepreneurship), and those who are starting a business to take advantage of an opportunity (opportunity entrepreneurship). This is relevant because existing empirical evidence suggests that such reasons have a substantial impact on individuals' earnings and outcomes [e.g. Fossen and Büttner, 2013].

**Luxembourg entrepreneurs are primarily opportunity-driven entrepreneurs.** Figure 4.8 presents the reasons to engage in entrepreneurship emerging from the survey. About 90% of all TEA entrepreneurs are either opportunity-driven or at least partly opportunity-driven. Nearly 10% of Luxembourgish entrepreneurs are driven by necessity compared to the 20.9% of all European entrepreneurs [GEM, 2017, p. 116]. The figure also shows how the different reasons that motivate entrepreneurs are distributed across the population's traits. Necessity and opportunity reasons differ most across groups, especially income based groups.

The share of respondents involved in TEA because of necessity is about 20% for those reporting lower income, compared to about 5% for those with higher revenues (60 000 € is the sample median income). In other words, low income entrepreneurs are nearly twenty times more likely to be driven by necessity. This pattern is consistent with the interpretation that lack of financing may constrain entrepreneurial activity.

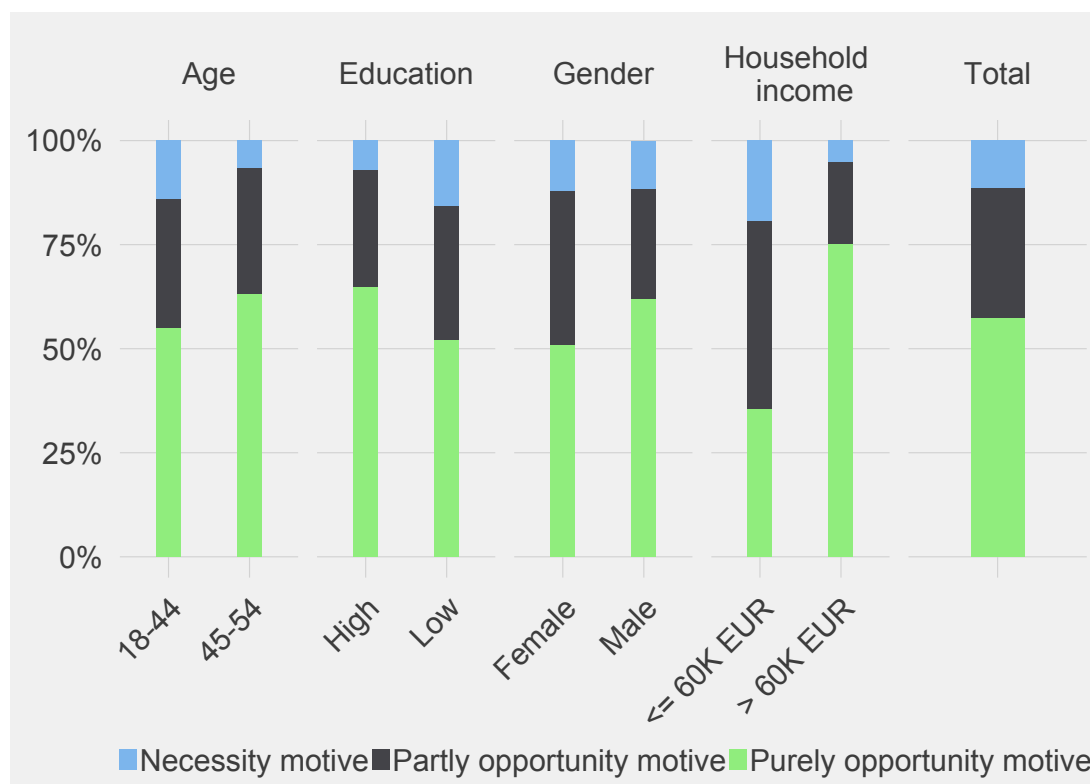


Figure 4.8: Motivations to get involved in TEA 2016

### 4.1.3 New ventures: ownership, activity, innovativeness and funding

While previous sections focus on individuals' traits, what follows examines the characteristics of firms. The aim is to “profile” firms that have higher chances of growing. Namely, this section investigates the new firms' ownership structure, the industry, innovativeness and the sources of funding of new firms.

#### Ownership structure

Setting up new ventures requires founders with adequate know-how and skills. A variety of skills (e.g. managerial, technical) influence the survival and the growth of new firms. One founder only has rarely all the needed skills. Studies show that the higher the skills and human capital of the founders are, the faster the growth of the start-ups is [e.g. Colombo and Grilli, 2005]. Additionally, many founders can more easily collect the capital needed to start a new business. However, if there is more than one owner, there is the risk of disagreements among owners. This can slow down the decision-making process, and ultimately can hinder the start-ups' growth. Figure 4.9 presents the ownership structure (i.e. number of founders) for new and established businesses over the period 2013-2016. It shows that nearly half of the new businesses have only one owner, and that these proportions are relatively stable over time. The proportion of sole proprietors of established businesses increased in 2016 compared to 2015 from about 50% to about 63% similar to the proportion in 2013. Figure 4.9 shows that **the majority of both new and established firms are owned by sole proprietors** and there is no major difference between years.

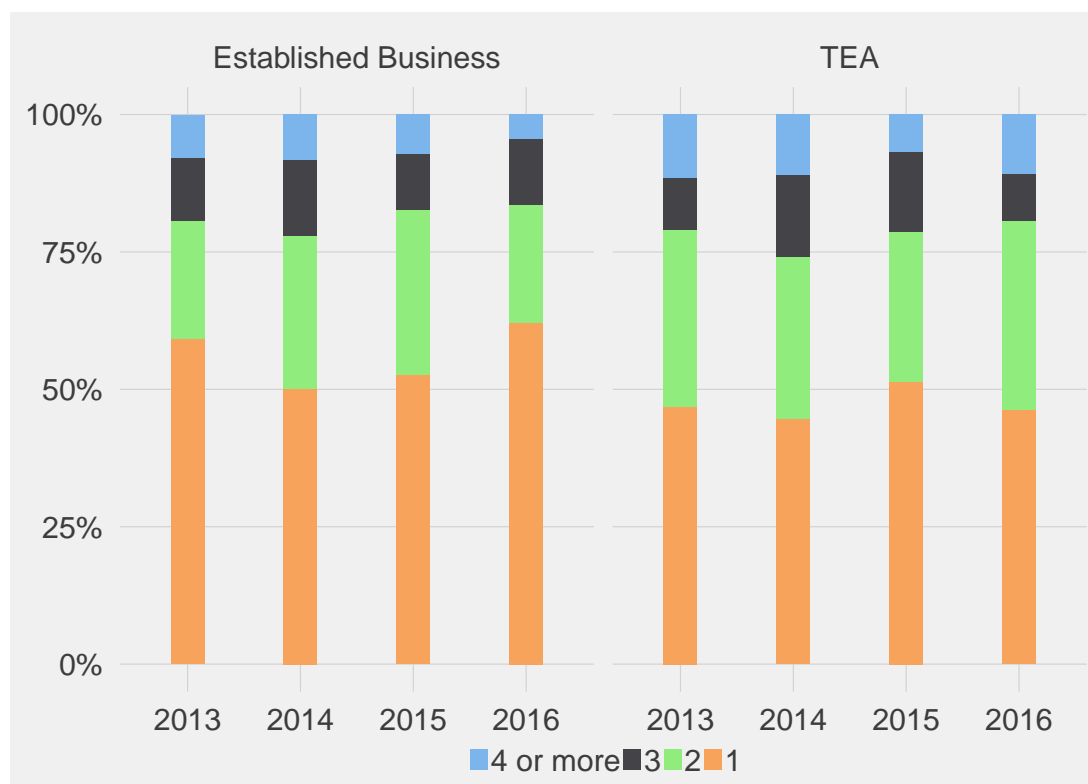


Figure 4.9: Ownership structure of TEA and Established businesses by year 2013-2016

### Type of activity

Birth and survival of new businesses can vary considerably among different industries. Some industries grow faster than others. As a result, such industries might offer more business opportunities than others. Additionally, some industries show some degree of specialization in terms of gender (for example males are the majority in construction) or skills (ventures in biotechnology may require higher degree of education). To explore industry patterns of entrepreneurship, this section illustrates the industry sector distribution of TEA by personal characteristics of the entrepreneurs. Economic Activities are defined according to the International Standard Industrial Classification of All Economic Activities (ISIC Rev.4). The classification in this report is the following:

- Transforming: agriculture, forestry, fishing, mining and construction manufacturing, utilities, transport, storage and wholesale trade.
- Consumer oriented: retail trade, hotels & restaurants and personal-consumer services.
- Health, education and others: health, education and social services
- Business services: information and communication, financial intermediation, real estate activities, professional services and administrative services.

Figure 4.10 shows that new entrepreneurs are mostly active in the business services industry (40% of new ventures), followed by consumer-oriented services. Firstly, the gender breakdown shows that **males are mainly operating in business services (about 40%) and almost**

a quarter in the transforming industry, while females are more active in the education, health and other services industry (about 40%) and consumer-oriented services industry (25%). Secondly, looking at income it is interesting to see that industry distribution is generally similar in 2016 while the transforming industry was more common among low income individuals than among high income individuals. Thirdly, highly educated entrepreneurs have a proportionally higher share of Business services than less educated entrepreneurs. Finally, age does not seem to matter in the choice of industry.

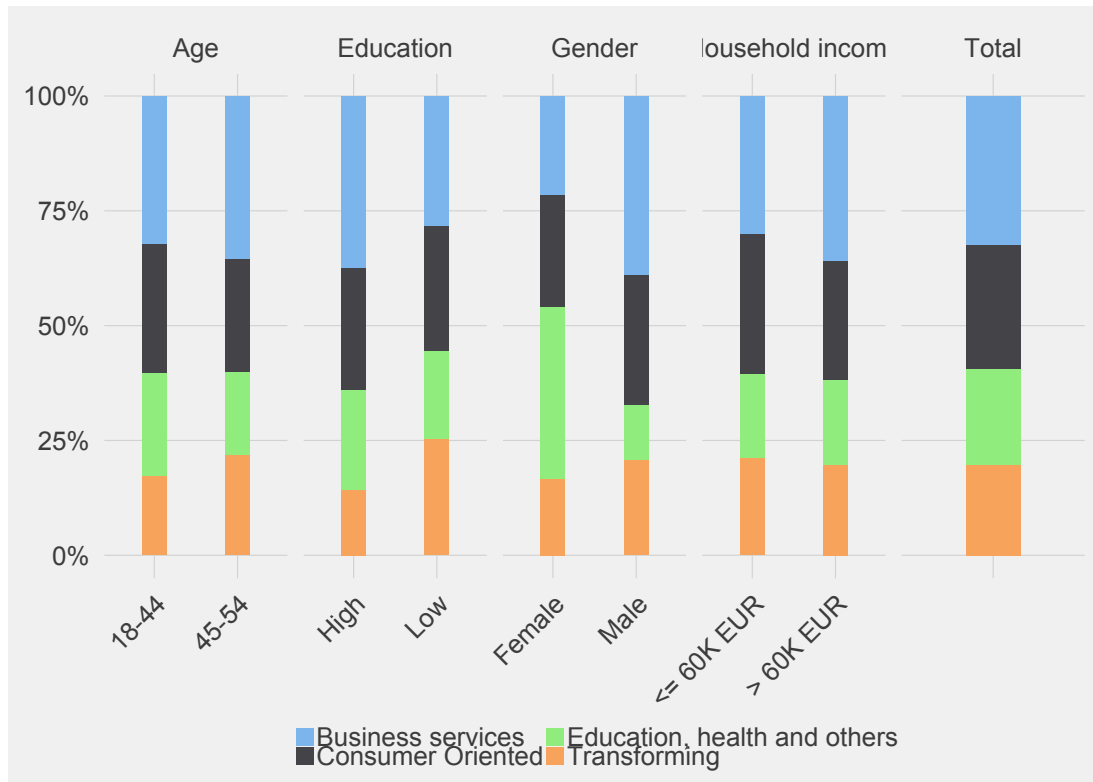


Figure 4.10: TEA by industry (by gender, income, education and age) 2016

### Innovativeness

Start-ups are generally considered radically innovative because they are able to identify and exploit business and technological opportunities better than older firms. GEM uses two main indicators to establish innovativeness of new ventures: 1) the share of customers perceiving the main product of the new or established venture as new or unfamiliar; 2) the age of the technology used. Figure 4.11 suggests that about 15% of interviewed TEA entrepreneurs and about 16% of owners/managers of the Established businesses consider that all of their customers see their product as new or unfamiliar. Note that managers of the ventures are answering this question and not their customers. Thus, the answers do not reflect the market's perception but the managers' beliefs. Early entrepreneurs tend to perceive their products as more innovative than established (more experienced) entrepreneurs. These shares appear rather stable over time.

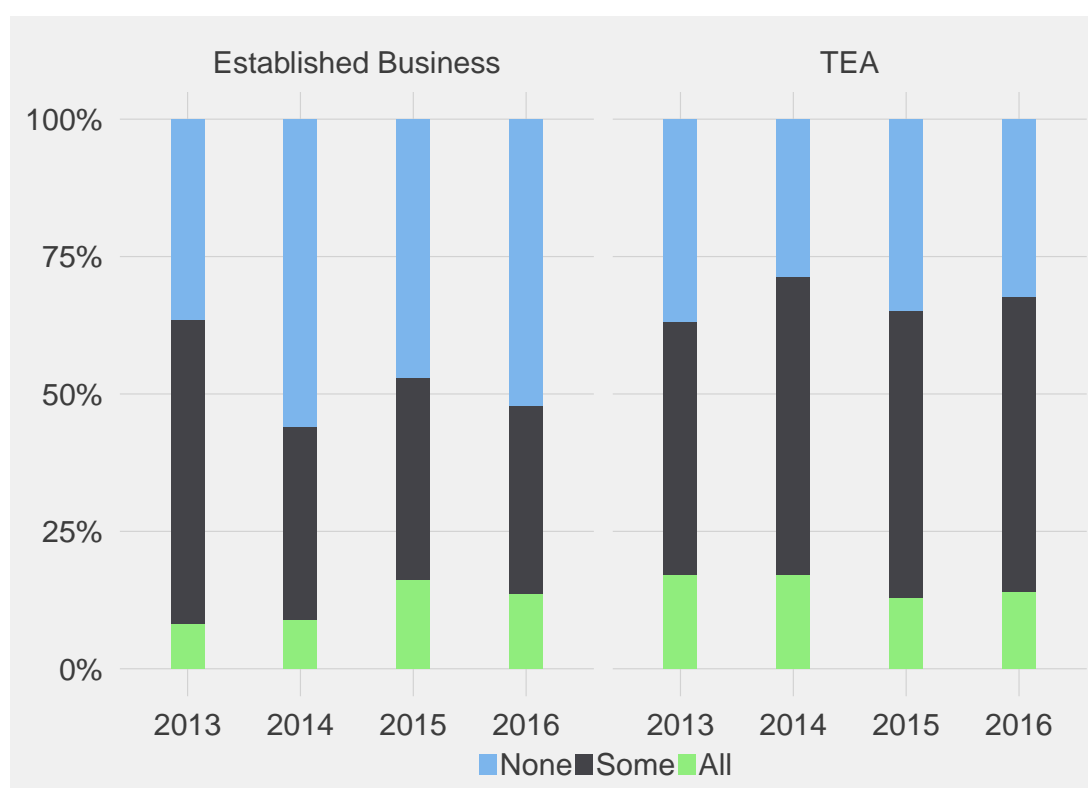


Figure 4.11: Percentage of the customers considering your product new or unfamiliar, 2013-2016

Figure 4.12 shows that more than half (60%) of the enterprises younger than 42 months declared that they used no new technology (i.e. technology older than 5 years). This percentage is even more remarkable when looking at the established business (75%). This pattern is nearly unchanged over time.

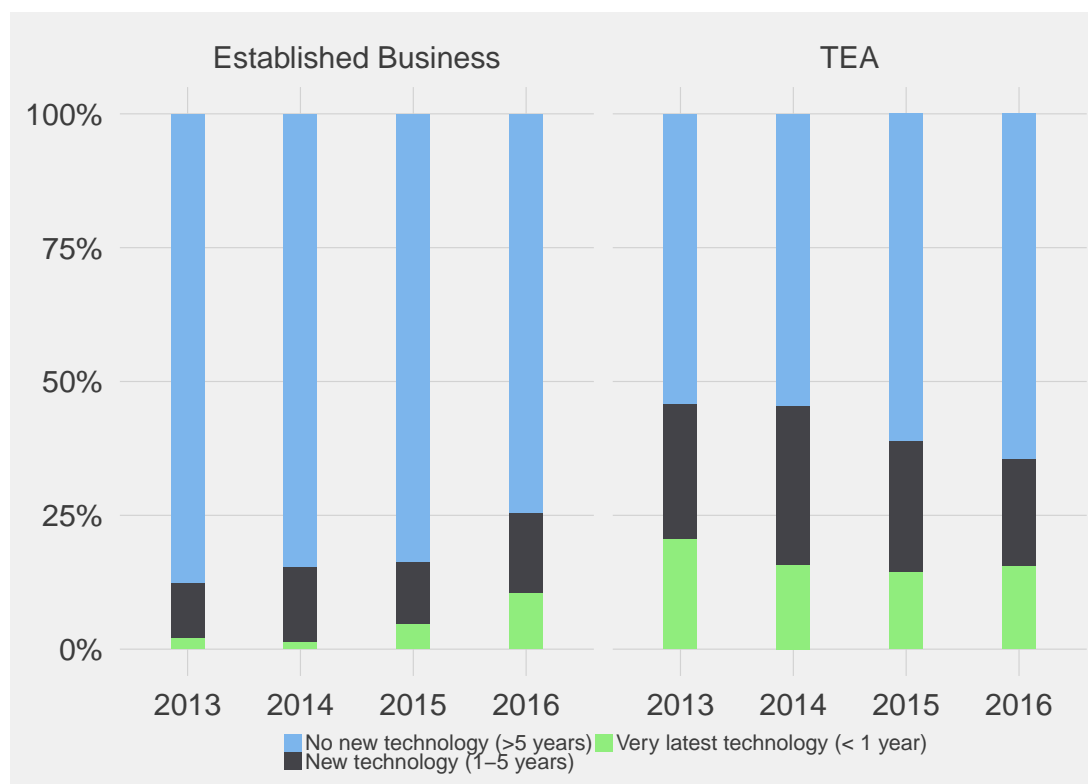


Figure 4.12: Age of the technology or procedure used to provide the services/products 2013-2016

## Funding

Starting and growing a new business requires adequate access to capital. The lack of funding is one of the biggest hurdles to entrepreneurship. Start-ups may have problems to collect necessary capital because financial systems may be reluctant to fund businesses that have not proven to be profitable. It is difficult to assess the quality of new business ideas and many start-ups fail [e.g. Kerr and Nanda, 2011]. Lack of funding (loans or equity) can postpone productive investment and slow down growth. This section aims to provide information about the sources of funding available to Luxembourgish business start-ups in 2016. One observes that, in 2016, 7% of respondents declare to have provided funds (loans or equity) for a new business started by someone else (Figure 4.13). Out of two thirds of respondents that declared the amount of their funding, 54% gave less than 10,000 €, a further 26% provided between 10,000 and 50,000 €, and 25% provided more than 50,000 €. One can see that close family and friends are giving most of the funding. This result is in line with the argument that family and friends are the primary sources of finance for start-ups [Kotha and George, 2012].

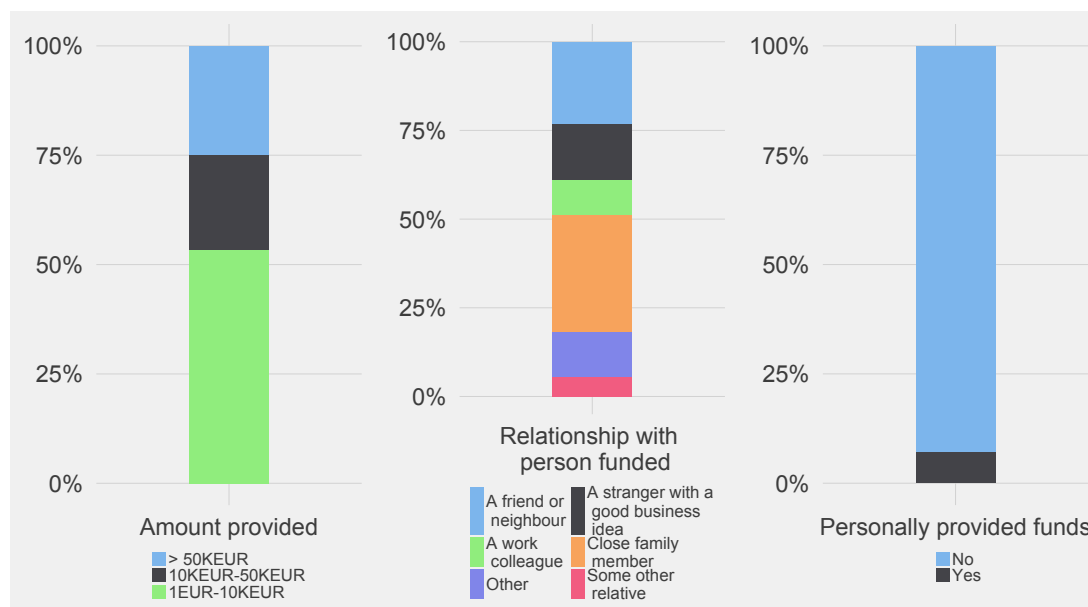


Figure 4.13: Funding of start-ups in Luxembourg 2016

#### 4.1.4 Entrepreneurship: a cross-country perspective

This section compares entrepreneurial attitudes and activities in Luxembourg to those of other countries. The analysis focuses first on TEA and on the perception of entrepreneurship, and then differences in the actual participation in entrepreneurship are examined. As described above, 9.2% of the 18-64 years old population of Luxembourg is engaged in entrepreneurship activities (i.e. TEA). Figure 4.14 reports TEA for European countries. As in the last year, Estonia ranks the first among European countries (16.2%). Luxembourg is above the European average (8.6%) but loses the 2nd place of last year. Comparing figures of this and last year, it is important to note that not all countries participate every year in GEM (e.g. Ireland and Cyprus did not). Another relevant aspect is that efficiency driven countries usually present higher TEA than developed countries [GEM, 2017]. Luxembourg's neighbours have a TEA rate ranging between 4.6% for Germany, 5.3% for France and 11.0% for Netherlands (Belgium did not participate in GEM this year). Besides TEA, figure 4.14 also illustrates the international ranking in terms of entrepreneurs that start a new firm to exploit a business opportunity (the opportunity driven TEA that is discussed in section 4.1.2). Looking at the opportunity driven TEA, Luxembourg ranks 5th out of 22 European countries.

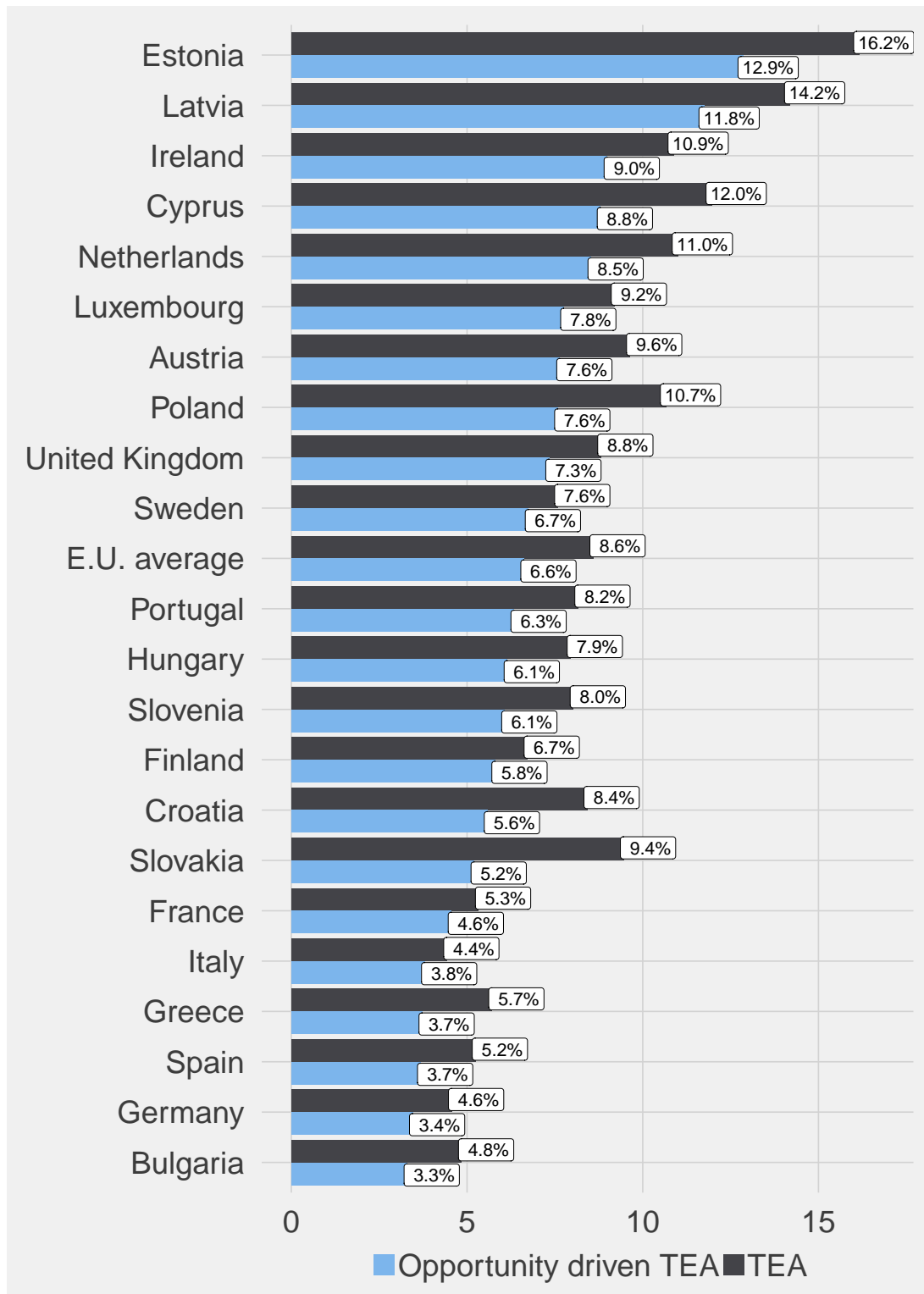


Figure 4.14: TEA and opportunity driven TEA in EU countries 2015



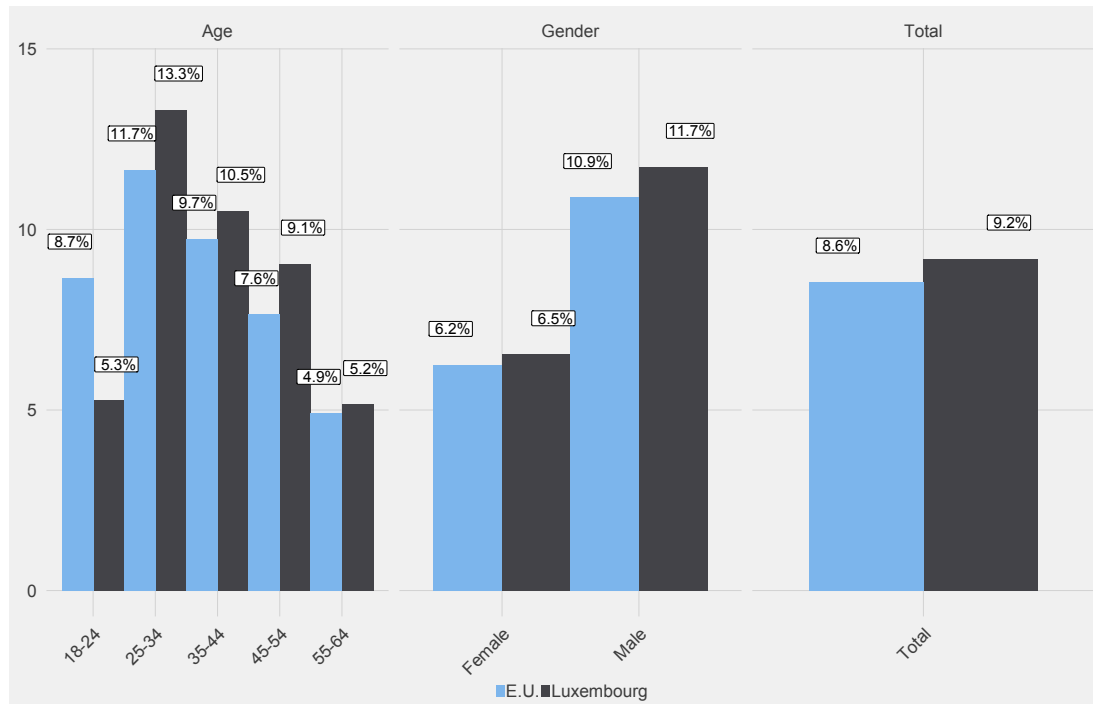


Figure 4.15: Luxembourg and E.U. countries: TEA in % of age group and Gender, 2016

Figure 4.15, reports the TEA share in Luxembourg and in other European countries in 2016 by gender and age classes. Luxembourg has a slightly higher TEA share than the average of E.U. countries (9.2% and 8.6%, respectively). Looking at gender, both male and female TEA entrepreneurs are more frequent in Luxembourg than the in other European countries. Figure 4.15 shows more difference between European countries and Luxembourg. It reveals that among persons between 25 and 54 years of age, TEA is considerably higher in Luxembourg than in other European countries. In the age class 18-24 the pattern is reverted: TEA rate is higher in Europe than in Luxembourg (8.7% versus 5.3%).

Figure 4.16 compares entrepreneurial intention, entrepreneurial skill perceptions, and the fear of failure across Luxembourg and other E.U. countries. In 2016, Figure 4.16 indicates that nearly 50% of the Luxembourgish respondents perceive that there are good opportunities to start a business in the area they live. This figure is much higher than the E.U. average (36%). The business climate conditions in Luxembourg are particularly favourable for entrepreneurship initiatives in 2016. Figure 4.16 shows that nearly 37% of respondents in Luxembourg report that they personally know someone who had started a business in the past 2 years. Similar percentage is observed in other European countries. The rate of persons reporting that they have the knowledge and skills to start a business is slightly lower in Luxembourg (41%) than in the European countries (nearly 44%). Finally, the fear of business failure seems more present in Luxembourg (nearly 51%) than in the E.U. (46%). In summary, **Luxembourgish residents value Luxembourg as a good place to start a business. Additionally, they perceive themselves as relatively skilled but more risk adverse than other neighbouring countries' residents to start a business.**

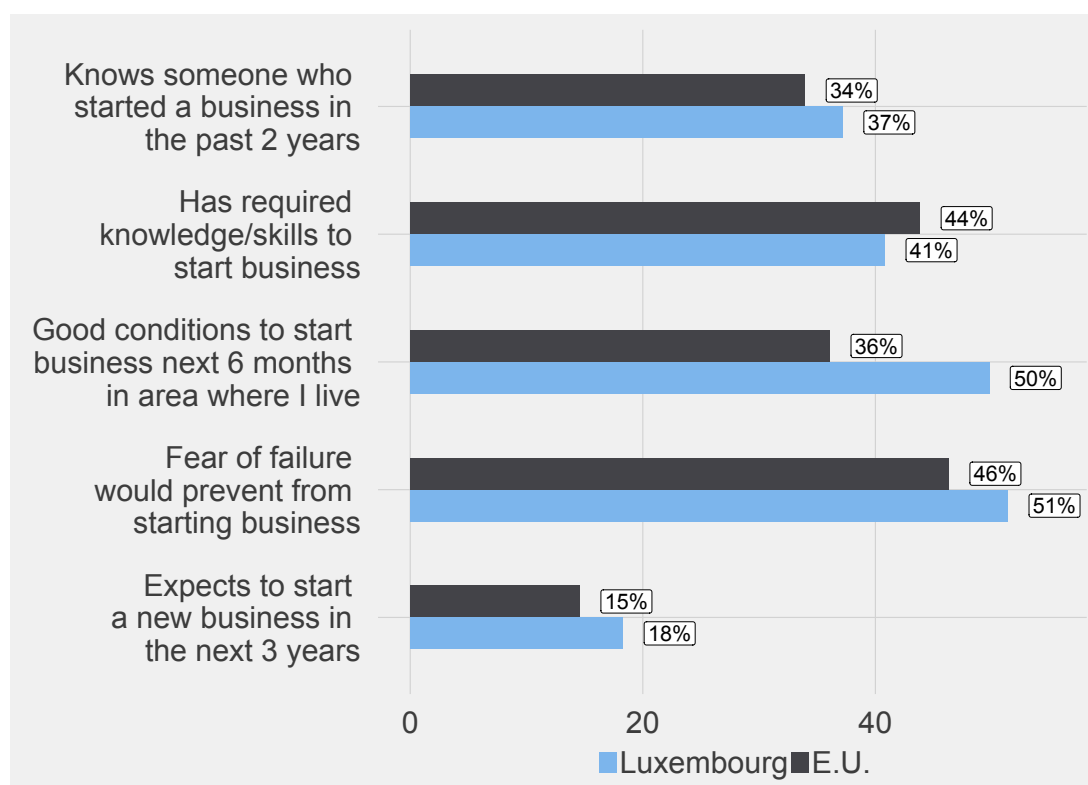


Figure 4.16: Luxembourg and E.U. countries: Intention, skills and fear of failure 2016

One noticeable difference between Luxembourg and other European countries concerns the social perception of entrepreneurs and the entrepreneurial careers. The Figure 4.17 shows that 42% of the Luxembourgish respondents regard the entrepreneurial career as a good choice compared to the 58% of the European respondents. Media attitudes are a crucial factor in shaping the public perception of entrepreneurs [Levie et al., 2011]. Media coverage of successful entrepreneurs can influence the perception and values of an audience. Myrick et al. [2013] showed that the media coverage of the death by pancreatic cancer of Steve Jobs, had strongly influenced the perception of cancer of young adults. In the same way, examples of entrepreneurial success can generate imitative processes and then influence the career choices of the audience.

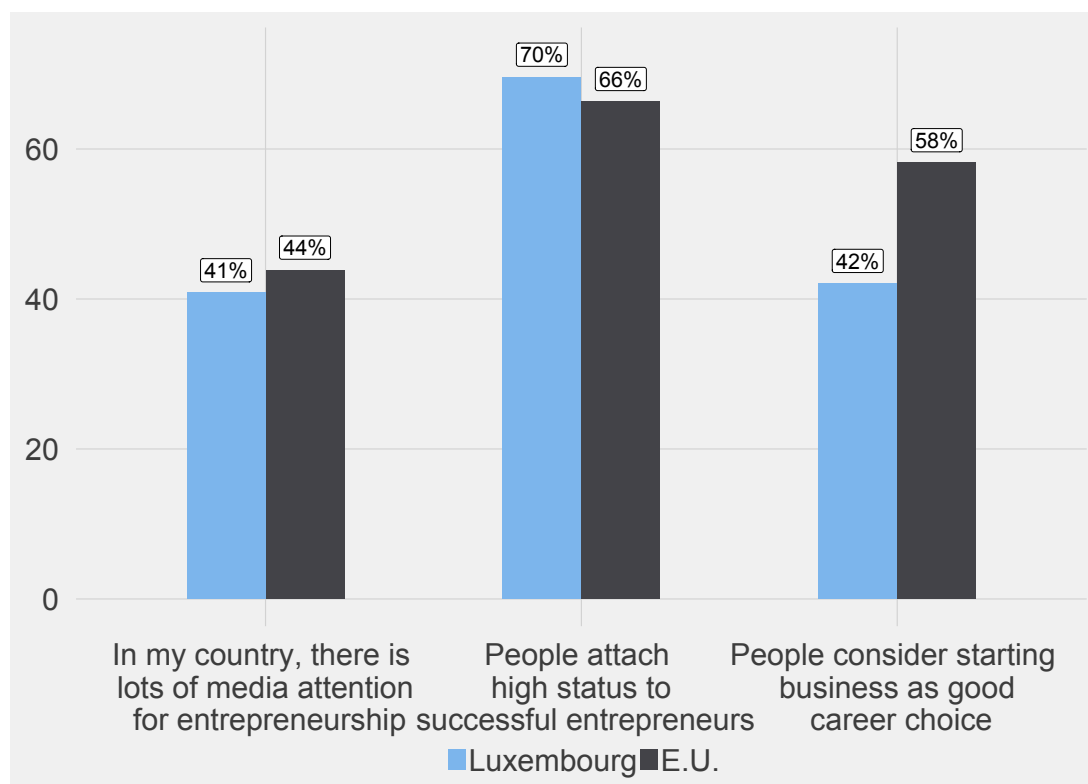


Figure 4.17: Luxembourg and E.U. countries: Perception of entrepreneurship (% of 18-64 years old)

Mass media are capable of reinforcing their audience's existing values on entrepreneurship, but are less effective in radically changing those values [Hindle and Klyver, 2007]. Figure 4.17 shows that successful entrepreneurs are highly regarded both in Luxembourg and in European countries (70% and 66% respectively). Finally, 41% of the Luxembourgish respondents (versus 43% in E.U. countries) declare that the media gives a lot of information about entrepreneurship in 2016. In 2015, the percentages were 45% for Luxembourgish respondents and 55% for other E.U. countries. These figures suggest that the difference of perception of entrepreneurship between Luxembourg and the rest of Europe is decreasing.

After discussing how entrepreneurship is perceived in the whole population, the following figures present the actual engagement in the entrepreneurship process in Luxembourg and Europe. In terms of entrepreneurial engagement, Luxembourg shows a much higher proportion of entrepreneurs starting a new business compared to other European countries. Figure 4.18 below illustrates the share of people actively engaged in different entrepreneurial activities in Luxembourg and Europe. The share of persons engaged in a business start-up is higher in Luxembourg than in other European countries (18% and 10%, respectively). Also the proportion of adults involved in Employee Entrepreneurial Activity -EEA- presented in 3 is higher in Luxembourg than in Europe (6% and 5%, respectively). However, the Luxembourgish share of persons being a business owner or manager is lower than the EU average (10% and 15%). Moreover, the proportion of people who provide funds for someone else's new business is at 8%, three and half percentage points higher in Luxembourg than the average E.U. countries. In terms of entrepreneurial engagement, Luxembourg shows a much higher proportion of entrepreneurs starting a new business compared to other European countries.

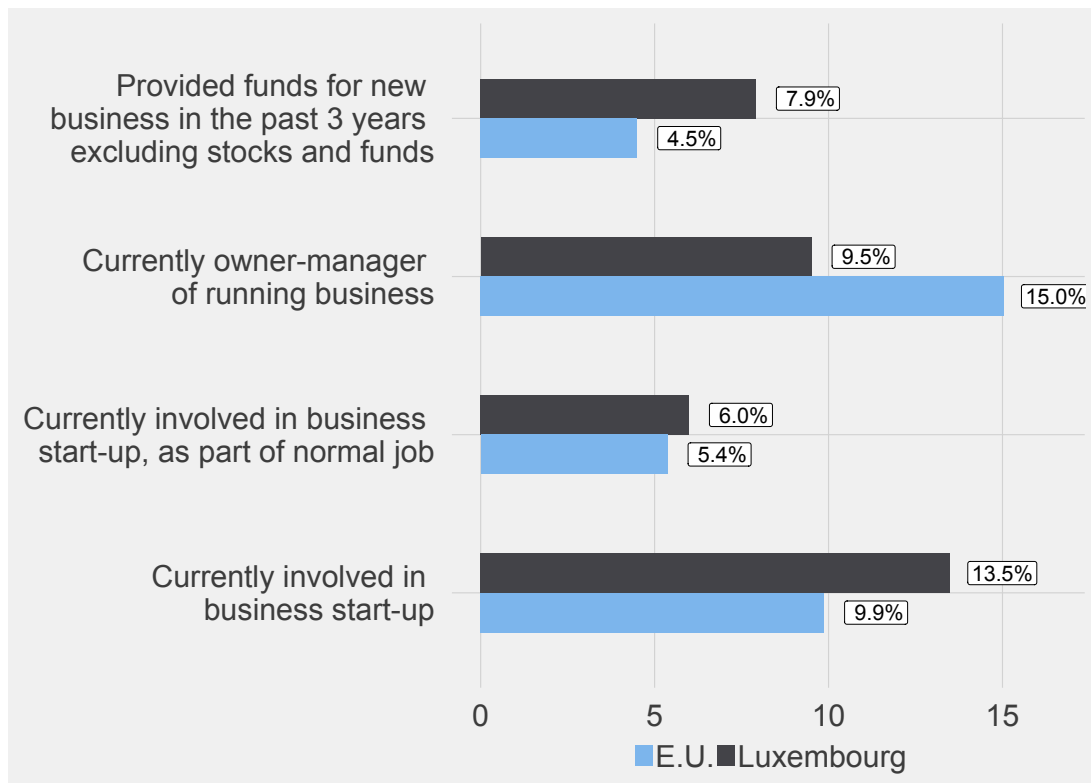


Figure 4.18: Luxembourg and EU: % of the 18-64 years old population

Entrepreneurial activity encompasses multiple phases of the business process, from start-up to discontinuation. Entrepreneurs at one point exit their business. But not all exits are for the same reasons. Sometimes, companies go out of business because they are not profitable, other times the business is transferred because of the retirement of the owner.

Figure 4.19 presents the most important reasons for exiting a business in Luxembourg from 2013 to 2016. These figures are compared with average E.U. countries. In Luxembourg, like in other E.U. countries, the two main reasons to close a business are lack of profitability and personal reasons. Moreover, an important reason to exit entrepreneurship is “problems getting finance”. On the other hand, many entrepreneurs exit their business to engage in another job or business. Figure 4.19 indicates that generally Luxembourg exits are planned in advance (compared to 5% for the average E.U. countries). In previous years, Luxembourgish entrepreneurs have more opportunities to sell their business than other European entrepreneurs. In 2016, Luxembourg and European entrepreneurs have more similar chance to sell their business.

Overall, in 2016 the main difference with other EU countries is that **the proportion of entrepreneurs exiting their business because of another job or business opportunity is considerably higher in Luxembourg (18%) than in the rest of Europe (11%).**

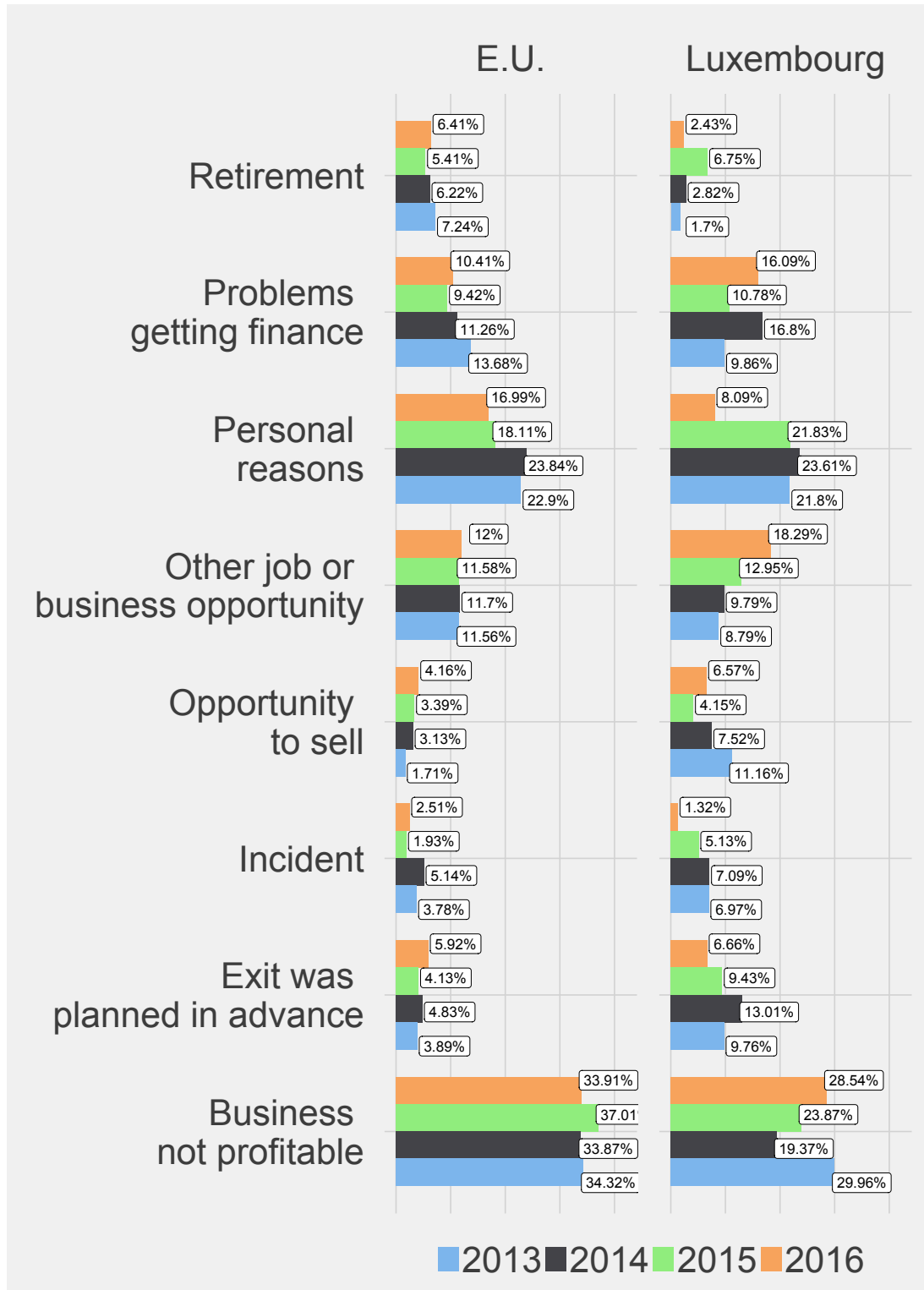


Figure 4.19: Luxembourg and E.U. countries: Entrepreneurial exit reasons

Table 4.1: Respondents' individual traits

<b>Gender</b>	
Female	49
Male	51
<b>Age</b>	
18-24	13
25-34	23
35-44	23
45-54	24
55-64	18
<b>Education</b>	
(Upper) secondary education	33
Bachelor or equivalent (3-4 years)	18
Doctoral or equivalent	1
Early childhood education	1
Lower secondary or second stage of basic education	13
Master craftsman's diploma	6
Master or equivalent	17
Primary education or first stage of basic education	2
Short-cycle tertiary (2-3 years)	9
<b>Income</b>	
€0 to €20 000	3
€20 001 to €40 000	16
€40 001 to €60 000	22
€60 001 to €80 000	21
€80 001 to €100 000	16
More than €100 000	22
<b>Region of residence</b>	
Center	34
East	12
North	15

Note: GEM APS 2016 weighted observations. About one fifth of the interviewees refused to respond to the question on income, or declared to have no knowledge of their household income. A similar pattern is observed in other household surveys [e.g. Schenker et al., 2008].

# Luxembourg 2016 National Expert Survey

Entrepreneurial Framework Conditions (EFCs) refer to business opportunities, entrepreneurial capacities, infrastructure and individuals' preferences, which, in turn, impact the creation and development of businesses' and entrepreneurial success. By collecting information from the national experts' interviews on EFCs, GEM captures informed judgments regarding the entrepreneurial "ecosystem" [GEM, 2017]. This section presents a comparative assessment of the entrepreneurial "ecosystem" of Luxembourg based on data from the National Expert Survey (NES). The aim of the NES is to assess the entrepreneur ecosystem through the measurement of a set of 9 Entrepreneurial Framework Conditions (EFC) indicators. These EFCs are: entrepreneurial finance; government policy; government entrepreneurship programs; entrepreneurial education; R&D transfers; the commercial and legal infrastructure; barriers to entry; physical infrastructure; and cultural and social norms. Table 5.1 describes in detail the various framework conditions. Each EFC is measured on the basis of answers to a set of questions. Experts evaluate adequacy of each EFC using a Likert scales of 9 points (1 = highly insufficient, 9 = highly sufficient). The following provides some information on respondents' individual characteristics, and presents descriptive statistics on the entrepreneurial environment indicators.

## Luxembourg's NES sample

Luxembourg's NES sample includes 36 experts from Luxembourgish private and public institutions (25 and 11, respectively). Most of the experts are male (9 females and 27 males), hold a lower university degree (50%) or higher such as a Master or a Phd (50%) and the average age is 46 years. Finally, answering to multiple choice question about their activity, 13 experts describe themselves as "entrepreneur", 14 as a "Business and support service provider", 7 as "Educator, teacher, and researcher on entrepreneurship", 9 as "Policy-maker" and 8 as "Investor or Banker".

## Luxembourg's NES results

Figure 5.1 presents average scores for Luxembourg's EFCs for 2016. Physical Infrastructure (6.8), Commercial and Legal Infrastructure (5.8) and Government Entrepreneurship Programs (5.7), are the 3 EFCs with the highest values. In contrast, Entrepreneurship Education at primary and secondary school (3.3), Internal Market dynamics (3.8), and Financing for entrepreneurs (4.0) are the 3 EFCs with the lowest values. In other words, in 2016, entrepreneurship experts suggest that the infrastructures and the government policies are the main strengths

Table 5.1: The 9 GEM's Entrepreneurial Framework Conditions (EFC) that describe the entrepreneurial ecosystem

1) Entrepreneurial Finance. This condition aims to capture the availability of financial resources — equity and debt — for small and medium enterprises (SMEs). It includes grants and subsidies)
2) Government Policy. The extent to which public policies support entrepreneurship. This condition has two components: a) General: Government perceives entrepreneurship as a relevant economic issue and b) Regulation: Taxes or regulations are either not discriminating on the grounds of size or encouraging new ventures and SMEs.
3) Government Entrepreneurship Programs. The presence and quality of programs directly assisting SMEs at all levels of government (national, regional, municipal).
4) Entrepreneurship Education. The extent to which training in creating or managing SMEs is incorporated within the education and training system at all levels. This EFC has two components: a) Entrepreneurship Education at primary and secondary school, and b) Entrepreneurship Education at post-secondary levels (higher education such as vocational, college, business schools, etc.).
5) R&D Transfer. The extent to which national research and development will lead to new commercial opportunities and is available to SMEs.
6) Commercial and Legal Infrastructure. The presence of property rights commercial, accounting and other legal and assessment services and institutions that support or promote SMEs.
7) Barriers to entry. This EFC includes two components: a) Market Dynamics: the level of change in markets from year to year, and b) Market Openness: the extent to which new firms are free to enter existing markets.
8) Physical Infrastructure. Ease of access to physical resources and infrastructure, such as communication networks, utilities, transportation, land or space—. This also captures cost of accessing such infrastructure faced by SMEs: prices should not discriminate against SMEs.
9) Cultural and Social Norms. The extent to which social and cultural norms encourage or allow actions leading to new business methods or activities that can potentially increase personal wealth and income.

of the Luxembourgish entrepreneurial system. The basic education, the social norms, and the barriers to entry are the weakest points, or “bottlenecks” of the Luxembourgish entrepreneurial environment.

Overall, the survey on Luxembourgish experts suggests that **Luxembourg’s institutional framework is generally perceived as supporting of entrepreneurial activities**. The access to infrastructure is also positively evaluated by experts. As in previous years, the **NES survey highlights some problems with respect to the education system and the market structure that prevents the free entry of new firms**. These results are largely consistent with the main findings of the study “OECD Economic Surveys: Luxembourg”. The study is based on business executives’ survey and investigates business “ecosystem” in general but identifies “Restrictive labour regulations” and “Inadequately educated workforce” as the most problematic factors for doing business [OECD, 2015, p. 35].



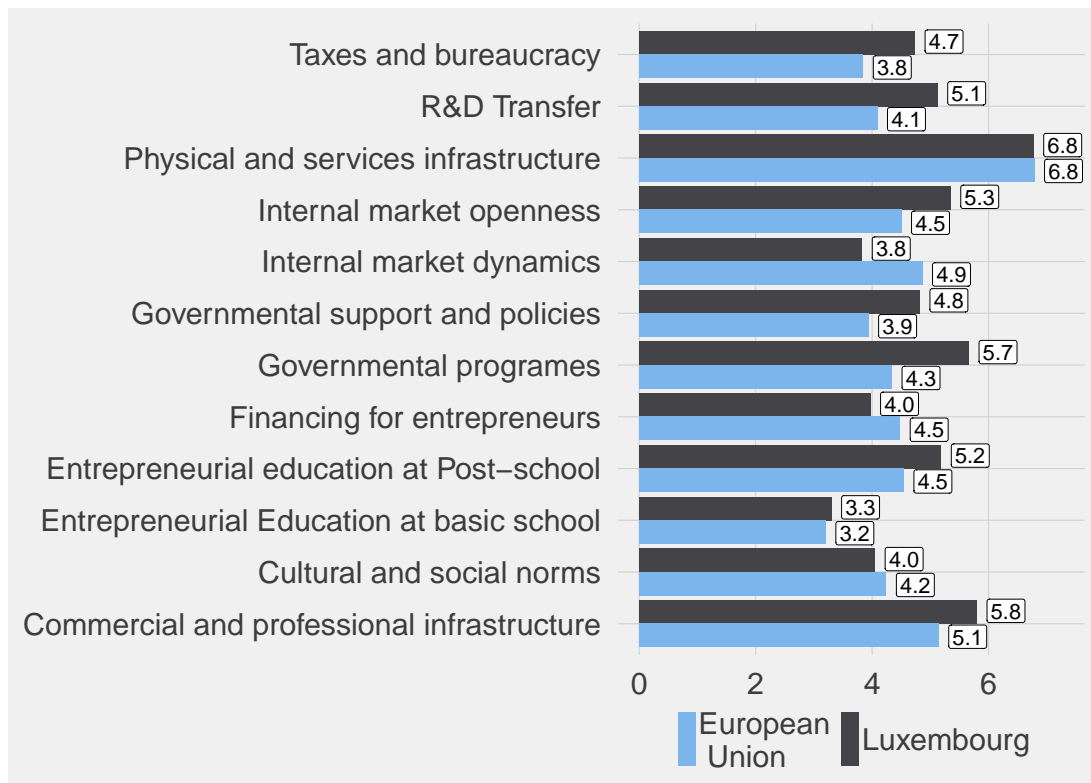


Figure 5.1: Average expert scores for Luxembourg’s EFCs (Likert scales of 9 points (1 = highly insufficient, 9 = highly sufficient))

## 5.1 Barriers and enablers of entrepreneurship

To complement the experts’ informed opinion in 2016 we asked all respondents to assess barriers and enablers of the Luxembourgish Entrepreneurship ecosystem. Seven dedicated questions were asked to measure the agreement to the following statements.

- I can easily access funding for launching and running my company.
- I have time to launch a new company.
- I can easily access needed information to start my company.
- Dedicated training programs to start a new company are available and adequate
- I can easily access potential customers.
- I can easily access office spaces that are affordable.
- Qualified and affordable human resources, needed for launching and running a new company, are available

Figure 5.2 shows the assessment of these statements by TEA status. This is relevant because some barriers can be better assessed by somebody who is actually engaged in entrepreneurship activities. More than half of the entrepreneurs (TEA) are at least somewhat agreeing that dedicated training programs are available and that they can easily access needed information

(first and second group of bars in Figure 5.2). 25% of entrepreneurs strongly believe that it is easy to access potential customers compared to 5% of non-entrepreneurs, suggesting a strong difference of perception between these two groups. The two groups differ also on the perception of the availability of time to launch a new firm. Entrepreneurs have more time to start a new business (25% of entrepreneurs strongly agree vs about 6% of not TEA). Interestingly, entrepreneurs and not entrepreneurs agree on reporting difficulties to access funding (only 5% strongly agree that funding is available ) to find office spaces (2% and 5% strongly agree that office space is available) and to find qualified human resources (4% and 6% strongly agree that human resources are available). **Overall, national experts and the population agree that financing and availability of key resources such as office space and qualified human resources are the majors barriers to entrepreneurship in Luxembourg.**

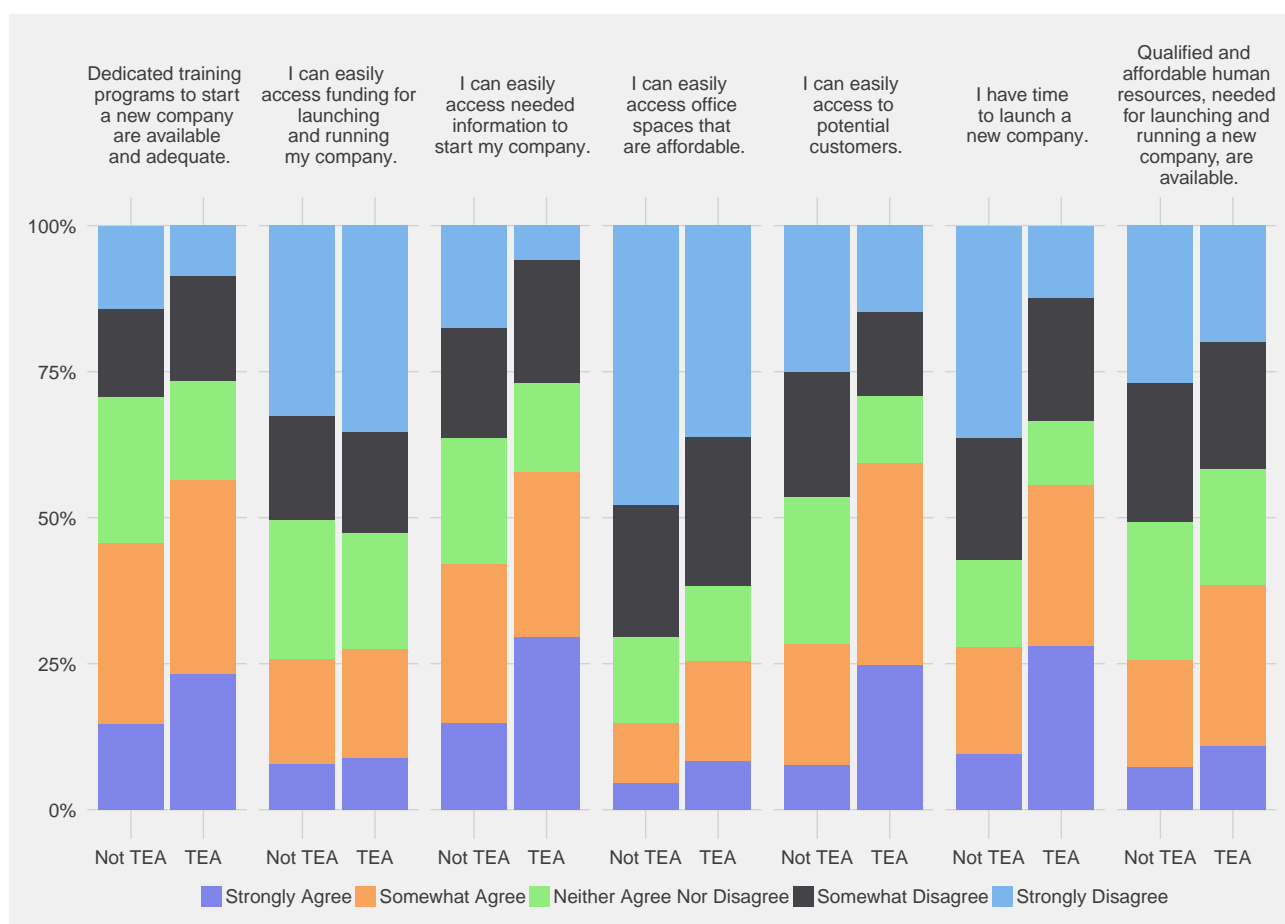


Figure 5.2: Assessment of barriers and enablers of Luxembourgish Entrepreneurship ecosystem by TEA status according to APS

# Special topics: immigration, well-being and policies

This section investigates topics that are of particular interest for Luxembourg using dedicated questions that are national specific. The section sheds light on the relationship between entrepreneurship and the structure of the population in Luxembourg. In addition, it reports on the well-being of residents, as GEM is the only source of information at annual frequency on this topic of increasing relevance for Luxembourg. Finally, the link between entrepreneurship policies and perception of entrepreneurship, the special topic for 2016, is analysed in the last section.

## 6.1 Entrepreneurial activities and immigration in Luxembourg

The issue of immigrants' involvement in entrepreneurial activities is of general interest, but is also of special relevance to Luxembourg in view of the country's population structure. The proportion of Luxembourgish residents with some immigration background is considerable. In 2011, according to the last census data, 49% of residents are Luxembourgish at birth [Peltier et al., 2012]. Foreigners account for nearly half of the resident population (43%) and 94.5% of all immigrants come from other EU countries [Peltier et al., 2012]. The Luxembourgish labour market largely depends on foreign workers resident and non-resident: 45% of the total labour force is resident in neighbouring countries [STATEC, 2017]. Immigration and its economic consequences, is the subject of several studies in recent years. Such studies highlight how migrants and cross-border workers largely contribute to the entrepreneurial efforts [Stawinska, 2012, Peroni et al., 2016]. In view of Luxembourg's population structure, GEM Luxembourg regularly collects detailed information on migration background.<sup>1</sup> What follows examines this data, which highlights how the Luxembourgish population structure is related to entrepreneurship indicators, and to characteristics of entrepreneurs and new ventures. Immigration background is defined as following: First generation is made of people born outside of Luxembourg. Second generation was born in Luxembourg and has at least one parent that was born outside of Luxembourg. Finally, non-immigrants are the persons born in Luxembourg with both parents born in Luxembourg.

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<sup>1</sup>Currently GEM covers only Luxembourgish residents excluding cross-border. Ongoing pilot study explores the feasibility to include residents of neighbour country in the Luxembourgish APS sample.

### Entrepreneurial indicators by immigration background

Figure 6.1 shows that immigrants are more likely to engage in early stage entrepreneurial activities, as measured by TEA. In 2016, among respondents that have no immigration background, 8.1% are in TEA. The proportion among first and second generation is 13.2% and 8.5% respectively. **The proportion of entrepreneurs among first generation immigration is consistently larger than in the native and second generation population.**

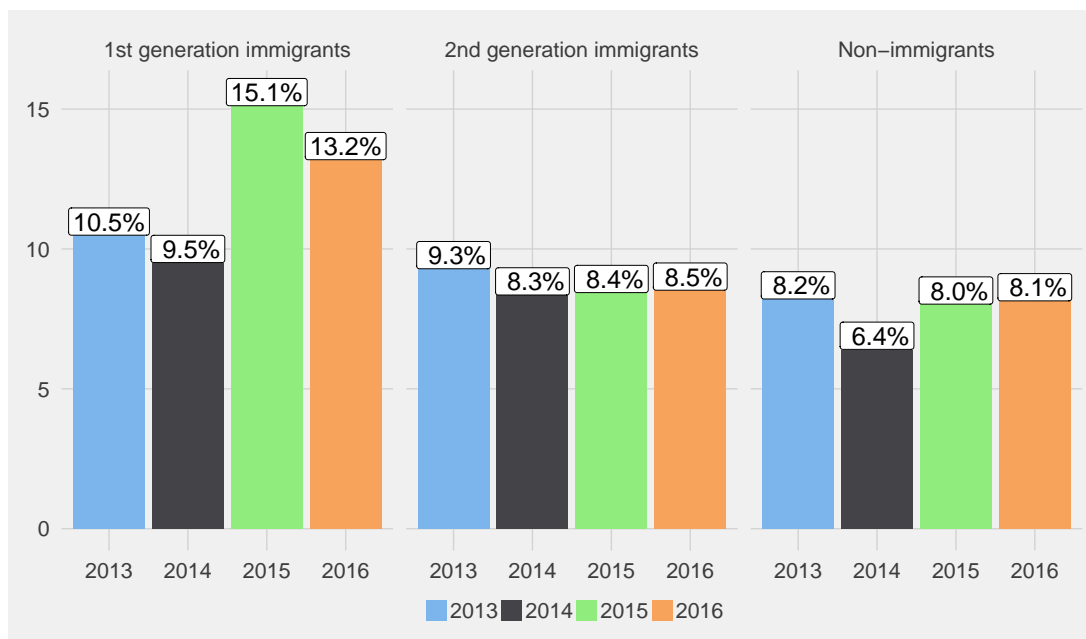


Figure 6.1: Immigration background: TEA rates 2013-2016

Figure 6.2 highlights how immigrants contribute to the share of established businesses. The figure shows that the proportion of first generation immigrants running an established business is basically the same in 2015 and 2016 confirming the importance of immigrants over time.

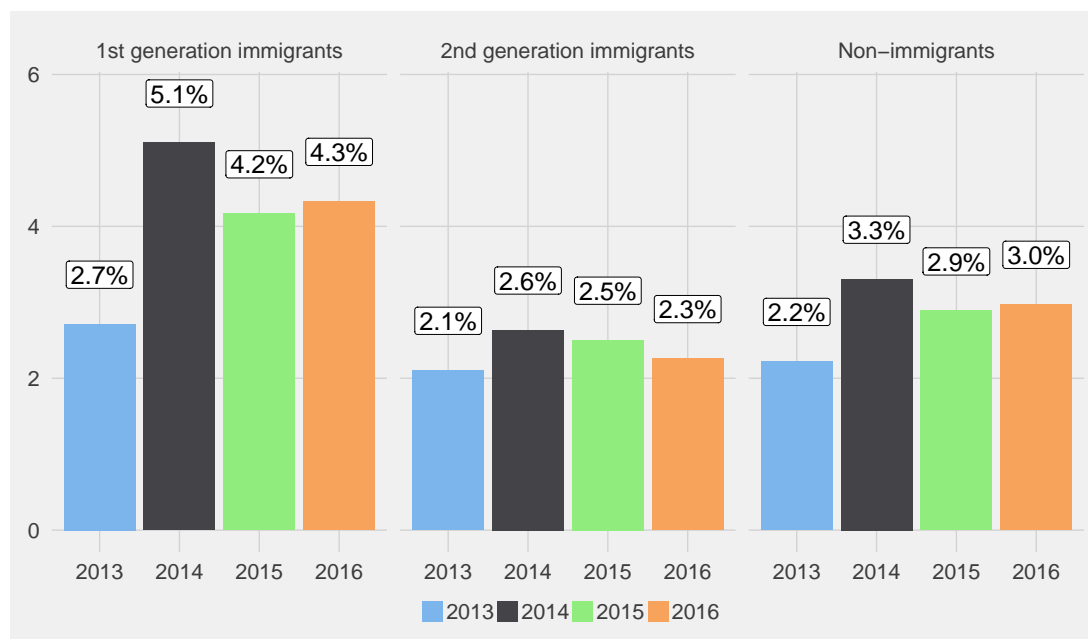


Figure 6.2: Immigration background: established business rates

### Individual attributes of entrepreneurs by immigration background

To shed some light on the relationship between age, immigration, and entrepreneurial success, Figure 6.3 depicts the relationship between TEA and immigration status for different age classes. First generation immigrants are reporting higher proportion of TEA in all age classes while non-immigrants and second generation present a lower and similar proportion. Among 18-34 years old individuals, first generation TEA is nearly 24%, while second generation TEA and non-immigrants have nearly 8% and 10% respectively.

## 6.2 Industry by immigration background

As discussed in section 4.1.3, entrepreneurial activities are differently distributed across industries. This section depicts how national and immigrant entrepreneurs are distributed across industries. Figure 6.5 and Figure 6.6 show the relationship between immigration background, economic activity (as defined in section 4.1.3) of TEA and established business. It is important to note that first and second generations are grouped together because of the low number of observations. Several patterns emerge. Firstly, in Figure 6.5, one can see that in the early business activities (TEA), business services is the most common industry for both immigrants (30%) and non-immigrants (32%). The main difference between immigrants and non-immigrants appears in the transforming industry. The proportion of active entrepreneurs with immigration background is 25% compared to 14% with non-immigrants.

Figure 6.6 shows that 60% of immigrants with established businesses are concentrated in the business service industries in contrast to 19% of non-migrants. The comparison of Figure 6.5 and Figure 6.6, shows that the TEA and established companies differ in terms of industries. Interestingly, while 30% of new firms (TEA) of immigrants are active in the business service industry, among firms older than 42 months, this percentage increases up to 60%. For non-immigrants, the percentage of transforming firms passes from 14% in early stages to 30% in later

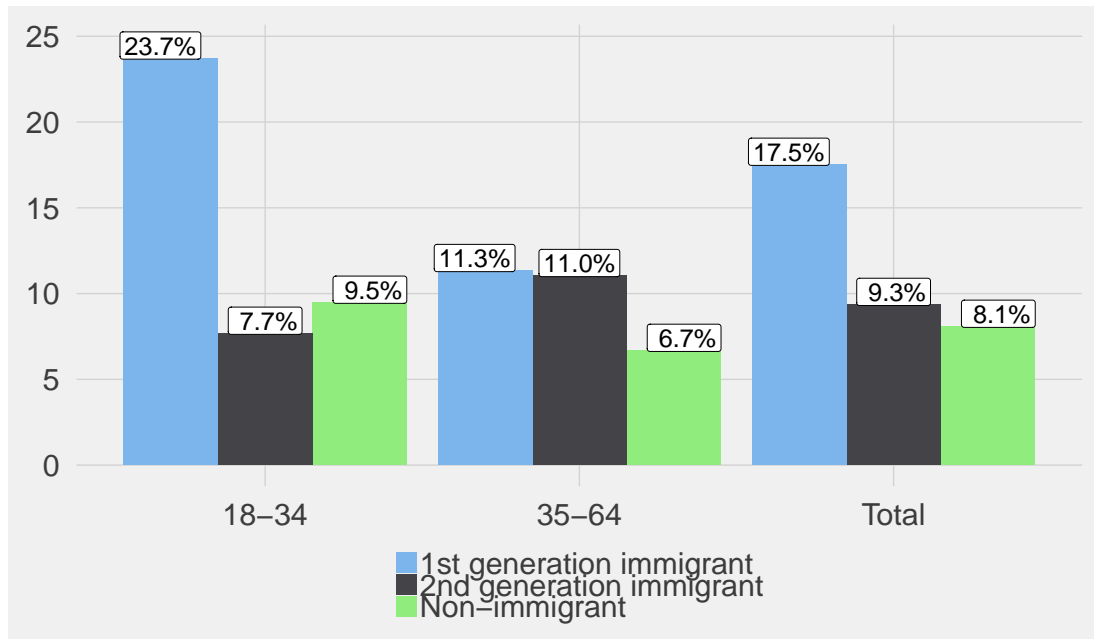


Figure 6.3: Immigration background: % of age group involved in the TEA

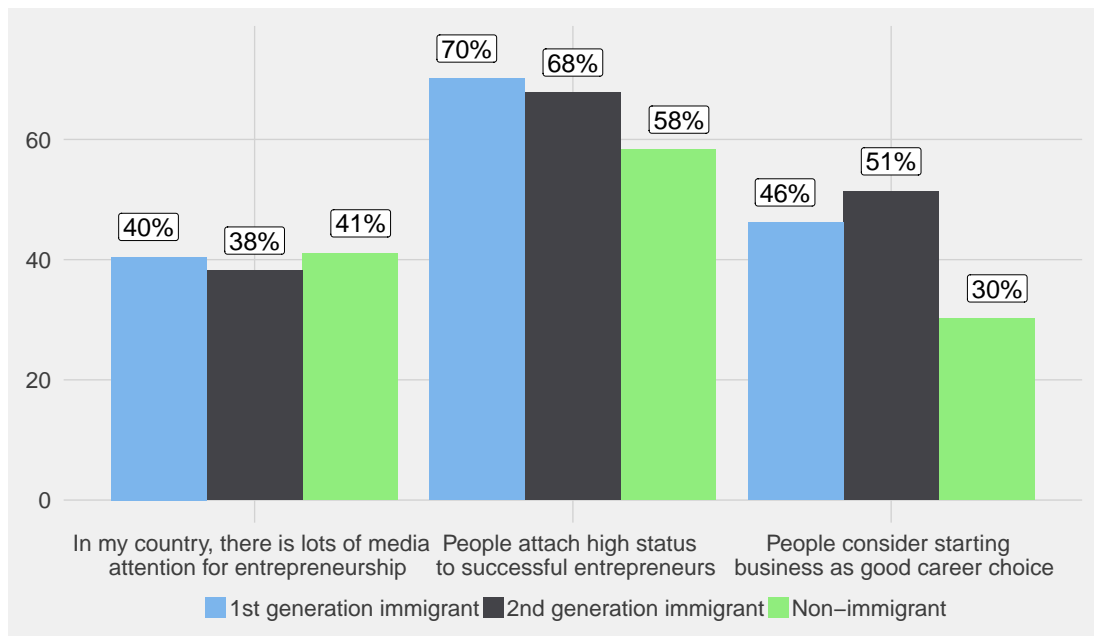


Figure 6.4: Immigration background: Perception of entrepreneurship (% 18-64 years old)

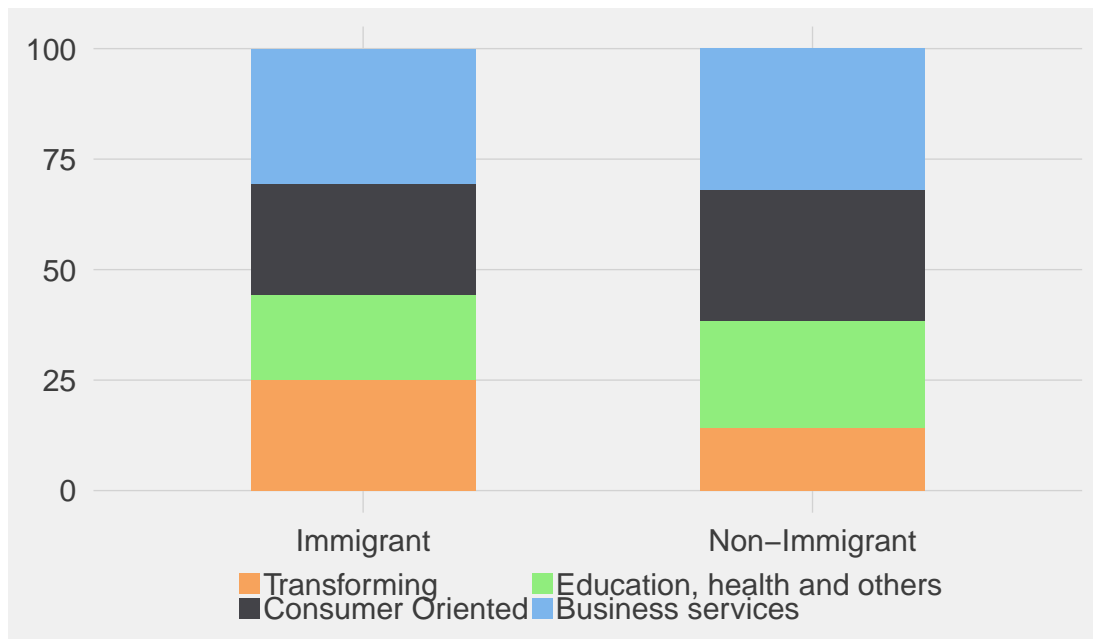


Figure 6.5: Immigration background: Industry of TEA

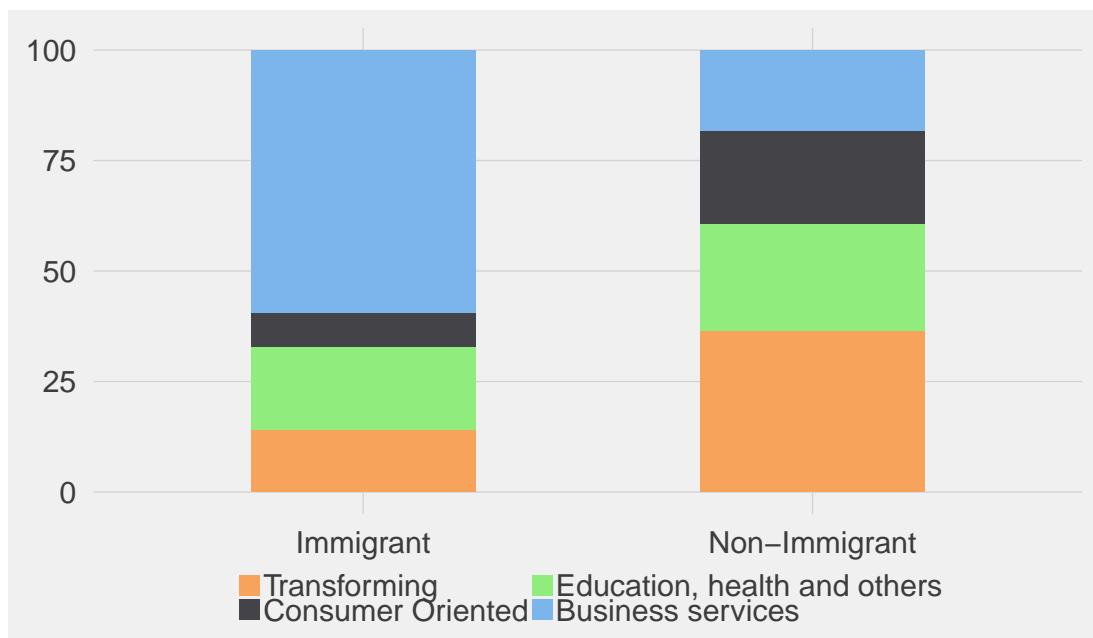


Figure 6.6: Immigration background: Industries in Established Businesses

stages. Overall, in line with other studies [Logan et al., 2003], figures suggest that nationals and immigrants specialize in different industries.



### 6.3 Well-being in Luxembourg

In recent years, subjective well-being has attracted the attention of policy-makers, as societies increasingly express the need of complementing traditional income-based measures of welfare with measures of well-being and quality of life. In addition to the issue of whether economic growth leads to improvements in people’s well-being, a wide literature examines the determinants of well-being. More recently, some studies tested the role of well-being at individual and country level. Well-being, however, has seldom been studied in conjunction with entrepreneurship. Subjective well-being (SWB) refers to people’s experience with their lives, and it comprises both emotional reactions and cognitive judgments [Diener, 1984]. A common measure of SWB is life satisfaction, that is, the global cognitive judgments of satisfaction with one’s life. The APS survey for Luxembourg includes a question on respondents’ life satisfaction on all the waves of the survey, from 2013 to 2016. The inspection of the data suggests that professional choices affect subjective well-being. Figure 6.7 shows that the life satisfaction of entrepreneurs is constantly lower than for non-entrepreneurs. In 2016, 18% of the total early active entrepreneurs (TEA) disagree with the statement “I am satisfied with my life”. It is remarkable that only 10% of the individuals not engaged in entrepreneurial activities report to be unsatisfied. The percentage of respondents that are satisfied with their life is lower for the entrepreneurs than for non-entrepreneurs (70% and 80% respectively). This figure suggests that, on average, entrepreneurs perceive their life as less satisfactory than other people. Other developed countries experience a similar pattern [GEM, 2013]. The following graphs show the life satisfaction of entrepreneurs by gender (Figure 6.8 ) and age (Figure 6.9).

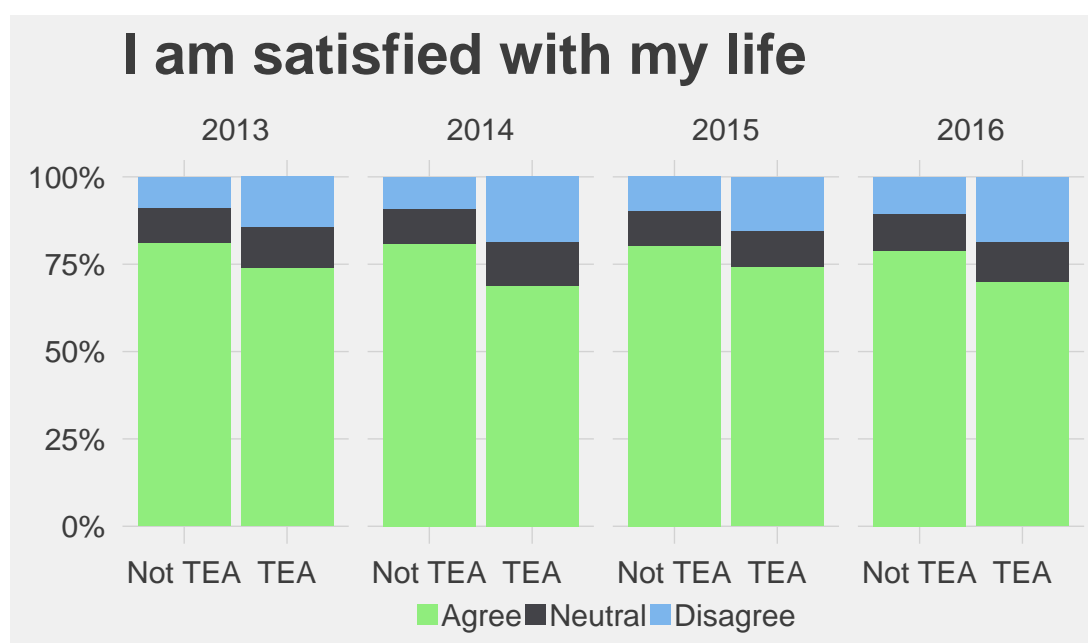


Figure 6.7: Subjective Well-Being by TEA

Figure 6.8 shows that subjective well-being is relatively stable during time. The proportion of satisfied entrepreneurs differs across gender in all waves. In 2016, among female entrepreneurs, 25% of women are not satisfied with their lives while this proportion is about 10% for males. Among non-entrepreneurs, well-being does not exhibit significant differences across gender. Figure 6.9 suggests that age is not influencing life satisfaction among adults who are

not engaged in entrepreneurship. The proportion of non-entrepreneurs declaring to be “not satisfied” with their life is nearly the same for people aged 18 to 34 and people aged 35 to 64 (11% and 10% respectively). Looking at the entrepreneurs, the 35-64 year-old entrepreneurs show more variability than 18-34 year-old entrepreneurs. However, in 2016 the percentage of unsatisfied individuals is remarkably similar among older and younger entrepreneurs (20% and 19%). A possible interpretation of the patterns in Figure 6.8 and Figure 6.9 is that entrepreneurs, especially if female, may face problems in balancing work and private life. This interpretation is in line with the literature emphasising the importance of work-family balance (Jennings and McDougald, 2007). Further analysis, however, is required to better understand the relationship between entrepreneurship and subjective well-being.

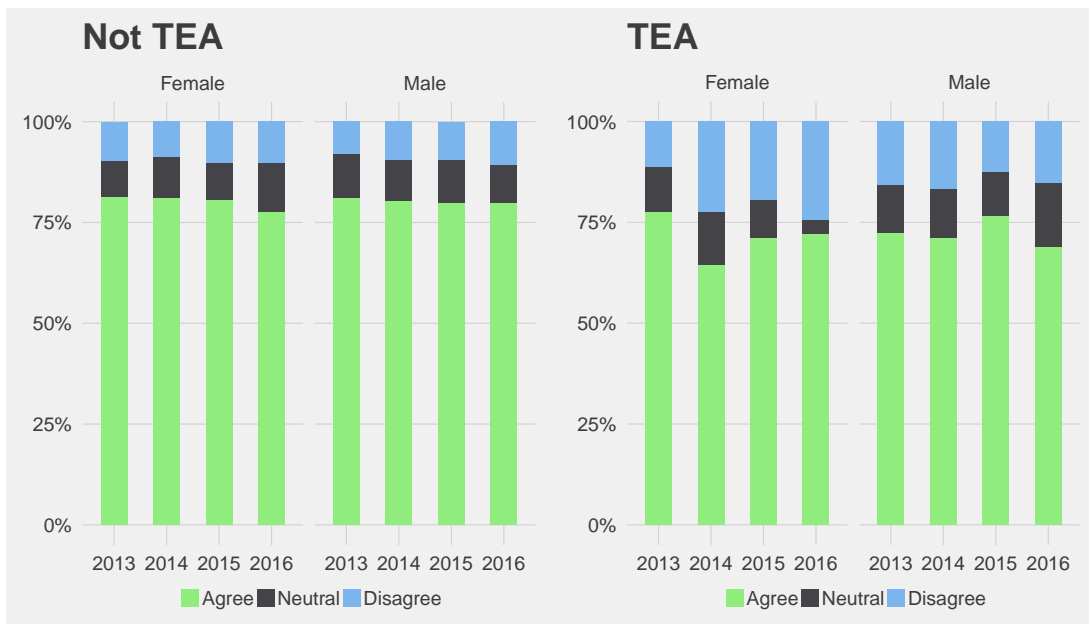


Figure 6.8: Subjective well-being by gender

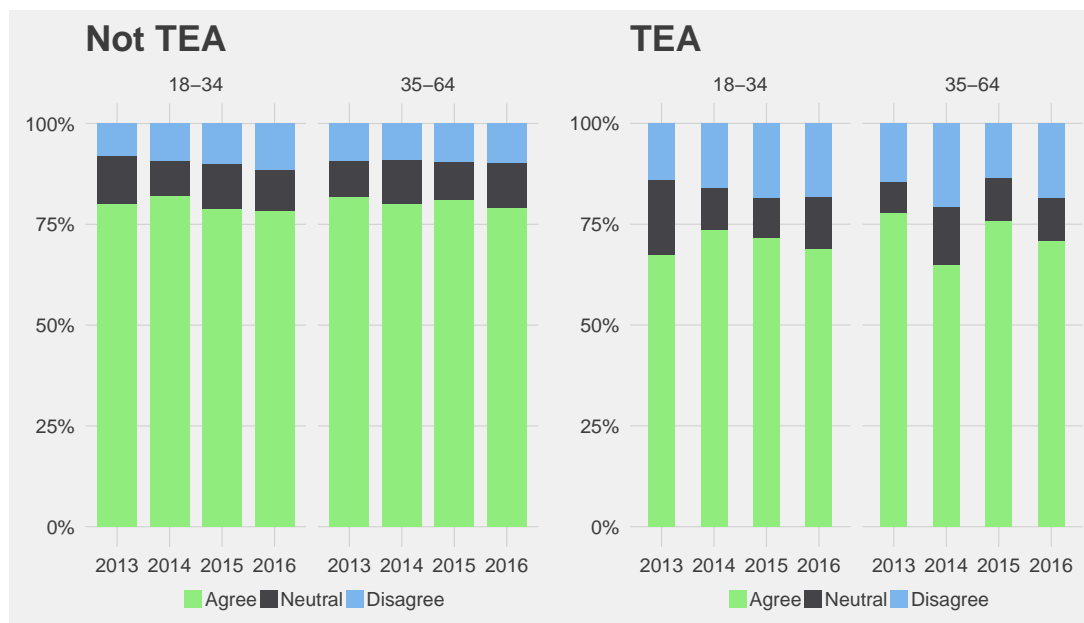


Figure 6.9: Subjective well-being by age class

## 6.4 Entrepreneurship policies and entrepreneurship

Policy-makers, scholars and operators regard entrepreneurship as crucial for growth. This is because new entrepreneurs and new businesses are important to foster innovation and employment. Thus, in Luxembourg government schemes aimed at fostering entrepreneurship in the country have been set up. These policies aim to raise the interest of the public in entrepreneurship careers, and provide support to entrepreneurship. For example *Fit4Start* is an initiative of Luxinnovation and Technoport incubator, that offers financing and advice to innovative start-ups of less than 12 months and composed of at least 2 persons. Other initiatives offer training about entrepreneurship during and after secondary school. For example, the *mini-companies*, an initiative from Jonk Entrepreneuren, aims to foster the students' entrepreneurial spirit at high school. The project invites students to set up their own company. During a year, students work in teams to create a business plan, design and commercialize innovative products or services. Successful *mini-companies* could develop into real enterprises. It is important to note that National Experts indicate education about entrepreneurship as the main bottleneck of the Luxembourgish entrepreneurship ecosystem (see section 5). Several schemes aimed at fostering entrepreneurship have been set up in the last years (Nyuko, Fit4Entrepreneurship, Fit4Start, etc).

To investigate the features and the role of policies aimed at fostering entrepreneurship in the economy, the APS 2016 includes a dedicated module. Four questions about entrepreneurship policies were asked:

1. *Has a campaign from institutional actors like the Chamber of Commerce, Government or an initiative that promotes entrepreneurship (Nyuko, Fit4Entrepreneurship, Fit4Start, etc) raised your interest in entrepreneurship?*
2. *Have you ever taken part in a training about how to start a business at secondary school? For example through specific projects like "mini-enterprise" or corporate relevant lessons*

*in economics, accounting or management?*

*At what kind of school have you received this training?:*

- (a) *Secondaire Général (Lycée Classique)*
- (b) *Régime technique (Lycée Technique)*
- (c) *Régime de la formation technicien (Lycée Technique)*
- (d) *Régime professionnel (Lycée Technique)*
- (e) *Other*

3. *Have you ever attended a training which would help you to start a business after leaving school?*

The following pie charts show how the population answered these questions and how the answers vary among entrepreneurs and persons that are not entrepreneurs. This will give some insights on the effect of different policies on entrepreneurship.

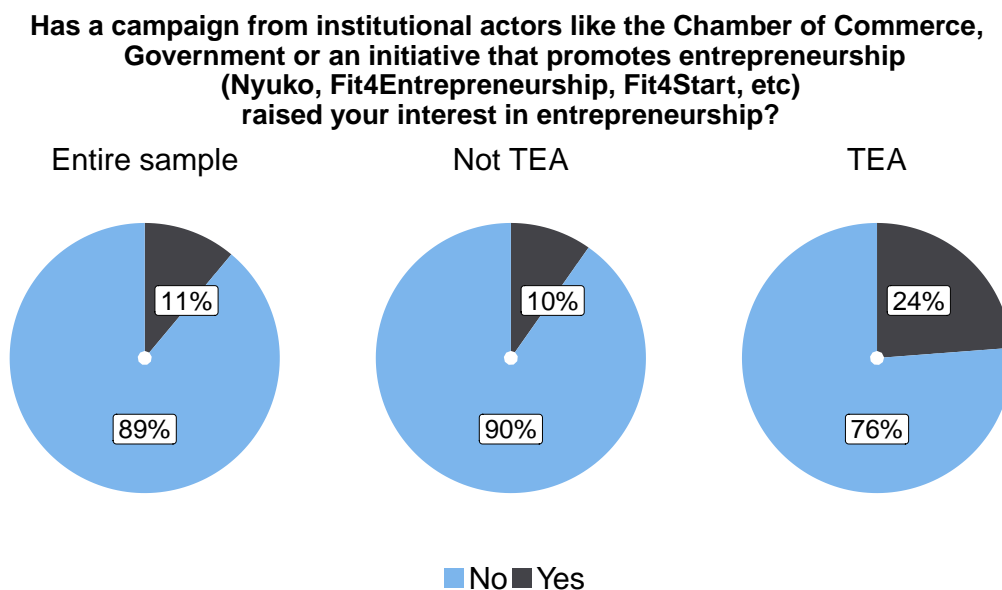


Figure 6.10: Answers to government campaigns/initiatives

Figure 6.10 shows that campaigns or initiatives of institutional actors have raised the interest in entrepreneurship among 11 % of the whole population. Interestingly, this proportion is higher among entrepreneurs than not entrepreneurs (24% compared to 10%) suggesting a **positive association between initiatives supporting entrepreneurship and starting a new business**. However, based on this result we cannot conclude that institutional initiatives *cause* entrepreneurship. It may be that individuals that are willing to start a business are more receptive to initiatives supporting entrepreneurship (**association does not mean causation**).

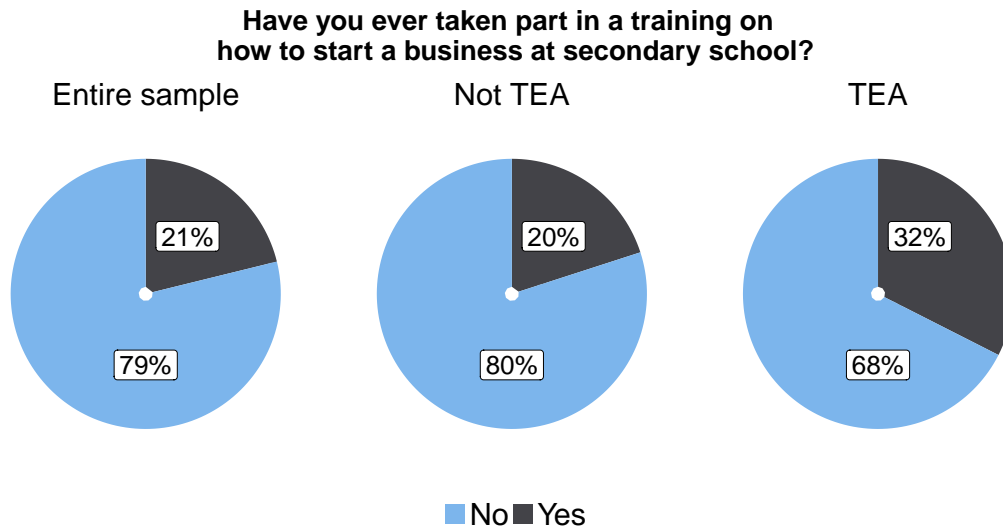


Figure 6.11: Answers to school training

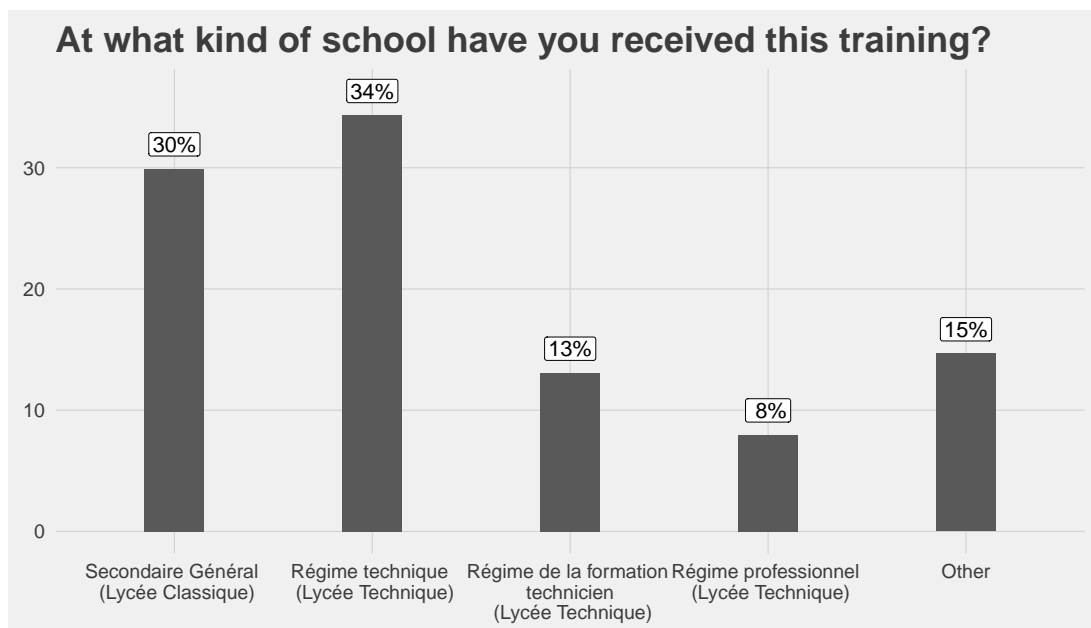


Figure 6.12: Schools where entrepreneurship training was received

Figure 6.11 shows that 21 % of individuals attended some courses related to entrepreneurship at secondary school and Figure 6.12 shows at which school this training was received. Among those who attended a training during high school, 34% were attending the “Lycée Technique - régime technique” and 30% the “Lycée Classique”.

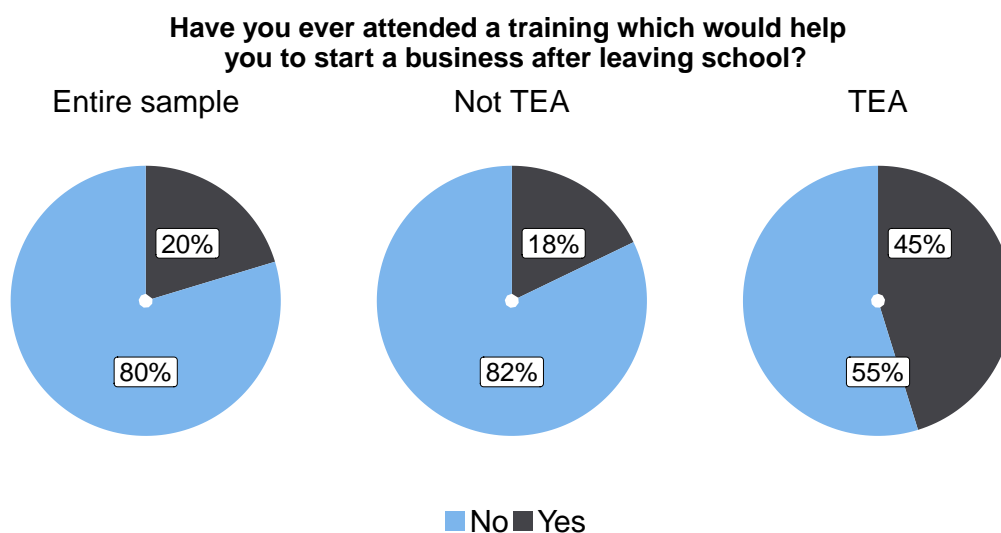


Figure 6.13: Answers to training after leaving school

Figure 6.13 reports the proportion of the population that received entrepreneurship training after leaving the school (20% of all population).

Reading together Figures 6.13 and 6.11, one notes that the proportion of entrepreneurs is higher among individuals that received the training (32% at secondary school, 45% after high school) than among those who did not (20% at secondary school, 18% after high school).

This suggests a positive association between entrepreneurial trainings and starting a new business. However, as noted above it may be that individuals that are willing to start a business are more motivated to learn skills about entrepreneurship. Nevertheless the positive association is a comforting result. Overall, it appears that **there is a positive association between entrepreneurial policies and starting a new businesses.**

# Conclusions

Entrepreneurship is an important dimension of innovation and a driver of productivity, and ultimately an engine of economic growth. Every year, GEM (Global Entrepreneurship Monitor) collects internationally comparable data to better understand the evolution and the characteristics of entrepreneurial activities across countries. Based on GEM data, this report gives an overview of the state of entrepreneurship in Luxembourg, discussing its features in a comparative perspective. Compared to previous years, the report integrates two new topics in the Adult Population Survey: barriers and enablers of the national entrepreneurship ecosystem and the link between policies and perception of entrepreneurship. This section draws the main conclusions of the GEM report 2016/2017.

## **Barriers and enablers of the entrepreneurial “ecosystem”**

Institutional and cultural differences shape the entrepreneurial “ecosystem” and concur to determine the outcome of the entrepreneurial process. Results of the national expert survey show that infrastructures and governmental policies are the main strengths of the Luxembourgish system of entrepreneurship. In contrast, the low level of entrepreneurial education in primary and secondary school is identified as the main weakness of the system. Experts perceive that the primary and secondary education system is not sufficiently encouraging and supporting of the undertaking of personal initiatives. Nevertheless, 21% of adults report that they have attended courses on how to start a new business in secondary school. National experts and the adult population all point out that *financing and availability of key resources such as office space and qualified human resources are the major barriers to entrepreneurship in Luxembourg*

The key indicator provided by the GEM dataset of the entrepreneurial activity is the early-stage entrepreneurial activity (TEA). This measure is defined as the proportion of entrepreneurs on total resident population. In 2016, the proportion of entrepreneurs in Luxembourg is 9.2%, higher than the European average (8.6%). Luxembourgish early-stage entrepreneurial activity is confirmed to be one of the highest among other developed countries. In 2016, Canada ranks the highest (16.7%) and Italy ranks the lowest (4.4%).

## **Entrepreneurship measures are relatively stable over time**

The comparison of GEM data from the available surveys shows that entrepreneurial conditions are not substantially changing. New data from the GEM 2016 survey confirm that entrepreneurs in Luxembourg are primarily motivated by the desire for independence rather than by necessity. In the period 2013-2016, TEA fluctuated around 9% (8.7% in 2013, 7.1% in 2014, 10.2% in 2015, and 9.2% in 2016).

### The profile of the entrepreneur and start-ups

Efficient policies aiming to promote entrepreneurship require a deep knowledge of different typologies of entrepreneurs. Given the budget constraints faced by governments, it is important that policies target groups of individuals and new businesses that may benefit the most. The main features and the different typologies of entrepreneurs and start-ups emerging from the GEM surveys are summarized and presented below:

*“Gender”*: In 2016, the share of early entrepreneurs among males (10.9%) is higher than the share of young entrepreneurs among females (6.2%). This difference is relatively stable during time.

*“Immigrant”*: Immigration is confirmed to be an important source of entrepreneurship. First generation immigrants play a major role in entrepreneurial activity (13.2% of first generation immigrants are engaged in entrepreneurship, against 8.1% of non-immigrants and 8.5% of second generation).

*“The cherry-picking”*: residents in Luxembourg are risk adverse and opportunity driven (nearly 10% of Luxembourgish entrepreneurs are motivated primarily by a lack of other options for making a living compared to the 21% of European entrepreneurs).

*“Dissatisfied”*: on average, entrepreneurs describe themselves more often as dissatisfied with their lives (18%) than others (10%). Dissatisfaction is more common among female entrepreneurs (25%) than male entrepreneurs (10%).

In addition to providing information on the individual characteristics of entrepreneurs, GEM also allows us to describe characteristics of start-up firms in Luxembourg. The typical start-up has one owner (60%) and 40% of the businesses running for less than 42 months are providing business services and about 25% are consumer-oriented; this confirms the strong service orientation of Luxembourg’s economy. Concerning the funding of new businesses, 7% of the interviewees answer that they provided funds for a new business started by someone else. Out of those who declared the amount provided, 54% provided less than 10,000 €. One can see that close family and friends are giving most of the funding suggesting some difficulties for new firms to access bank and other traditional funding.

### Policies and entrepreneurship

New entrepreneurs and new businesses are important to foster innovation and employment. Thus, in Luxembourg government schemes aimed at fostering entrepreneurship in the country have been set up. These policies aim to raise the interest of the public in entrepreneurship careers, and provide training and funding for entrepreneurs. Campaigns from institutional actors like the Chamber of Commerce, the government or initiatives that promote entrepreneurship (Nyuko, Fit4Entrepreneurship, Fit4Start, etc) have raised the interest in entrepreneurship among 11 % of the whole population.

Interestingly, this proportion is higher among entrepreneurs than not entrepreneurs (24% compared to 10%). Additional questions informed about the attendance of entrepreneurship training at secondary school or after. The proportion of entrepreneurs is higher among individuals that attended an entrepreneurship training at secondary school, (32%) or after (45%) than among those who did not (20% at secondary school and 18% after high school). **These figures suggest a positive *association* between entrepreneurial trainings and starting a new business.** However, this does not necessarily mean that entrepreneurial trainings *cause* new business. It may be that individuals that are willing to start a business are more



motivated to learn skills about entrepreneurship.

### **Future developments**

This report confirms the importance of collecting GEM data to investigate all aspects of entrepreneurship: the “ecosystem”, the individual entrepreneurs, and new businesses. GEM data complement business register data and provide a more comprehensive picture of entrepreneurship. Collecting data on an annual basis is particularly important to evaluate the evolution of entrepreneurship. This report sheds light on important aspects of entrepreneurship, such as the evolution over time and the relevance of individual motivations. It also allows us to study the link between entrepreneurship and immigration background and life satisfaction. Other important aspects of entrepreneurship remain to be explored. Future research will focus on the econometric evaluation of entrepreneurship policies in Luxembourg and the drivers of dissatisfied entrepreneurs. Finally, while several thousands of individuals commute on a daily basis to Luxembourg to work and contribute to the Luxembourgish economy, the current APS survey neglects cross-border entrepreneurs covering only the adult residents in Luxembourg. Future surveys will attempt to evaluate the magnitude of cross-country entrepreneurship in Luxembourg.

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