REPORT 2020/2021

Global Entrepreneurship Monitor Luxembourg

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Executive summary

Entrepreneurship is widely regarded as a key ingredient to foster job creation, technological change and, ultimately, economic growth. As a result, policy-makers around the world have become increasingly active in designing programs to encourage and sustain entrepreneurial efforts. In light of this, the Global Entrepreneurship Monitor (GEM) initiative was launched in 1999 to collect cross-country data in order to better understand entrepreneurial dynamics, and to provide information needed to support policy actions. Data are collected through surveys in many countries on an annual basis, and harmonized to enable international comparisons. Since Luxembourg joined the GEM project in 2013, the GEM report has been providing unique information on entrepreneurial activities in Luxembourg.

After the emergence of the coronavirus pandemic, and its potentially severe consequences for entrepreneurial activities, the GEM consortium dedicated a special section of the survey to monitor entrepreneurs' response to these challenging times. Data were collected during the months of June and July 2020 and thus reflect respondents' view after the first wave of the pandemic. In December 2020, the GEM team in Luxembourg leveraged these recent and timely data to present the first account on how entrepreneurial dynamics in the country were affected by the pandemic (Peroni et al., 2020). The current report expands the previous analysis by comparing the 2019 and 2020 GEM data for Luxembourg with those of other European countries participating to the project. This allows to benchmark the state of entrepreneurial activity in Luxembourg from a cross-country perspective. Before outlining the key takeaways of the report, it is important to recall that data refer to mid-2020. Hence, these allow to characterize the initial effects of the pandemic on entrepreneurship but the results should not be extrapolated to more recent developments. GEM data for 2021 are currently being collected and they will be instrumental in understanding whether the trends detected in 2020 are transitory or not. The main takeaways of the report are the following.

- **The pandemic has disproportionally affected economic activities in 2020, though Luxembourg fared better than the European average.** The breakout of the coronavirus negatively affected economic activity. GDP in EU-27 countries saw a year-on-year decline of 6.2%. Luxembourg weathered the storm better, with only a 1.3% drop in GDP. GEM data confirm the uneven impact of the crisis across countries: on average 40% of all respondents reported that the pandemic led to a drop in their household income, whereas this figure is lower for Luxembourg (26%).

- **People perceived there were less opportunities to start a business in 2020, compared with 2019.** The sudden economic contraction during the first half of 2020 led to a decline in the share of individuals' perceiving that there were good opportunities to start a business. In Europe, this share dropped from 51% in 2019 to 40% in 2020. In Luxembourg this drop was somewhat more pronounced, moving from 58% in 2019 to 42% in 2020.

- **As a result, the share of individuals trying to set up a new business decreased in 2020, especially in Luxembourg.** The share of adult individuals trying to set up a business decreased from 15% in 2019 to about 9% in 2020. This decline was stronger if compared with the European average, going from 11% in 2019 to 9% in 2020. Among those individuals that decided to start a business, the majority declared that the pandemic delayed getting businesses operational (68% in Luxembourg and 61% in Europe).

- **However, recent official data on new business registrations suggests that the drop in business entry might have been partially reabsorbed during the last three quarters.** While GEM data indicate a reduction in entrepreneurial entry in Luxembourg and other European economies during mid-2020, more recent statistics from the Luxembourg Business Registry document a surge in new business registrations. In the first five months of 2021, new business formation in Luxembourg increased 20% if compared with the same months of 2019. This suggests that the reduction of entrepreneurial entry in the first half of 2020 might have been partially mitigated.

- **In 2020 there was a decline in total early-stage entrepreneurial activity (TEA).** The decline in the share of individuals trying to start a business contributed to a reduction in total-early entrepreneurship (TEA), that is, the share of individuals involved in starting *or* running a new business. In Luxembourg the reduction in TEA (from 10.2% in 2019 to 8% in 2020) was somewhat larger than the European average (from 9% in 2019 to 8% in 2020). However, the magnitude of this variation does not appear to be severe if compared with historical GEM data for Luxembourg and considering the unprecedented challenges brought about by the pandemic. In the period 2013-2020, TEA was on average 9.2%, ranging from 7.1% in 2014 to 10.7% in 2018.

- **The decline in TEA has been more severe for women than men, especially in Luxembourg.** The COVID-19 crisis did not affect all entrepreneurs equally. For instance, the average female TEA declined by 13% while male TEA only by 7%. In Luxembourg the drop in female TEA was substantial (-40%) while male TEA suffered a decline similar to the European average (-9%) thus widening the already existing entrepreneurial gender gap.

- **Necessity-driven entrepreneurship increased while opportunity-driven entrepreneurship was roughly stable.** In Europe necessity-driven entrepreneurship increased in 2020, whereas opportunity-driven entrepreneurship experienced only a small decline. These dynamics were overall similar to what observed for Luxembourg as well. Notwithstanding these changes, Luxembourg still features a very high share of opportunity-driven entrepreneurship (50% against an average of 38%) and one of the lowest shares of necessity-driven entrepreneurship (42% against an average of 60%).

- **Entrepreneurs' growth expectations were lower but some envisioned opportunities to pursue.** The breakout of the pandemic represented a threat to entrepreneurial activity and substantially increased uncertainty. As a result, 43% of early-stage entrepreneurs reported lower growth expectations in 2020 when compared with 2019 (45% in Luxembourg). At the same time, consistent with the idea that crises can also be regarded as times of "creative destruction" characterized by the emergence of successful entrepreneurs, a non negligible amount of early-stage entrepreneurs perceived that the pandemic brought about new opportunities to pursue (32% in Europe and 31% in Luxembourg).

- **Business closures were stable in 2020, and only a small fraction was due to the pandemic in Luxembourg.** The share of individuals discontinuing a business was generally stable in the majority of European countries, including Luxembourg. This was plausibly due to the rapid and massive government response that helped businesses staying afloat. Among those who declared to have discontinued a business in the last 12 months, 23% reported that the reason was the pandemic in Europe, whereas this figure was only 12% in Luxembourg.

- **The pandemic led to a decrease the share of individuals with future entrepreneurial prospects.** The increase in uncertainty might have had an impact on both current and prospective entrepreneurs. The share of individuals with entrepreneurial intentions decreased in almost all European countries, including Luxembourg.

- **Entrepreneurs in Luxembourg showed the highest appreciation of the government response to the economic consequences of the pandemic during 2020.** Around 76% of early-stage entrepreneurs at least somewhat agrees that the government response was indeed satisfactory compared to a European average of 46%.

Contents

1 Introduction

The coronavirus pandemic caused major disruption, and it is likely to have far-reaching and long-lasting impact on the global economy. During the second quarter of 2020, economic output in EU-27 countries declined by 14% compared with the same quarter of the previous year.[1] This sudden and deep economic contraction that followed the emergence of COVID-19 had, inevitably, a negative impact on entrepreneurship all around the world. Indeed, while many existing businesses faced a higher risk of insolvency, and some were forced to close down (OECD, 2020a), the creation of new businesses decreased sharply in the first half of 2020. While the magnitude of the drop in economic activity was unprecedented, the downturn was of different nature with respect to past ones (e.g. the Great Recession), as it was not accompanied by frozen credit and equity markets. What is more, governments rapidly deployed resources to assist the private sector. During the first months of the pandemic, governments' interventions helped preserving employment, and sustained businesses through numerous policy schemes. Those interventions kept firms afloat during the initial phases of the crisis, at a time when premature bankruptcy could have worsen the recession. In the second half of 2020, some economies have exhibited signs of recovery in their economic activities. This also reflected in a substantial rebound in new business formation in many advanced countries (OECD, 2021b). While this is a positive development, it is still to early to fully assess the implications of the pandemic on entrepreneurship.

At the time of writing - June 2021 - European countries are gradually lifting restrictions while vaccinations gain momentum. While these developments allow for some optimism, the short-term outlook remains uncertain. Economic growth is expected to rebound by 4% in 2021 for EU-27 countries[2], but the recovery will depend on the spread of virus variants, and on an effective vaccination campaign. As the economy slowly starts to emerge from the lockdown, the role played by entrepreneurs in fostering job creation and technological change will be important to secure a speedy and sustained recovery.[3] The main risk in the current scenario is a permanent reduction in the rate of start-ups, and in the growth prospects of small and medium enterprises, which could lead to a decline in aggregate employment, innovation, and economic growth (Naudé, 2020; Fairlie, 2020). Hence,

[1] https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Quarterly_national_accounts_-_GDP_and_employment#Quarterly_GDP_growth.

[2] https://ec.europa.eu/info/business-economy-euro/economic-performance-and-forecasts/economic-forecasts/spring-2021-economic-forecast_en.

[3] Newly-established firms account for about 20% of employment but create almost half of all new jobs on average across OECD countries (Calvino et al., 2016), and their innovation efforts contribute significantly to aggregate productivity growth (Klenow and Li, 2020).

keep monitoring how entrepreneurs are responding to the COVID-19 crisis is important to decision makers tasked with shaping the recovery.

In this context, the 8th edition of the Global Entrepreneurship Monitor (GEM) for Luxembourg devotes special attention to entrepreneurial dynamics in the country after the emergence of the coronavirus pandemic. A first portrait of the evolution of entrepreneurship in Luxembourg during the COVID-19 crisis was released in December 2020 (Peroni et al., 2020). The current report expands the previous analysis by examining the state of entrepreneurial activities in Luxembourg from a cross-country perspective. In particular, leveraging on data collected in 2020 and 2019, this account compares Luxembourg's performance with all European countries for which GEM data are available. While these data allow us to benchmark Luxembourg with respect to other countries, it is important to stress that they refer to mid-2020 and that results should not be extrapolated to more recent developments.

To summarize the state of entrepreneurship during the last two years in both Luxembourg and Europe, Table 1.1 displays the key GEM indicators and their evolution.

Table 1.1: Dashboard of key GEM indicators

	Luxembourg		Europe		Luxembourg's Rank		
	2019	2020	2019	2020	2019	2020	Change
1. Perceptions							
Good business opportunities	58	41.9	51.2	40	5^{th}	8^{th}	🔴
Knowledge and skills	48.5	45.7	50.4	52.6	12^{th}	13^{th}	🟡
Fear of failure	45.7	42.3	39.5	42.4	5^{th}	10^{th}	🟢
2. Activities							
Currently starting a business	15.1	8.9	10.9	9.2	4^{th}	9^{th}	🔴
TEA	10.2	8	9.1	8.2	6^{th}	9^{th}	🔴
EBO	4.7	3.6	7.9	6.9	16^{th}	16^{th}	🟡
3. Motivations							
Opportunity-driven TEA	60.5	51.1	41.3	37.8	2^{nd}	2^{nd}	🟡
Necessity-driven TEA	38.3	44.3	52.1	59.9	14^{th}	15^{th}	🟡
4. Exit and future intentions							
Discontinued business	2.3	1.9	1.9	2.0	7^{th}	11^{th}	🟢
Future entrepreneurial intentions	18.4	14.5	15.1	13.7	5^{th}	6^{th}	🟡

Source: 2020 and 2019 GEM Global APS data. Note: all figures are expressed in percentage of the adult population, except for opportunity-driven and necessity-driven which are expressed in percentage of TEA. The column "Rank" reports Luxembourg's position out the 17 European countries for which GEM data are available. The column "Change" reports whether Luxembourg's position in the ranking is better (green dot), stable (yellow) or worse (red) in 2020 compared with 2019. A green (red) dot is assigned when Luxembourg gains (loses) more than two ranks. Annual variations equal or below two ranks are assigned a yellow dot.

According to respondents, entrepreneurial activities in Luxembourg have declined in 2020, in line with what is observed in other European economies. The emergence of the pandemic led to a drop in the share of individuals that perceive that there are good opportunities to start a business. As a result, the share of individuals trying to set up a business has declined, especially in Luxembourg. Setting up a business was considered more difficult in 2020 than in the past, with the pandemic delaying getting businesses operational. This decline in the entry of new businesses has contributed to the drop in total early-stage

entrepreneurship (TEA), that is, the share of individuals starting or running a new business in both Luxembourg and Europe. The reduced amount of TEA was not homogeneous across the population, with women more severely affected than men especially in Luxembourg. Additionally, there was a generalized increase in necessity-driven entrepreneurship whereas opportunity-driven entrepreneurship experienced a small decline that was slightly more pronounced in Luxembourg. Plausibly due to government intervention, there was no change in the rate of individuals discontinuing a business during 2020. A sensible reduction in the number of potential entrepreneurs is observed, with fewer people planning to set up a business in the coming years mostly due to the COVID-19 crisis. Finally, in Luxembourg respondents show the highest appreciation of government response to the economic consequences of the pandemic in European comparison.

The structure of the report is the following. Chapter 2 presents the GEM framework of analysis, and describes the main features of the GEM dataset, which combines two surveys, namely the Adult Population Survey (APS) and the National Expert Survey (NES). Chapter 3 reports the main results from the 2020 wave of the GEM survey for Luxembourg which contains a dedicated section devoted to shed light on entrepreneurs' response to the COVID-19 pandemic. Chapter 4 summarizes the results and concludes the report.

2 The GEM research approach[1]

Entrepreneurial activities are essential drivers of job creation and contribute to generate and diffuse new technologies, thus indirectly increasing productivity and overall economic activity (Carree and Thurik, 2010). As a result, entrepreneurship is widely regarded as a key ingredient for economic prosperity and is the target of a myriad of policy initiatives around the world.[2] In this context, the Global Entrepreneurship Monitor (GEM) project was established in 1999 by academics at the London Business School (U.K.) and Babson College (U.S.) to study entrepreneurship, its outcomes and effects on economic development, and the conditions for thriving entrepreneurs. Based on surveys conducted by national teams in many countries, GEM provides a harmonized dataset at annual frequency, which enables researchers and analysts to investigate entrepreneurial activities adopting a cross-national perspective. Since its inception, the GEM project has grown from a consortium of 10 participating countries to one involving researchers from over 120 different countries. GEM is now regarded as a prominent longitudinal study of entrepreneurship. Based on 46 participating countries in 2021, the consortium published its 22st annual report (Bosma et al., 2020b).

Luxembourg started participating in the project in 2013. Since then, the two GEM Surveys - the Adult Population Survey (APS) and the National Experts Survey (NES) - have been administered to samples of the country's residents and panels of experts every year. This country report, the 8th for Luxembourg, presents results from surveys administered during May-July of 2019 and June-July 2020. The APS was conducted on a sample of 2,100 individuals in 2019 and 2,011 individuals in 2020, while the NES consisted of 38 interviews in 2019 and 36 interviews in 2020.

2.1 The GEM conceptual framework

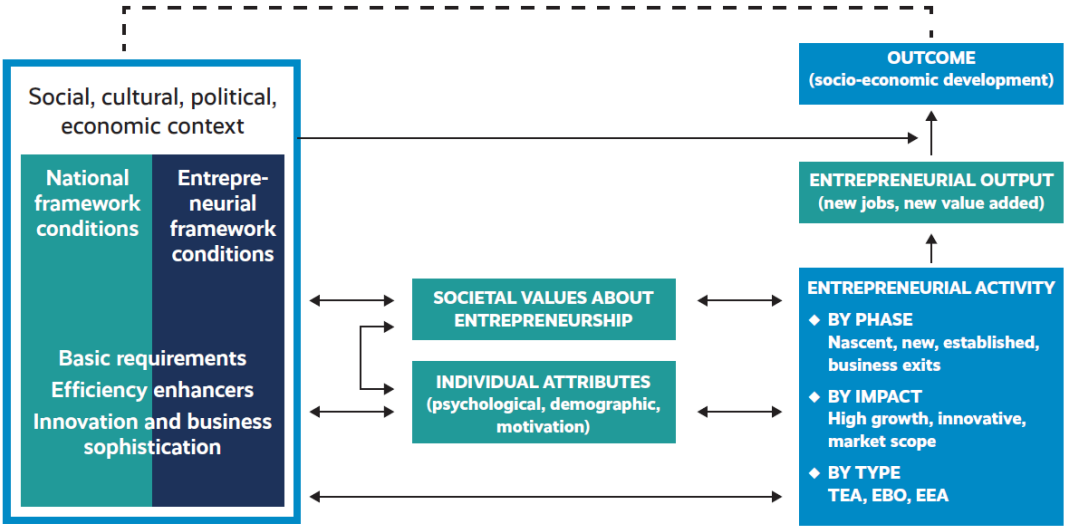
GEM defines entrepreneurial activity as "any attempt at new venture or new business creation, such as self-employment, a new business organization or the expansion of an existing business, by an individual, a team of individuals, or an established business" (Bosma et al., 2020a, p.22). Entrepreneurial activity, however, should not be regarded as an heroic act of an individual. One of the main features of the GEM conceptual framework is that entrepreneurial activity does not take place in a vacuum, but rather within the specific context of

[1] This chapter draws upon the Luxembourg GEM report 2019/2020 (Peroni et al., 2020).

[2] According to Bai et al. (2021), between 2010 and 2019, national governments' entrepreneurial finance programs around the world had on average a cumulative annual budget of 156 billion US dollars.

a given environment, with its own unique social, cultural and economic characteristics. Entrepreneurial activity is then jointly determined by the interaction between traits and characteristics of entrepreneurs and the overall "environment". In turn, entrepreneurial outcomes affect firm and job creation, innovativeness, and ultimately economic growth. The GEM conceptual framework outlined in Figure 2.1 portrays the relationship between entrepreneurship and its local, regional and national environment. To provide a comprehensive account of entrepreneurial activity and the context in which it takes place, GEM administers two surveys: the Adult Population Survey (APS) which captures the attitudes, behaviours and expectations of individual adults, and the National Expert Survey (NES) which focuses on the entrepreneurial context (see Section 2.2).

Figure 2.1: The GEM Conceptual Framework

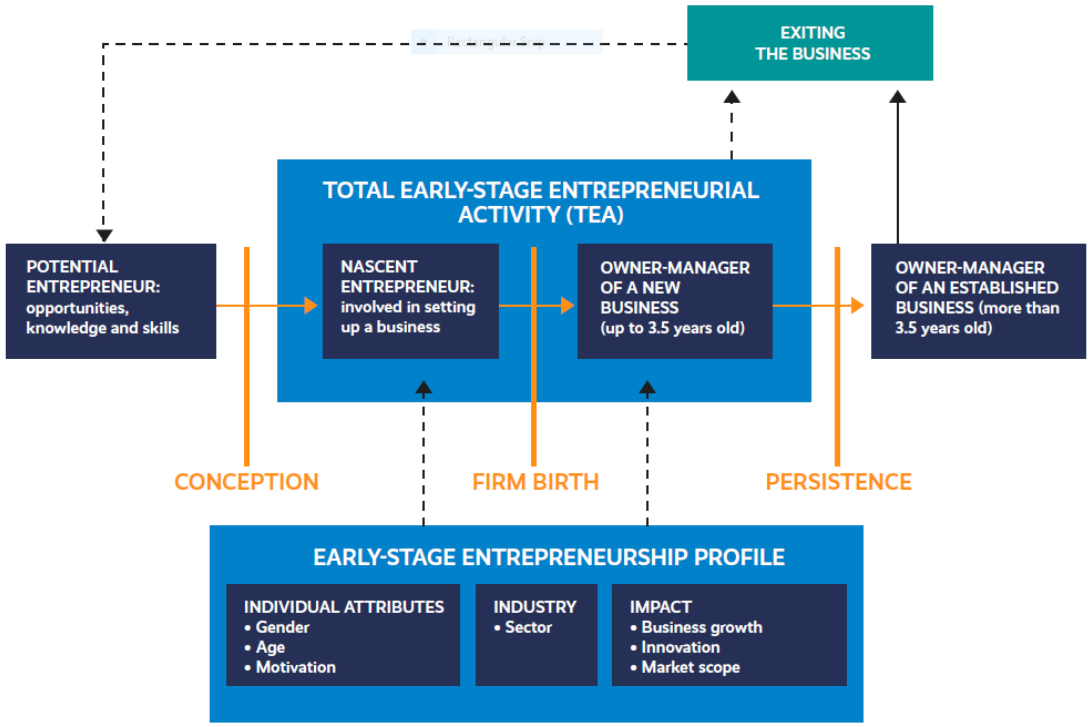


Source: Bosma et al., 2020a.

An additional feature of the GEM framework is that entrepreneurship can be better described as a "cycle" - "*from conception of entrepreneurial opportunities to its maturity or, alternatively to its demise*" (GEM, 2018a, p. 21). GEM surveys are shaped by this framework, and are designed to track people along the entrepreneurship process to provide indicators of entrepreneurial activities. To this end, every person engaged in any activity related to the creation of a new business is regarded as having an impact on the national level of entrepreneurship. Figure 2.2 depicts the entrepreneurial process, and the corresponding operational definitions adopted by GEM for each phase of the process. The individuals at a particular stage of the entrepreneurial process are characterized as follows: i) "potential entrepreneurs" are those who plan to start a new business in the next three years; ii) "nascent entrepreneurs" are those individuals involved in setting up a new business, and who have paid wages (to employers or to themselves) for less than three months; iii) "new entrepreneurs" are owner-managers of firms that have paid wages for a period of time between 3 and 42 months; iv) "established entrepreneurs" are owner-managers of firms that have paid wages for a period longer than 42 months.

The most important indicator produced by GEM is Total Early-Stage Entrepreneurial Activity (TEA). TEA measures the proportion of the working-age adult population actively engaged in starting or running a new business. Specifically, TEA is the sum of "nascent entrepreneurs" and "new entrepreneurs". In other words, TEA reflects the level of entrepreneurial dynamism in a country and represents an overall entrepreneurship rate. Another important indicator is the level of Established Business Ownership (EBO), or the percentage of adults owning and managing an established business, defined earlier as having paid wages or salaries for 42 months or more. If the new business is successful, then it will evolve over time to become an established business. Either the new business owner or the established business owner may exit the business at some stage, and that business may or may not continue without them.

Figure 2.2: Entrepreneurial phases and GEM entrepreneurship indicators



Source: Bosma et al., 2020a.

GEM collects information on individuals' entrepreneurial attitudes, activities and aspirations over all the phases of the entrepreneurship process. The focus on individuals differentiates GEM from other statistical sources, in particular from official statistics such as business registers and business surveys. Official records are collected at the firm-level and, as such, they neither measure entrepreneurship *per se* (although they are linked to it) nor capture attitudes and perceptions of entrepreneurs and potential entrepreneurs. Another limitation of official firm-level data is that they are not fully comparable across countries, because of the differences in countries' laws and institutions (e.g. mandatory incorporation with different turnover thresholds). Moreover, business registers do not record informal business

activities and informal investment which might be relevant to assess entrepreneurship rates across countries (Marchese, 2015).

2.2 GEM surveys

The conceptual features of the GEM framework are reflected in the two surveys that are administered annually.

2.2.1 Adult population survey (APS)

The APS is a survey addressed in each country to the population between 18 and 65 years old. Each of the participating countries conducts the survey by interviewing a representative sample of at least 2,000 individuals (2,011 individuals in 2020). The field work takes place during the spring/summer of each year. The basic questionnaire is common to all countries participating in the consortium. The questionnaire comprises core questions and modules on special topics. The core questions of the APS enquire about individual attitudes and perceptions on whether it is easy to start a business, whether there are good business opportunities, and whether fear of failure is an obstacle. Additional questions focus on whether that person is actively starting a new business or running an established business and what their motivations and ambitions are. Hence, the APS provides a comprehensive depiction of all phases of the entrepreneurial process.

The special modules of the APS were focused on different topics such as immigrant entrepreneurs in 2012 (Xavier et al., 2013), and on subjective well-being in 2013 (Amorós and Bosma, 2013). Because of the relevance of these topics to Luxembourg, these modules have been included in the national questionnaire ever since. Starting from 2018, other Luxembourg specific questions are collected. They concern barriers and enablers, entrepreneurial policies, and their perception. As already mentioned, in light of the COVID-19 pandemic a special module was administered to monitor entrepreneurial dynamics with data collection performed during the months of June and July 2020.[3]

To ensure consistency, the international GEM data team supervises the data collection process. During the field work, raw data are sent regularly to the GEM data team for quality checks. The observations are weighted to ensure that the joint distribution of the gender, age, education and immigration status of the respondents is equal to the distribution of the reference population as recorded in official registers.

[3] In 2020, the questionnaire is made of the following eleven blocks of questions: 1) Nascent entrepreneurs; 2) Owner-managers; 3) Potential and discontinuing entrepreneurs; 4) Informal investors; 5) Employment and entrepreneurial employee activity; 6) Coronavirus pandemic (Special topic 2020); 7) Entrepreneurship programs (Luxembourg specific questions); 8) Barriers and enablers (Luxembourg specific questions); 9) Individual perceptions: health;trust;well-being; job satisfaction (Luxembourg specific questions); 10) Immigration (Luxembourg specific questions); 11) Demographics of respondents.

Once collected at the country level, national records are harmonized to enable meaningful international comparisons of results. Indeed, a prominent goal of GEM is to collect comparable data to explore cross-country differences in the motivations of entrepreneurs, and to link these differences to job creation rates and economic growth.

2.2.2 National experts survey (NES)

The national experts' survey (NES) provides insights into the entrepreneurial start-up environment in each country. National experts provide information regarding nine Entrepreneurial Framework Conditions that influence entrepreneurial activities. They range from the ease of access to finance to social support for entrepreneurship, and from the adequacy of entrepreneurial education to the availability and cost of essential business services. Each of these aspects is evaluated in the NES by a group of four or more national experts, summing up to a total of at least 36 experts per country.

2.2.3 GEM surveys and the pandemic

After the breakout of the pandemic in March 2020, the GEM extended its APS and NES surveys to capture the impact of COVID-19 crisis on different aspects of the entrepreneurial process. In particular, the APS asked respondents about the effects of the pandemic on the ease (or difficulty) of starting a business, on growth expectations, and about the adequacy of government responses to the pandemic's economic impact. Additionally, the 2020 NES asked national experts to evaluate the response of both governments and entrepreneurs to the challenges brought about by the pandemic. On top of that, they key GEM indicators on entrepreneurial activity (e.g. TEA and EBO), and the fact that these have been collected in an harmonized fashion over time, enable the analysis of the changes occurred during the pandemic.

In December 2020, the GEM team in Luxembourg released the results of the latest APS data in order to offer insights on how entrepreneurial activities evolved in the country after the emergence of the pandemic (Peroni et al., 2020). The current report represents a follow-up which leverages the recently released cross-country data from the Global GEM surveys. These allow to benchmark Luxembourg with all European countries participating to the GEM project. These countries are: Croatia, Cyprus, Germany, Greece, Italy, Latvia, the Netherlands, Norway, Poland, Russia, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom. The report will make use of data for these 16 countries plus Luxembourg. The main analysis will employ data from both the APS 2019 and the APS 2020 in order to capture the main differences across the pre-pandemic and the pandemic periods across European countries.

Before presenting the results, it is important to outline some caveats that should be kept in mind when interpreting the changes that countries exhibit both across them and across

time. First of all, surveys were conducted during mid-2020, when countries were coming out of the pandemic and lifting restrictions. Hence, interpretation of these results should not be extrapolated to more recent developments. Furthermore, economies may have been at different stages in the pandemic cycle, with heterogeneous intensities and governments' responses. For instance, respondents in Luxembourg, differently from many other countries, were mainly interviewed in a period where the country was going through a second wave of the pandemic. It is also important to note that, throughout two decades of annual GEM data, key variables undergo changes year-on-year. Some of this variation reflects structural or other changes in individual economies, while some will be the natural consequence of random sampling across a large population. In comparing 2020 results to 2019, most changes might be attributed to the widespread disruption of the pandemic and subsequent government responses. However, it should be noted that small changes may simply be a result of sampling.

3 Entrepreneurship during COVID-19

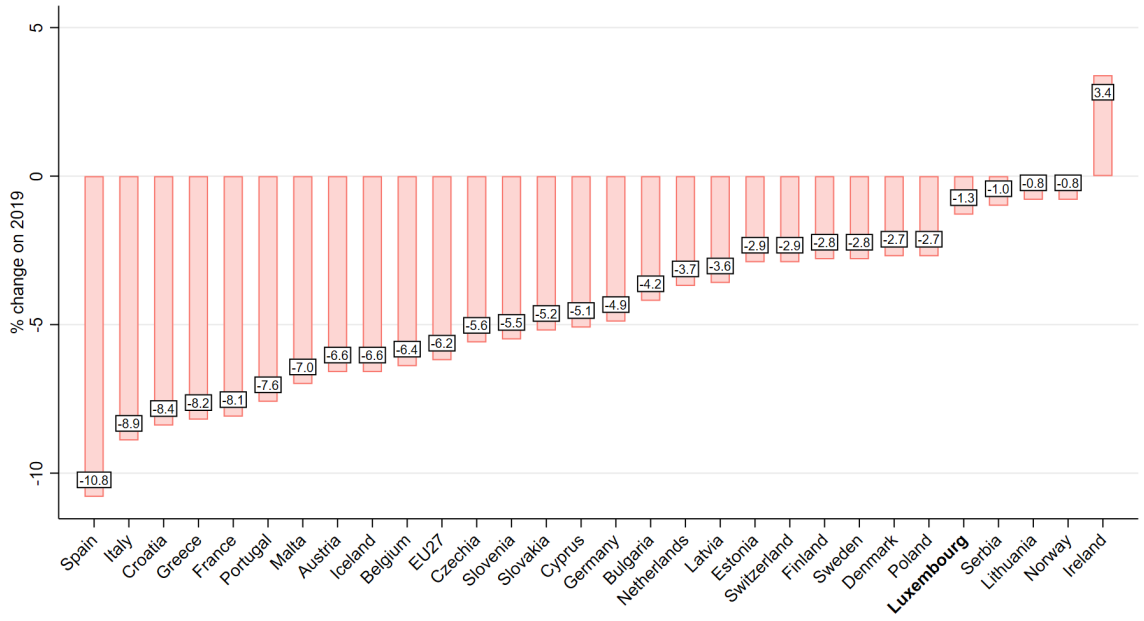
This chapter focuses on entrepreneurial dynamics in Luxembourg using data from all European countries participating in GEM as a benchmark. Emphasis lays on the analysis of variations between 2019 and 2020, which may be due to the coronavirus outbreak, as already discussed in Section 2.2.3.

We start by accounting for the impact of the COVID-19 crisis on macroeconomic activities and household incomes (Section 3.1). We then focus on how entrepreneurial perceptions and the establishment of new entrepreneurial endeavors evolved in Luxembourg and other European countries in the last two years (Sections 3.2 and 3.3). Next, we describe how entrepreneurial activities changed according to key GEM indicators (Section 3.4); successively, we provide a breakdown of such indicators according to certain characteristics of the population (e.g. gender, education) to gauge if some categories were hit more than others by the current crisis (Section 3.5). The chapter goes on to present results on entrepreneurial motivations and how these varied during 2020 (Section 3.6). We then present how entrepreneurs' expectations on growth, and perceived opportunities, changed during the crisis (Section 3.7). Subsequently, we examine entrepreneurial exits (Section 3.8) and future entrepreneurial intentions (Section 3.9). Finally, we shed light on entrepreneurs' perceptions of governments' responses to the economic consequences of the pandemic (Section 3.10). This evidence is based on cross-country data derived from the 2019 and 2020 waves of the GEM Adult Population Survey (APS). We complement the above analysis by using data from the GEM National Expert Survey (NES). These allow us to describe the national entrepreneurial environments according to experts' evaluation and whether they were affected by the pandemic (Section 3.11).

3.1 Economic activity

The outbreak of the coronavirus pandemic disproportionally affected economic activities in 2020. As a result, GDP experienced a year-on-year decline of around 6.2% in EU-27 member countries. The drop in economic activity was not homogeneous across countries though. As shown in Figure 3.1, some EU-27 economies saw a decline in GDP of over 8% whereas, on the other end of the spectrum, some others where only marginally affected. Luxembourg belongs to this second group and appears to have weathered the storm relatively better than the majority of EU members. Thanks to a positive performance during the second semester of 2020, Luxembourg suffered only a 1.3% drop in GDP, which makes it one of the least affected countries in the EU-27.

Figure 3.1: Annual real GDP growth rate in EU-27 countries



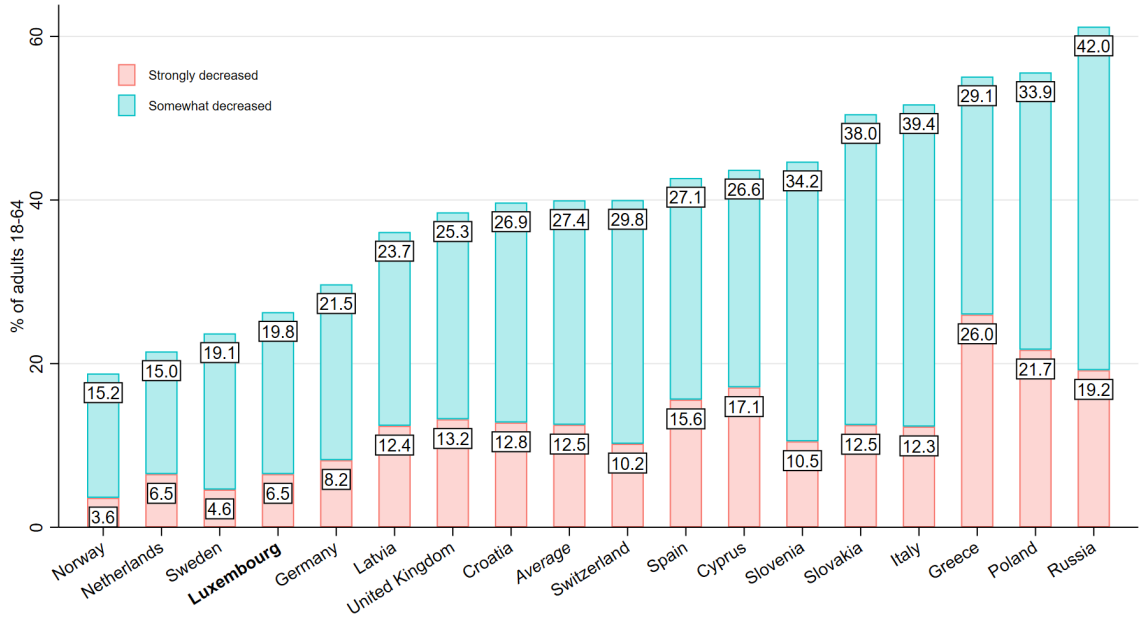
Source: Eurostat data for 2020 retrievable at `http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=tec00115&lang=en`.

To evaluate the impact of the pandemic on incomes, the 2020 Global GEM APS introduced a new question to adults aged 16-64 on whether the pandemic triggered a decrease in their household income. Figure 3.2 shows the share of adults reporting that the pandemic led their household income to strongly or somewhat decrease. Responses across all European countries participating to GEM confirm the overall negative impact of COVID-19. Results show that, on average, around 40% of all respondents reported a drop in their household income. Similarly to what observed for GDP, the impact was uneven across countries, with five economies in which more than half of respondents reported a fall in household income. As observed for GDP, Luxembourg was among the countries that suffered less in

European comparison, with only 26% of all respondents declaring a drop in their household income.[1]

The sudden and deep economic contraction due to the pandemic inevitably affected individuals' perceptions concerning the possibility to become entrepreneurs. In the next section, we start by looking at how these perceptions changed in European countries after the emergence of the coronavirus pandemic.

Figure 3.2: The pandemic has led to a decrease in household income (% of adults 18-64)



Source: 2020 GEM Global APS data.

3.2 Perceptions on entrepreneurship

The decision on whether to start an entrepreneurial activity is influenced by personality traits and perceptions (e.g. Boyd and Vozikis, 1994), including perceived business opportunities, attitude towards risks, and confidence in one's abilities. Hence, starting a new business is the result of the interaction between identifying available opportunities, the perceived own ability to act upon those opportunities, as well as overcoming fears about the possible failure of the new venture. The coronavirus pandemic might have influenced how individuals perceive the possibility to become entrepreneurs which, in turn, might affect the start of new entrepreneurial activities.

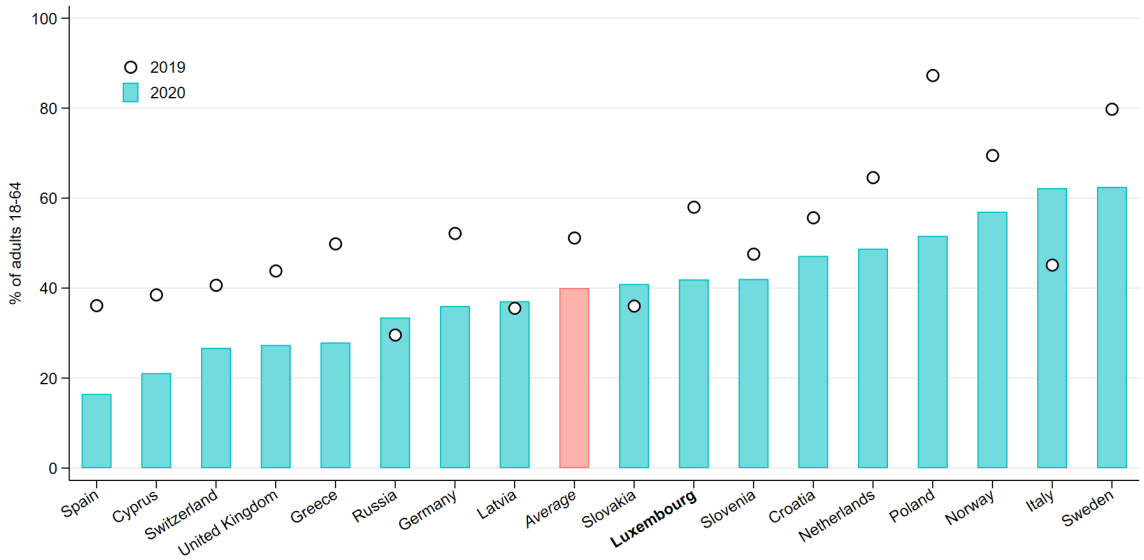
One of the channels the pandemic might have affected entrepreneurship is by changing individuals' perceptions of the business environment. To investigate this link, the GEM APS asked respondents whether they agree that there are good opportunities to start a

[1] Official statistics confirm the asymmetrical and sharp decrease in incomes. For instance, the median employment income before government transfers saw a year-on-year decline of -5.2% in the European Union during 2020. In Luxembourg this drop was less pronounced (i.e. -3.5%) (Eurostat, 2020).

business. This is relevant because, as said above, a higher share of respondents indicating that there are good business opportunities may lead to an increase in entrepreneurial activities. Conversely, the perception of a negative economic outlook may discourage entrepreneurial intentions and, as a result, the creation of new businesses.

Figure 3.3 compares the proportion of individuals agreeing that there are good business opportunities in 2020 and 2019 for the 17 European economies participating in GEM in both years. Results show that, in 14 out of the 17 European economies, there was a decrease in the share of individuals that perceived good opportunities to start a business. On average, this share dropped from 51% in 2019 to 40% in 2020. The decline recorded for Luxembourg, from 58% in 2019 to 42% in 2020, was somewhat more pronounced. These results indicate that the perception that the economic scenario after the first wave of the pandemic did not provide favorable conditions to set up a business was widespread across countries.

Figure 3.3: Good opportunities to start a business in next 6 months (% of adults 18-64)



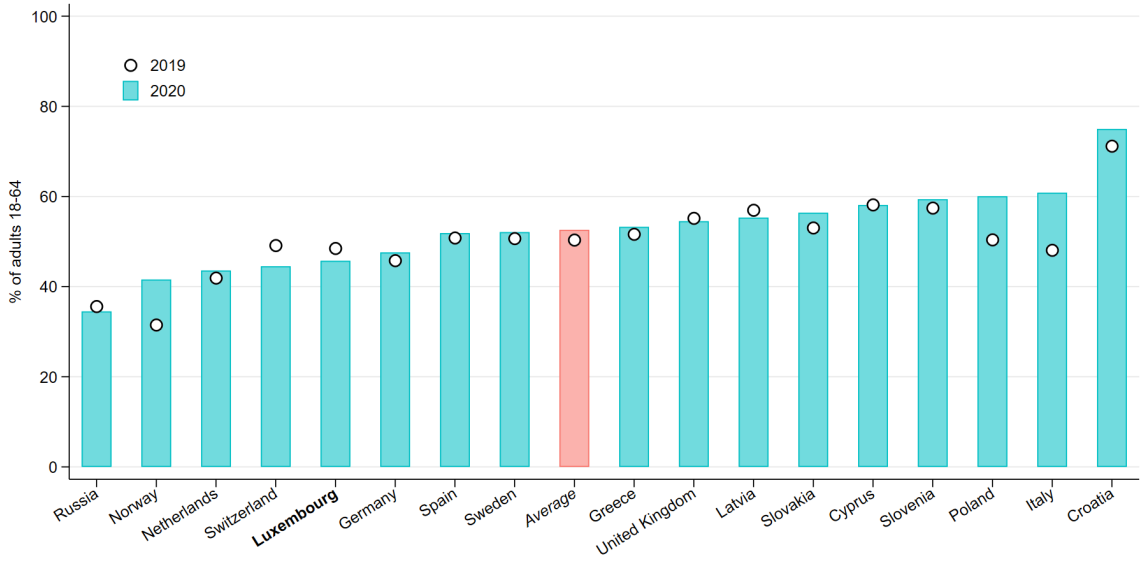
Source: 2020 and 2019 GEM Global APS data.

Individuals' perception of their own knowledge, and fears of failure, are among the factors that can affect entrepreneurial entry. Turning the intentions of pursuing entrepreneurial activities into practice requires the confidence in one's abilities, as well as overcoming fears about the possible failure of the new venture. The GEM APS asked adults whether they have the skills to start a new business, and if they would not start a new business for fear it might fail.[2]

Figure 3.4 reports the share of the adult population that declare to possessing the required knowledge, skills, and experience to start a business. Overall, the share of adults who report to have the required skills to engage in entrepreneurship was rather stable over the period

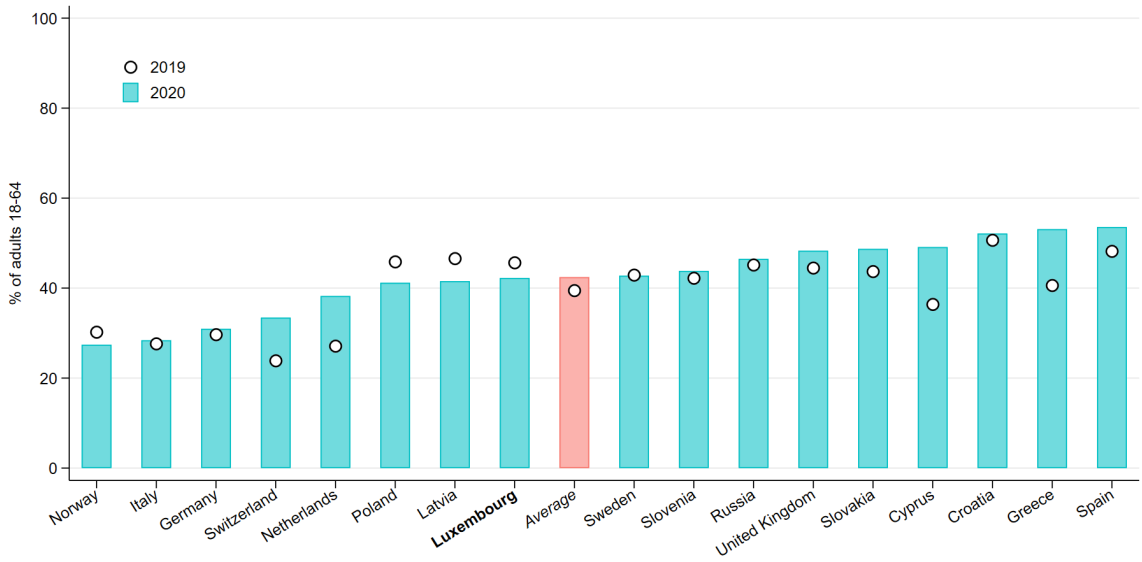
[2]Note that responses might be influenced by individuals' underestimation (or overestimation) of their abilities.

Figure 3.4: You personally have the knowledge, skills, and experience required to start a business (% of adults 18-64)



Source: 2020 and 2019 GEM Global APS data.

Figure 3.5: You see good opportunities, but would not start a business for fear it might fail (% of adults 18-64)



Source: 2020 and 2019 GEM Global APS data.

2019-2020, moving from 50.4% to 52.6%. In Luxembourg, this share slightly decreased from 48.5% to 46%.

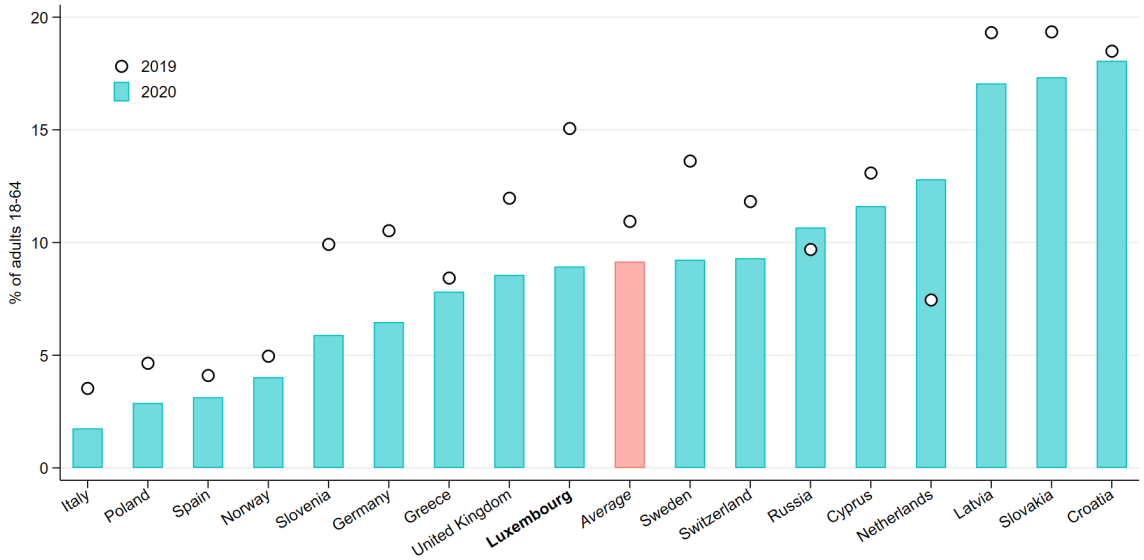
Figure 3.5 shows the percentage of the adult population who sees good opportunities but does not start a business for fear it might fail. As for the previous indicator, fear of failure share did not exhibit noticeable changes over the last two years (with the exception of Poland). Once again, Luxembourg showed very little variation between 2019 and 2020.

Despite the pandemic, the data do not reveal any substantial changes in self-perceived skills or in fear of failure. This result is perhaps surprising, in light of a scenario which looked challenging for entrepreneurs. It is plausible that government interventions contributed to mitigate the fear of failure, at least during the period when the surveys were carried out. Alternatively, some respondents might have envisaged new opportunities due to the pandemic. Additionally, self-perceptions and fears are related to personality and behavioral traits that are known to be relatively stable over time that hardly experience considerable variations from year to year.

3.3 Entrepreneurial entry and start-up process

One of the expected consequences of the COVID-19 pandemic was a reduction in entrepreneurial entry, that is, the share of people choosing to start new entrepreneurial activities. Indeed, the initial coronavirus outbreak and subsequent lockdowns hampered the start of new businesses during the first semester of 2020 across many countries (OECD, 2021b). One way of observing this is via the number of business registrations, which usually declines during economic crises (Klapper and Love, 2011). The GEM survey allows us to capture entrepreneurial entry by looking at the share of individuals over the adult population who are currently trying to set up a business. What follows monitors entrepreneurial entry in Luxembourg, in a comparative perspective, using both sources of information.

Figure 3.6: Currently trying to start a new business (% of adults 18-64)



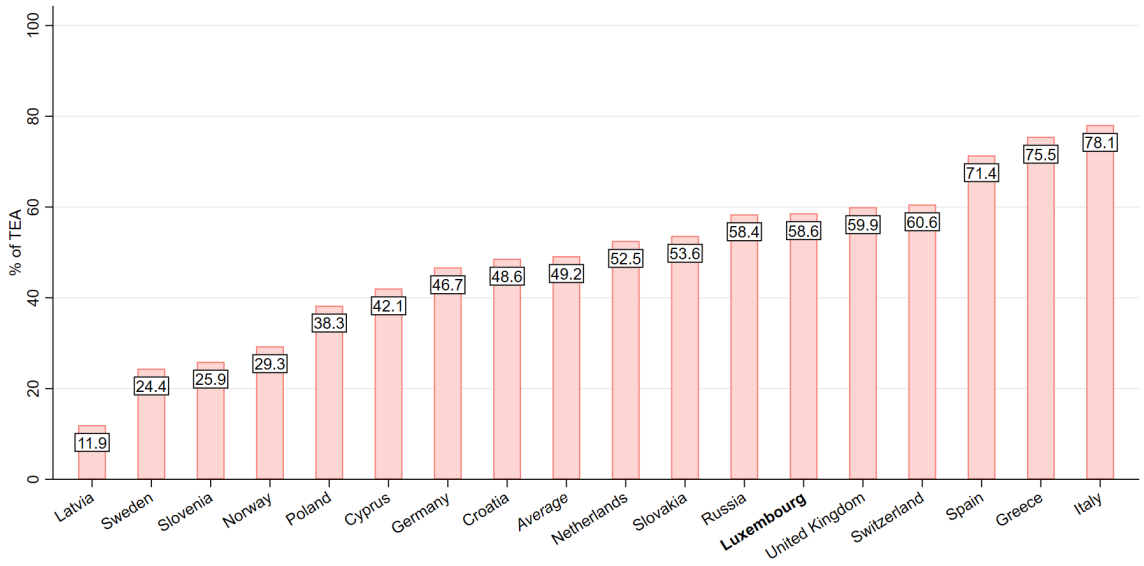
Source: 2020 and 2019 GEM Global APS data.

According to GEM data, the share of individuals currently trying to set up a business exhibited a generalized drop in 2020, characterizing 15 out of 17 participating countries. This is shown in Figure 3.6. In line with this, in Luxembourg the share of adults trying to set up a business decreased from 15% in 2019 to about 9% in 2020. This amounts to a one third decline, quite substantial when compared with the European average, going

from 11% in 2019 to 9% in 2020. It is plausible that this fall, which represents an all-time low for Luxembourg since the GEM started collecting data, reflected individuals opting to delay or abandon their entrepreneurial intentions altogether (Peroni et al., 2020). Future waves of GEM data will be needed to assess whether this decline is merely temporary or permanent.

The pandemic inevitably increased the difficulties involved in the start-up process. According to the early-stage entrepreneurs surveyed by GEM, roughly 50% reported that setting up a business was harder in 2020 than it was in 2019 (Figure 3.7). In Luxembourg, the perceived difficulties in starting up were slightly above average, with 59% of all early-stage entrepreneurs declaring that starting a business became more challenging in 2020.

Figure 3.7: Starting a business is more difficult compared to a year ago (% of TEA)



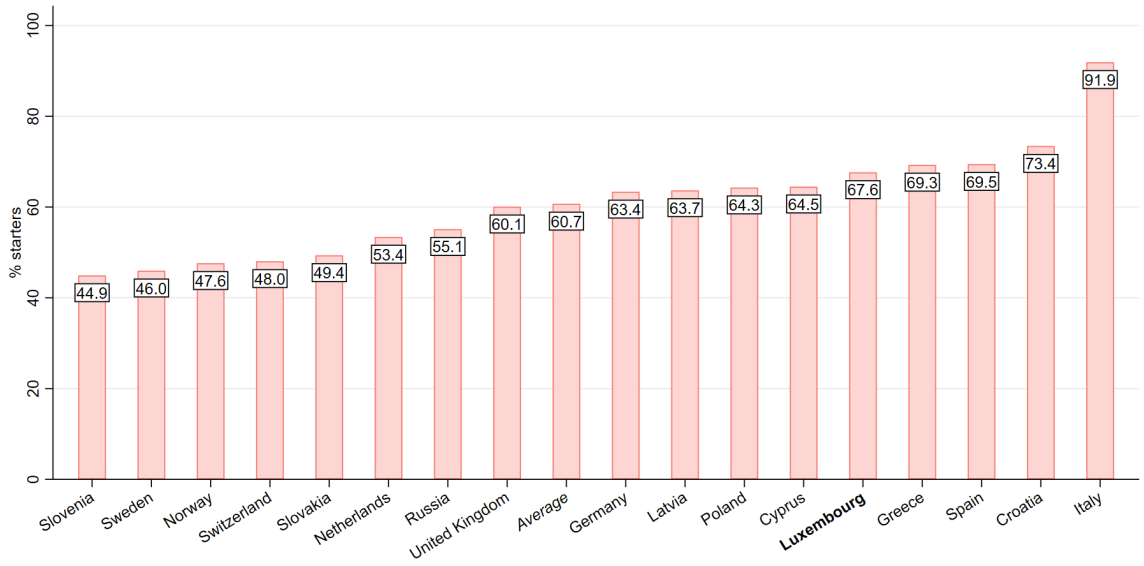
Source: 2020 GEM Global APS data.

To provide additional information on the start-up process during the pandemic, the 2020 APS inquired on whether the COVID-19 crisis led to delays in getting the business operational. In European countries, around 61% of all individuals who recently started an entrepreneurial activity declared that COVID-19 had indeed caused a delay in getting their business operational (Figure 3.8). For Luxembourg, this share was 68%, which was above the European average.

The indicators reported so far document an overall decline in entrepreneurial entry in 2020 in all European economies participating to GEM. In Luxembourg, this decline was larger than the European average.

It should be noted that GEM surveyed respondents during the summer of 2020. Therefore, this data cannot fully account for the 2020 year-long evolution, and for the economic recovery that many countries, especially Luxembourg, experienced during the third and fourth quarter of 2020. Hence, it is plausible to expect that entrepreneurial entry might

Figure 3.8: The pandemic has caused a delay in getting the business operational (% of starters)



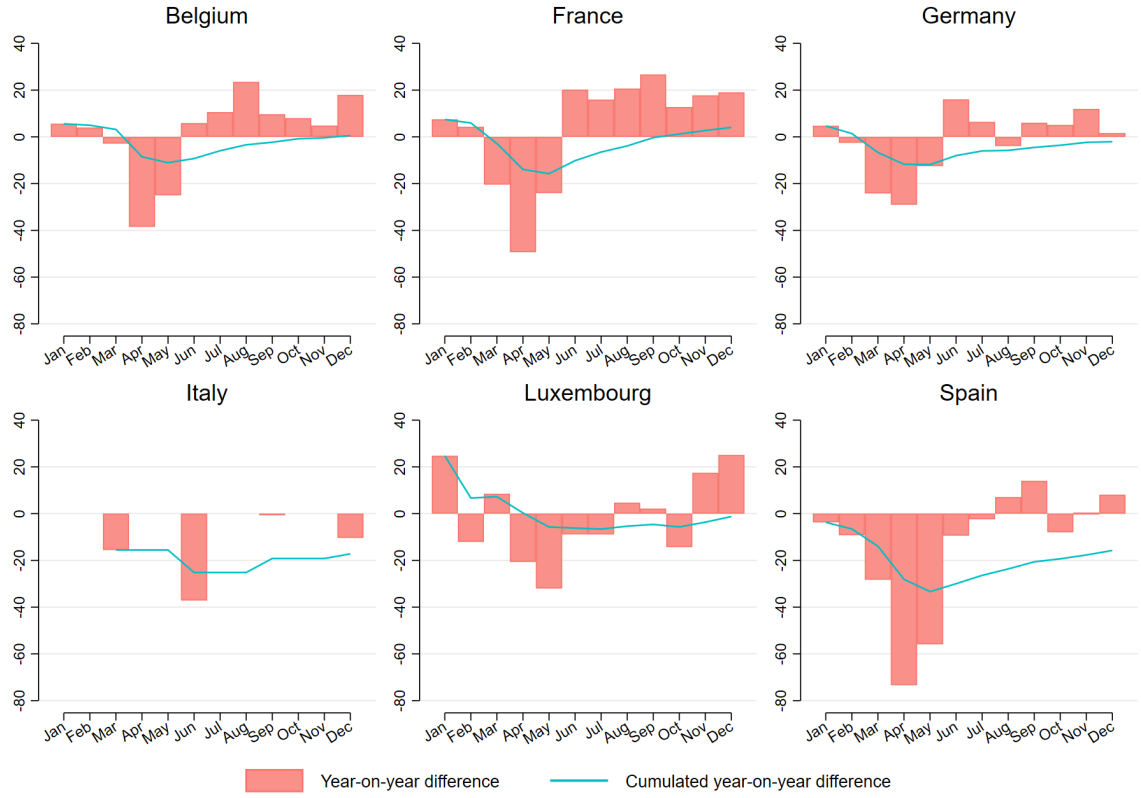
Source: 2020 GEM Global APS data.

have rebounded during the second half of 2020. To shed light on this, an additional way to monitor entrepreneurial entry during the pandemic is to compare business registrations in 2020 with 2019. Business registrations represent a timely indicator of entrepreneurship, as these data are usually collected monthly. Furthermore, new business formation rates are positively correlated with GEM indicators capturing early-stage entrepreneurial activity (Marcotte, 2013), thus providing us with a good additional indicator to monitor new entrepreneurial activities.

As highlighted by the GEM Flash Report published in December 2020 (Peroni et al., 2020), the number of business registrations in Luxembourg decreased during the months of April and July 2020 compared to 2019. This dynamic is not different from what occurred in several European economies during the same period, when the global economy was hit by a sudden and deep economic contraction (OECD, 2021b). Figure 3.9 reports the year-on-year percentage differences in monthly business registrations between 2020 and 2019 for selected countries. Luxembourg's evolution resembles that of Belgium, France and Germany. After a cumulative decline of around 10% in the first months of the COVID-19 pandemic, entry has generally recovered afterwards to reach the same level of 2019. Conversely, countries such as Italy and Spain suffered very strong contractions in business entry in the first half of 2020. As a consequence, the number of new businesses did not recover and, by the end of 2020, recorded a pronounced reduction of 20% in comparison to 2019.

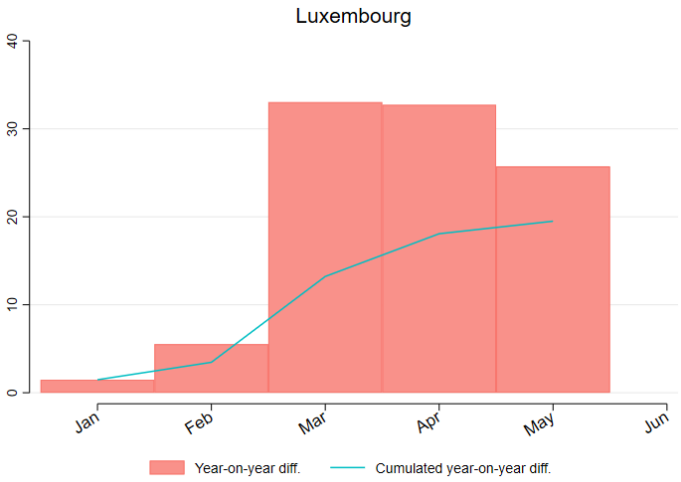
The positive trend registered during the last months of 2020 for Luxembourg appears to have persisted through 2021. Recent data from the Luxembourg Business Register (LBR) show that business registrations during the first five months of 2021 are considerably higher if compared with the same months in 2019, as reported in Figure 3.10. During this

Figure 3.9: Differences in business registrations in selected European countries: 2020 vs 2019



Notes: bars indicate year-on-year percentage differences at the month-level in business registrations (quarter-level for Italy). The blue line is the cumulated percentage difference from January to December. Sources: STATBEL (Belgium); INSEE (France); DESTATIS (Germany); LBR (Luxembourg); Movimprese (Italy); INE (Spain).

Figure 3.10: Differences in business registrations in Luxembourg: 2021 vs 2019



Notes: bars indicate year-on-year percentage differences at the month-level in business registrations between 2021 and 2019. The blue line is the cumulated percentage difference from January to May. Source: monthly filings statistics from LBR.

period the number of business registrations has increased by approximately 20% per cent in cumulative terms if compared with 2019.

This represents a positive development, suggesting that the drop in entry during the first half of 2020 might have been partially reabsorbed. This sharp rebound is also at odds with what observed in past recessions, when business entry declined for a long period of time after the onset of the downturn (Dinlersoz et al., 2021). It remains to be seen if this trend will persist in 2021, and whether this rise reflects an increase in necessity-driven vs. opportunity-driven entrepreneurship.[3] Nonetheless, it will be important to closely track this timely indicator until new GEM data for 2021 will be released.

3.4 Entrepreneurial activity

After investigating the comparative evolution of entrepreneurial entry in Luxembourg, we now turn to describe entrepreneurial activity. The GEM framework features two key indicators capturing entrepreneurial activities (see Section 2.1):

1. Total early-stage Entrepreneurial Activity (TEA): individuals involved in setting up a business or running a firm younger than 42 months that has paid wages during the last three months, measured as a percentage of the adult population;

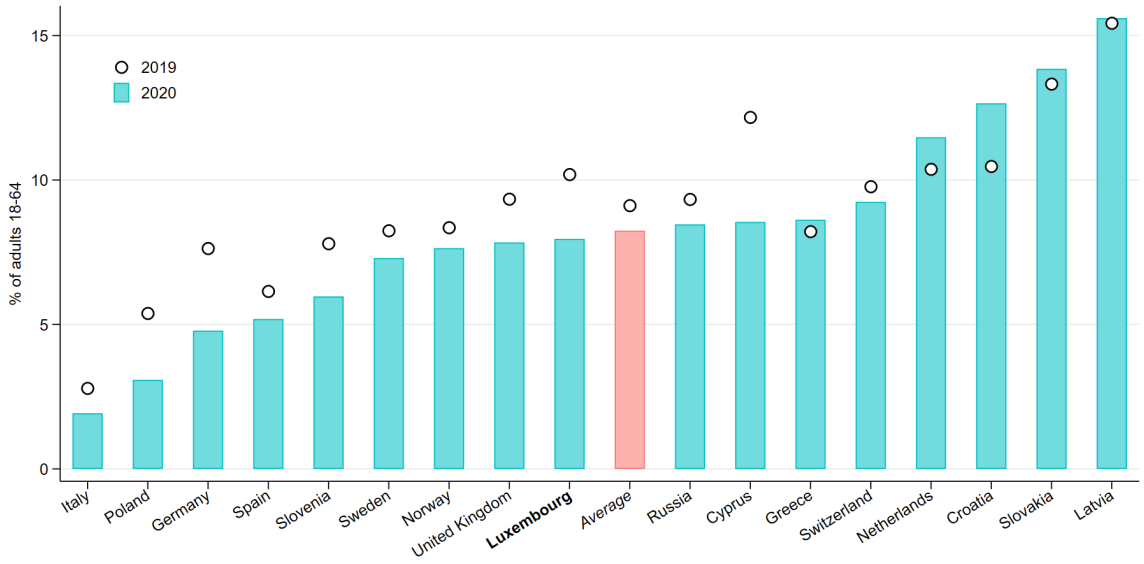
2. Established Business Ownership (EBO): owner-manager of firm older than 42 months that has paid wages during the last three months, measured as a percentage of the adult population.

Figure 3.11 reports TEA levels for 2019 and 2020, and shows that 2020 was characterized by a reduction in this indicator in many countries. In other words, the share of adults starting or running a new business largely declined during the last year. Indeed, out of the 17 European countries considered, 12 experienced a drop in TEA. Luxembourg belongs to this group of economies, with its TEA declining from 10.2% in 2019 to 8% in 2020.

We notice that in 5 economies (i.e. Croatia, Greece, Latvia, Netherlands, Slovakia), TEA remained stable, or even increased, during 2020. While this development might seem surprising, it might indicate an increase in the number of people turning to entrepreneurship

[3] On one hand, new businesses might be created in response to changing customer preferences during COVID-19 that create opportunity for entrepreneurs. Early evidence provides some support for this: data for France, Netherlands and the US show that most new businesses are being created in the wholesale and retail sector with a large proportion being online retailers (Buffington et al., 2021; Fareed and Overvest, 2021). This is consistent with an ongoing push towards remote interactions between consumers and businesses, and the pandemic seems to have amplified this trend of more remote interactions. On the other hand, past recessions saw an increase in business formation attributable to entrepreneurship by necessity (Fairlie, 2013). Limited opportunities in paid employment may trigger a surge in necessity entrepreneurship. Data for the US confirm that, during 2020, there was an increase in necessity-driven entrepreneurship and a decrease in opportunity-driven entrepreneurship (Fairlie and Desai, 2021).

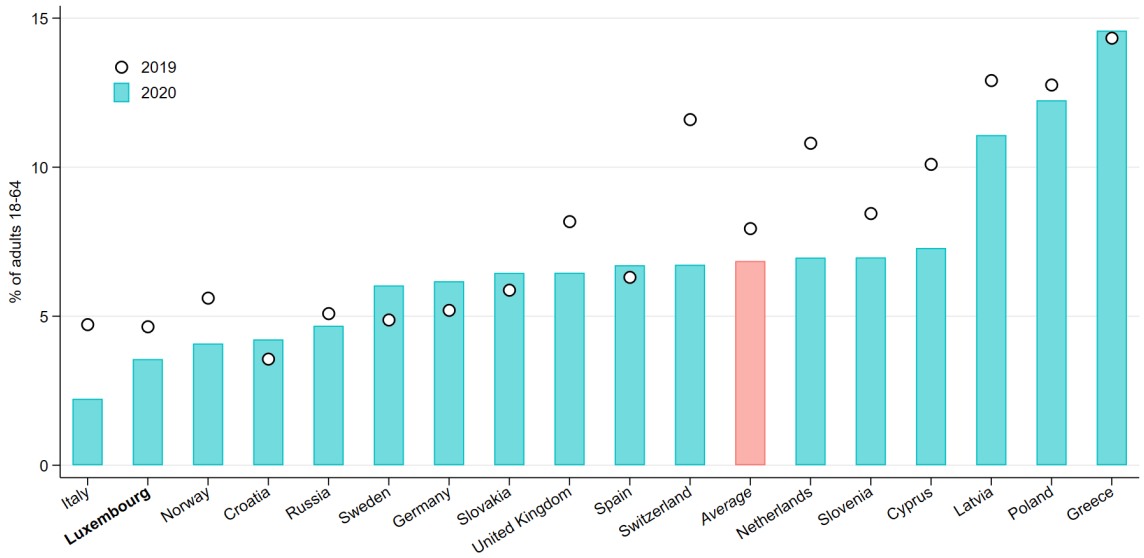
Figure 3.11: Total early-stage Entrepreneurial Activity (TEA) (% of adults 18-64)



Source: 2020 and 2019 GEM Global APS data.

for necessity, something that often occurs during periods of economic downturn. Indeed, as we will see in Section 3.6, data on necessity vs opportunity entrepreneurship confirm that these 5 countries experienced a surge in people turning to entrepreneurship because of lack of paid employment opportunities.

Figure 3.12: Established Business Ownership (EBO) (% of adults 18-64)



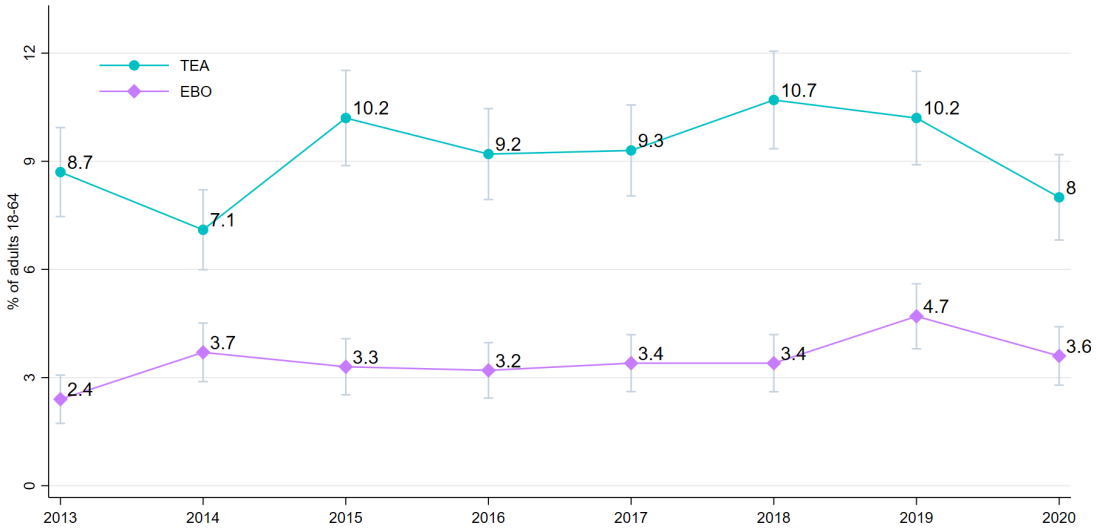
Source: 2020 and 2019 GEM Global APS data.

Figure 3.12 reports the level of EBO for both 2019 and 2020. Many countries exhibited a decline in the share of adults running an established business. In some economies, this share dramatically decreased in 2020: Italy experienced a 50% reduction, whereas Switzerland, Norway, and the Netherlands reported around a 25% drop. Luxembourg,

which has traditionally featured a low level of EBO (GEM, 2018b), also experienced a drop, albeit a lower one.

When compared with the European average, the reduction in both TEA and EBO looks considerable for Luxembourg. These data, however, needs to be interpreted cautiously. To do so, Figure 3.13 reports TEA and EBO for Luxembourg over the period 2013-2020. While 2020 saw a drop in Luxembourg's TEA, this is not the lowest figure recorded since 2013, the year of GEM's inception. In 2013 and 2014, TEA was around 8.7% and 7.1% respectively. The rate of Luxembourg's EBO is rather stable, despite the drop in 2020, and in line with what was recorded during the period 2013-2018, which is around 3.5%. To sum up, while it is clear that 2020 led to a decrease in TEA and EBO in Luxembourg, the magnitude of this variation does not appear dramatic when compared with the unprecedented challenge brought about by the pandemic.

Figure 3.13: TEA and EBO in Luxembourg during 2013-2020 (% of adults 18-64)



Source: 2013-2020 GEM Luxembourg APS data. 95% confidence intervals reported.

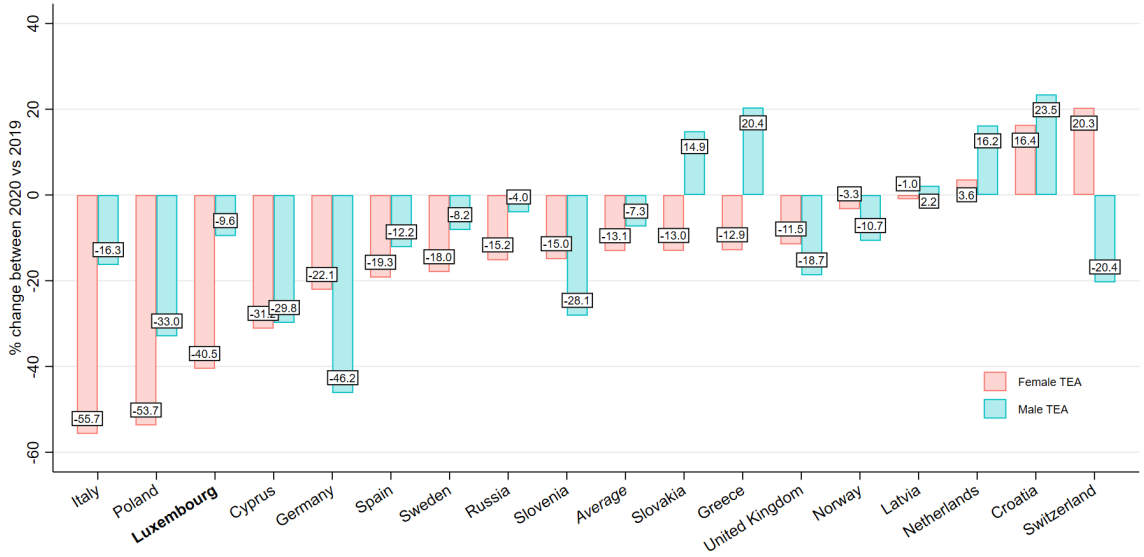
3.5 Differences across gender, income and education

As shown in previous sections, during 2020 we observed a decrease in both entrepreneurial entry and activities in a majority of European countries, including Luxembourg. Evidence is emerging that this general decline hid substantial heterogeneity across population's groups, with some categories hit harder than others by the pandemic. This section examines whether the decrease in TEA was particularly severe across observable characteristics of the population.

To this end, we start by considering the evolution of women engagement in TEA. In particular, we consider the percentage change between 2019 and 2020 in the share of women that are starting or running a new business. Figure 3.14 shows that there was a considerable reduction, averaging -13%. Conversely, the decrease in male TEA was less severe, reach-

ing 7% on average. Luxembourg, with a 40% reduction, is among those countries where women reported one of the highest disengagements from early-stage entrepreneurship. Past GEM reports documented that Luxembourg does feature a gender gap in entrepreneurship but that there is a higher involvement of women in entrepreneurship compared with other European economies (GEM, 2018b). Yet, in 2020 this gender gap widened in Luxembourg, with the rate of women involved in TEA reaching an all time low since 2013 (Peroni et al., 2020).

Figure 3.14: Changes in female and male TEA



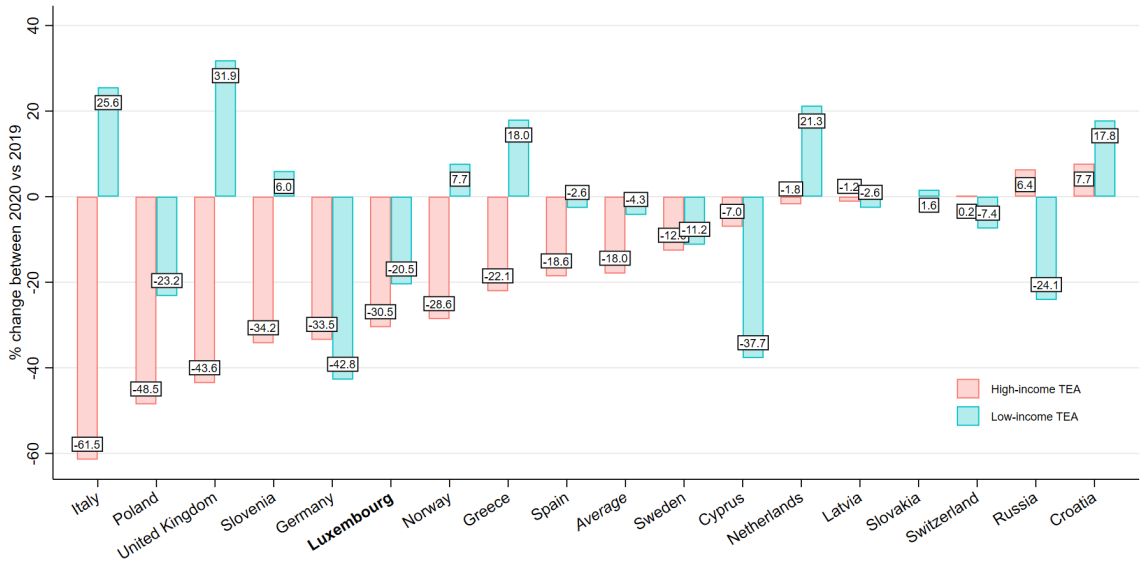
Notes: the figure plots the percentage change between 2019 and 2020 for female (male) individuals involved in TEA. Source: 2020 and 2019 GEM Global APS data.

This marked decrease in women TEA is not surprising in light of emerging evidence. Recent survey-based studies from several countries revealed that the pandemic affected female-led businesses differently from male-led ones (Facebook/OECD/World Bank, 2020). First, domestic responsibilities such as childcare and homeschooling have increased. As schools closed and many more children conducted their studies from home, this has disproportionately impacted women. [4] Second, women are more likely to work and own businesses in industries such as services and hospitality, where remote working and social distancing are more challenging. As a result, female-led businesses were more likely to be closed during lockdowns (Alon et al., 2020).[5]

[4] For instance, women are responsible for roughly 65% of unpaid care and domestic work in Luxembourg (OECD, 2019).

[5] A recent international survey (Facebook/OECD/World Bank, 2020) has shown that during the pandemic female-led SMEs were six percentage points more likely to close compared to male-led SMEs in European countries. Other studies confirm the higher impact on women entrepreneurs: for instance, female self-employed in Germany were 35% more likely to incur in revenue loss than man (Graeber et al., 2021). Research based on the US documents a decrease in employment and hours worked for self-employed, especially if women and married (Pabilonia, 2021). This evidence suggests that married mothers have been forced out of the labor force to care for children. In light of the differential impact of the pandemic on women-owned businesses, policy-makers have implemented targeted schemes although examples remain limited. For instance, in Ireland the Women in Business 2020 Action Plan aims to understand the risks faced by female entrepreneurs after the pandemic and identify priority policy areas. In Canada, around 12 million dollars have been allocated to the Women Entrepreneurship Strategy Fund, which provides a

Figure 3.15: Changes in high-income and low-income TEA



Notes: the figure plots the percentage change between 2019 and 2020 for high-income (low-income) individuals involved in TEA. High-income individuals are those pertaining to the top 33% of the income distribution, while low-income individuals belong to the bottom 66%. Source: 2020 and 2019 GEM Global APS data. Data are not available for Slovakia.

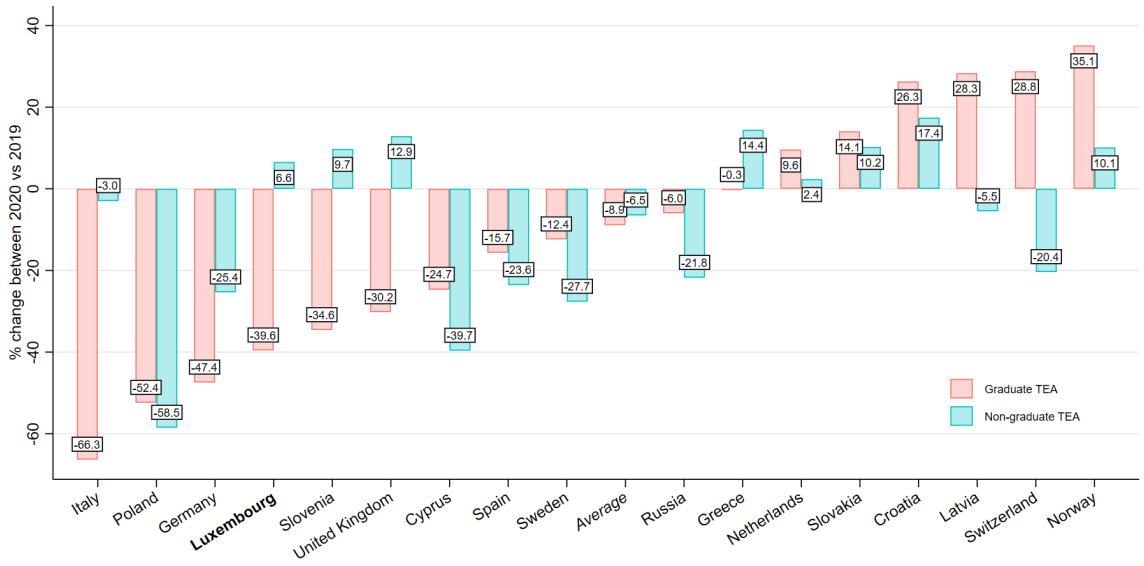
Household income might have also influenced individuals' entrepreneurial behavior. For instance, entrepreneurs with higher household incomes might have had 'deeper pockets' to better weather difficult times when compared with others. Conversely, wealthier individuals might have had a wider set of possibilities and might have chosen to withdraw for entrepreneurship (at least temporarily) to pursue alternative roads[6]. In line with this, Figure 3.15 shows that adults belonging to the top 33% of the income distribution reduced their participation in TEA in many European countries (i.e. -18%). Conversely, the decline in TEA for individuals pertaining to the bottom 66% of the income distribution was less marked (-4.3%). The results document some degree of heterogeneity with several countries experiencing an increase in low-income TEA, plausibly due to a rise in necessity-driven entrepreneurship. Luxembourg experienced a larger drop in high-income TEA (i.e. -30.5%) if compared with low-income TEA (i.e. -20.5%).

Differences can also be expected across different levels of educational attainment. Figure 3.16 shows the percentage change between 2019 and 2020 in graduate and non-graduate TEA. Graduate TEA is the share of individuals with a post-secondary degree who are involved in TEA. Non-graduate TEA represents individuals engaged in TEA with secondary degrees or lower. More educated individuals are generally more likely to start a business through improved skills and cognitive abilities (Block et al., 2013). As a result, TEA is usually higher among graduates and this has been true for Luxembourg as well (Peroni et al., 2020). During the last year, however, TEA declined for people with both low and high

range of support services to women entrepreneurs to strengthen their capacity to manage risks caused by the pandemic (OECD, 2021a).

[6]Wealthier individuals may differ in their labor market choices: for instance, empirical evidence suggests that they stay unemployed for longer periods of time Chetty (2008).

Figure 3.16: Changes in graduate and non-graduate TEA



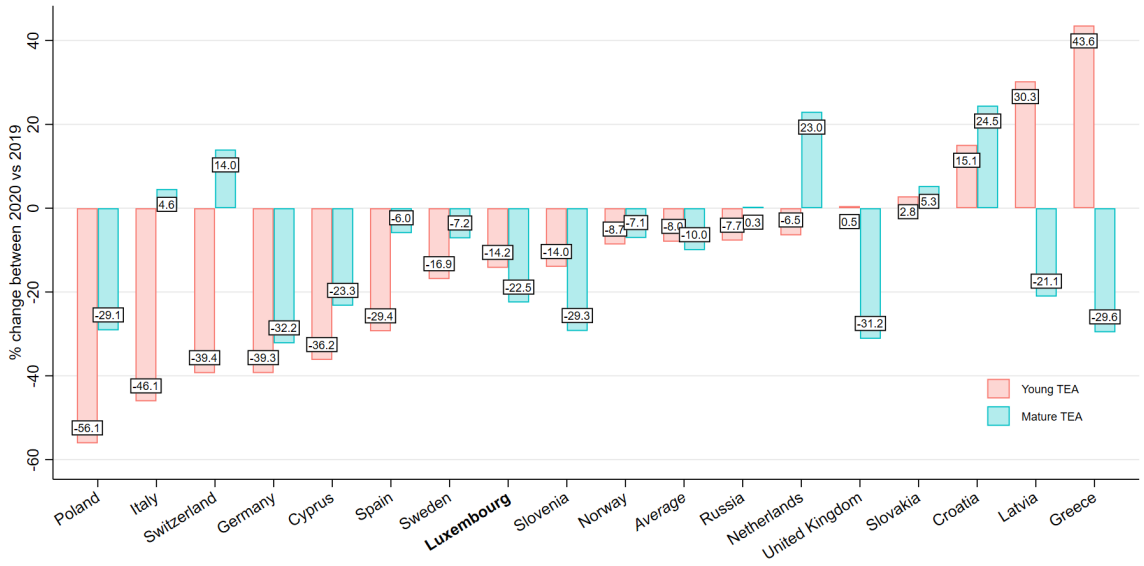
Notes: the figure plots the percentage change between 2019 and 2020 for graduate (non-graduate) individuals involved in TEA. Graduate individuals are those with post-secondary degrees, while non-graduate individuals are those with secondary degree or lower. Source: 2020 and 2019 GEM Global APS data.

educational attainment in several European countries. There is widespread heterogeneity though, with some economies experiencing a surge in graduate TEA (i.e. the Netherlands, Slovakia, Croatia, Latvia, Switzerland and Norway). Luxembourg exhibited a substantial decline in graduate TEA of about 40%, whereas the share of non-graduates increased by roughly 10%. This suggests that people with higher education might have had alternatives opportunities to pursue, and chose to do so during difficult times. At the same time, those that had lower education did not have these opportunities and might have been induced to persist in their entrepreneurial endeavors or "forced" to become entrepreneurs due to the lack of paid employment opportunities during a crisis.

Variations in entrepreneurial engagement across age profiles were less clear-cut, with a substantial degree of heterogeneity across Europe. Figure 3.17 shows the percentage change between 2019 and 2020 in terms of young and mature TEA. Young TEA is the share of individuals 34 or younger who engage in TEA. Mature TEA are individuals engaged in TEA older than 34 years old. On average, both categories decreased their participation in early-stage entrepreneurship. In Luxembourg this decline was somewhat larger for individuals aged 34 or older.

To sum up, GEM data document a decrease in entrepreneurial activity across the board, although the drop was not homogeneous for all entrepreneurs. The decline in TEA appears particularly stronger for women than men, which could be attributed to increased domestic responsibilities, and/or to the type of entrepreneurial activities which were more likely to be affected during the lockdown.

Figure 3.17: Change in young and mature TEA



Notes: the figure plots the percentage change between 2019 and 2020 for young (mature) individuals involved in TEA. Young individuals are younger than 35, while mature individuals are 35 or older. Source: 2020 and 2019 GEM Global APS data.

3.6 Entrepreneurial motivations

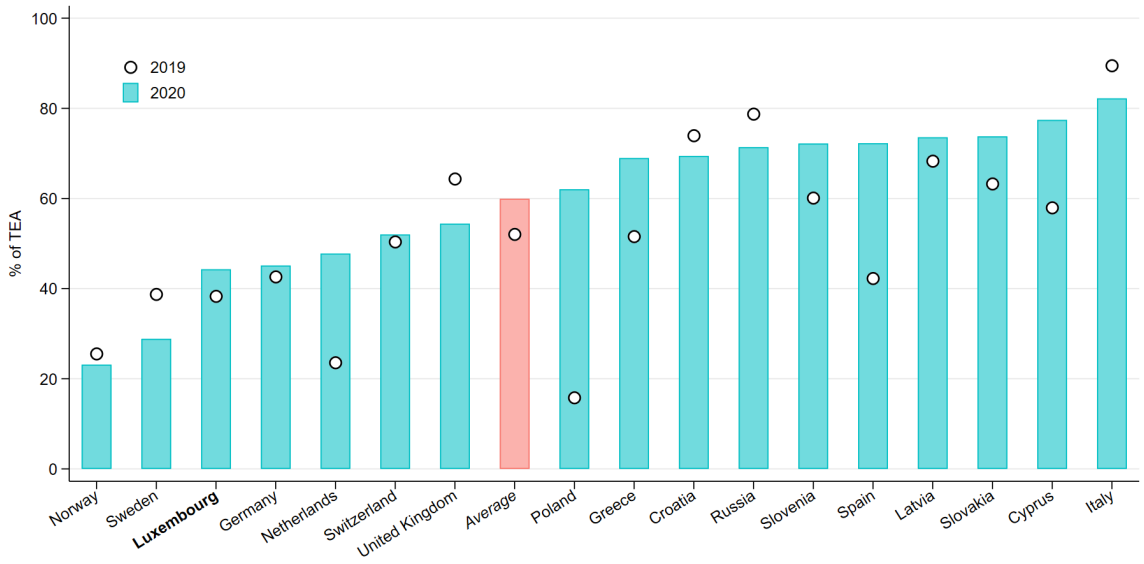
In the previous section we documented that the reduction in entrepreneurial activities was not homogeneous across the population. This points to the possibility that, as a consequence of the pandemic, the rate of entrepreneurship was not only quantitatively lower, but also accompanied by changes in its composition. To investigate this issue, it is worth to explore the distinction between opportunity-driven versus necessity-driven entrepreneurship. The former refers to people engaging in entrepreneurial activity due to the emergence of an opportunity, or a business idea, whereas the latter refers to individuals that are "forced" to choose entrepreneurship because of the inability to find paid employment (Fairlie and Fossen, 2019).[7] Hence, the distinction opportunity vs. necessity helps us capturing differences in the composition of entrepreneurship, namely, between entrepreneurs with high vs low growth prospects.

To investigate this, the GEM APS asked those individuals starting or running a new business whether they started this activity to make a difference in the world (i.e. opportunity-driven entrepreneurs), or because there were fewer job opportunities (i.e. necessity-driven entrepreneurs).

Figure 3.18 shows the percentage of those starting or running a new business who agree that their motivation is "to earn a living because jobs are scarse" during 2019 and 2020. This percentage rose in 2020 in almost all European countries surveyed by GEM, which

[7] Note that economic downturns are usually characterized by an increase in necessity-driven entrepreneurship due to lack of paid employment opportunities (Fairlie and Fossen, 2019).

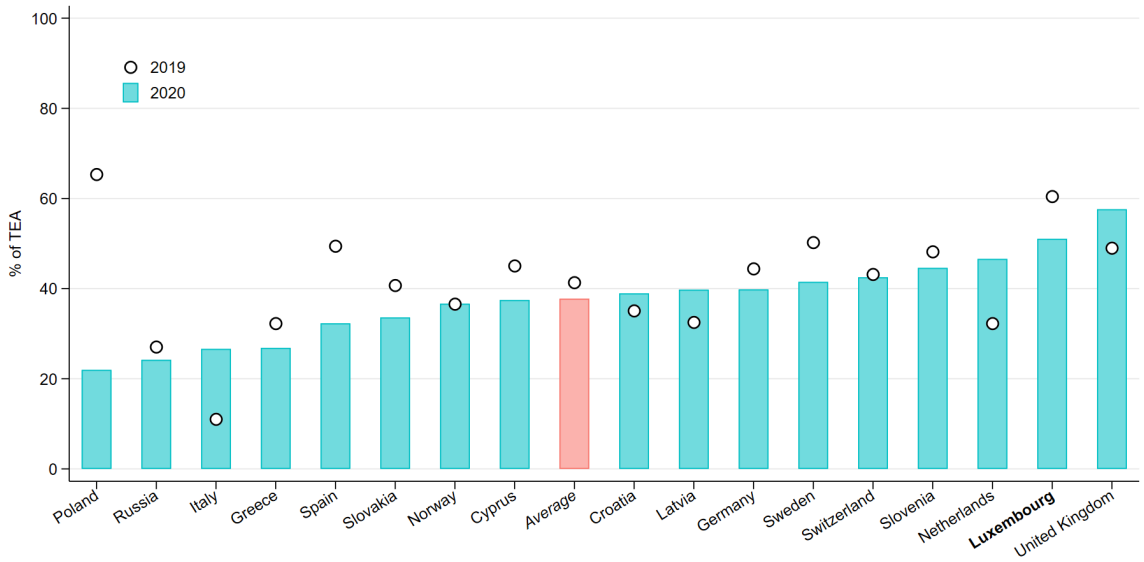
Figure 3.18: Motivation is "to earn a living because jobs are scarse" (% of TEA)



Source: 2020 and 2019 GEM Global APS data.

reflects in a higher average value (from 52% in 2019, to 60% in 2020). Necessity-driven entrepreneurship increased in Luxembourg as well, moving from 38% to 44%. However, the year-on-year difference was almost negligible, in line with other economies such as Switzerland and Germany, but in stark contrast with others experiencing over a 50% increase (i.e. the Netherlands and Poland).

Figure 3.19: Motivation is "to make a difference in the world" (% of TEA)



Source: 2020 and 2019 GEM Global APS data.

Conversely, average opportunity-driven entrepreneurship did not experience substantial changes during 2020. On average this share went from 41% to 38%. Almost all countries saw either a decline or a stable share of individuals setting up a firm to make a difference in the world in 2020 (Figure 3.19). Luxembourg, which generally features very high levels of

opportunity-driven entrepreneurship in cross-country comparison, saw a decline that was slightly more pronounced than other economies (from 60.5% to 51%). Notwithstanding these changes, Luxembourg still features a very high share of opportunity-driven entrepreneurship (50% against an average of 38%) and one of the lowest shares of necessity-driven entrepreneurship (42% against an average of 60%).

Overall, the data confirm the patterns observed during downturns, with necessity-driven entrepreneurship growing (Bosma and Levie, 2010). This suggests that the pandemic might have led to a deterioration in entrepreneurial activity not only in terms of its volume, but also in terms of its composition. As previously argued for other indicators, it will be important to monitor whether the changes observed during 2020 are transitory or more persistent. The latter being less desirable as opportunity-driven entrepreneurship is typically associated with the creation of businesses with higher growth ambitions which make a substantial contribution to job creation and economic development (Schoar, 2010).

3.7 Growth expectations and new opportunities

The outbreak of the pandemic represents a threat to entrepreneurship, not only because it makes starting and running a business more difficult, but also because it negatively affects future growth prospects for both new and established businesses. Indeed, prior research has found that economic downturns generally hamper the growth of young and small entrepreneurial firms (Fort et al., 2013; Bartz and Winkler, 2016).[8] Crisis, however, might also represent a force of "creative destruction", from which innovation and business opportunities emerge.

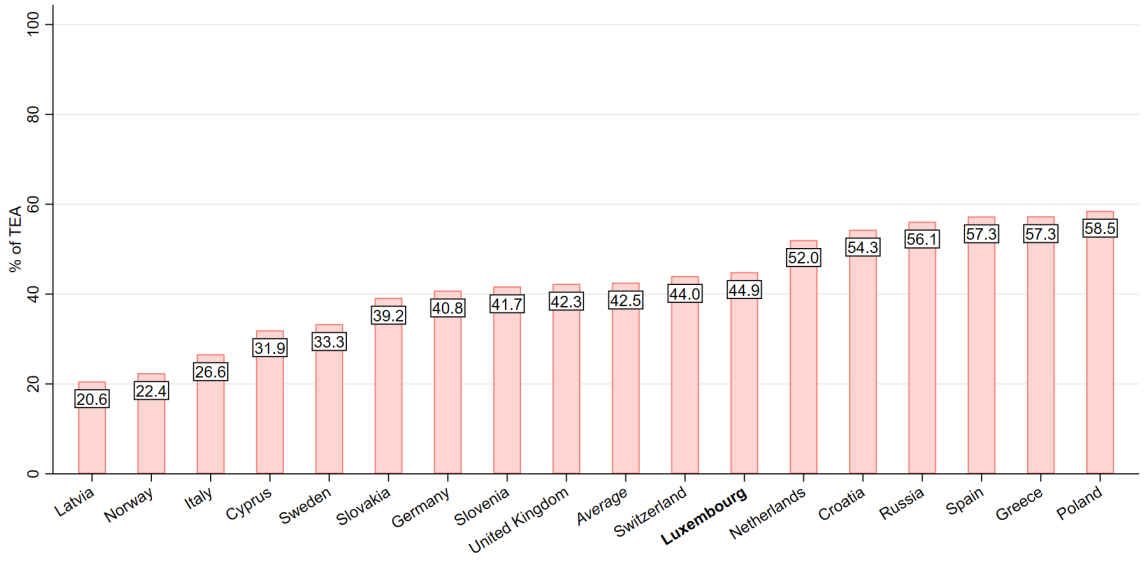
To examine the effects of COVID-19 on entrepreneurs' expectations, the 2020 GEM APS survey asked entrepreneurs whether their expectations on future business growth changed compared to 2019. Figures 3.20 and 3.21 report results for, respectively, respondents starting and running a new business (TEA) and established business owners (EBO), revealing that a considerable proportion of entrepreneurs lowered their growth expectations during 2020.[9] Across European countries, the average share was somewhat higher for EBO (i.e. 50%) than for TEA (i.e. 43%). A possible explanation for this difference is that individuals that recently engaged in entrepreneurship might be more optimistic about the future than established business owners (Bosma et al., 2020b). In Luxembourg, the share of TEA entrepreneurs reporting lower growth expectations was very similar to the European aver-

[8] Recent research for Belgium confirms that during the pandemic young business growth was more severely affected than that of older firms (Konings and Yergabulova, 2021).

[9] This finding is in line with survey evidence indicating that 70-80% of SMEs in most countries experienced a substantial drop in revenues since the onset of the pandemic (Facebook/OECD/World Bank, 2020). A recent work by Fernández-Cerezo et al. (2021) shows how the uncertainty generated by the pandemic represents a key hindrance to firm recovery. Using firm-level data for Spain, they show that the announcement of the the Pfizer vaccine on November 9th 2020 has increased significantly firms' subjective recovery expectations.

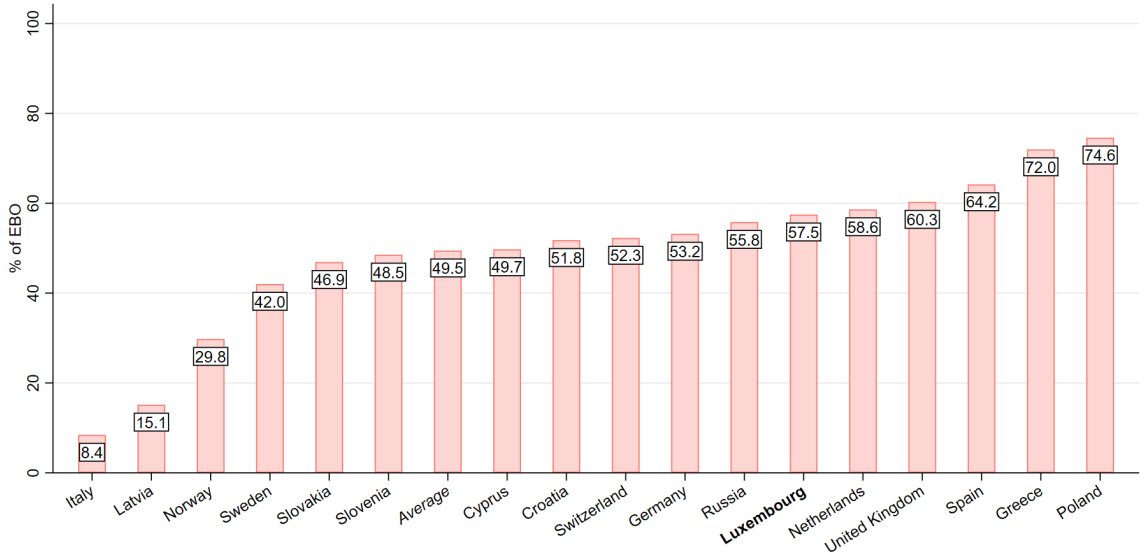
age. Conversely, the share of EBOs reporting lower growth expectations was higher than the European average.

Figure 3.20: Growth expectations are lower than one year ago (% of TEA)



Source: 2020 GEM Global APS data.

Figure 3.21: Growth expectations are lower than one year ago (% of EBO)



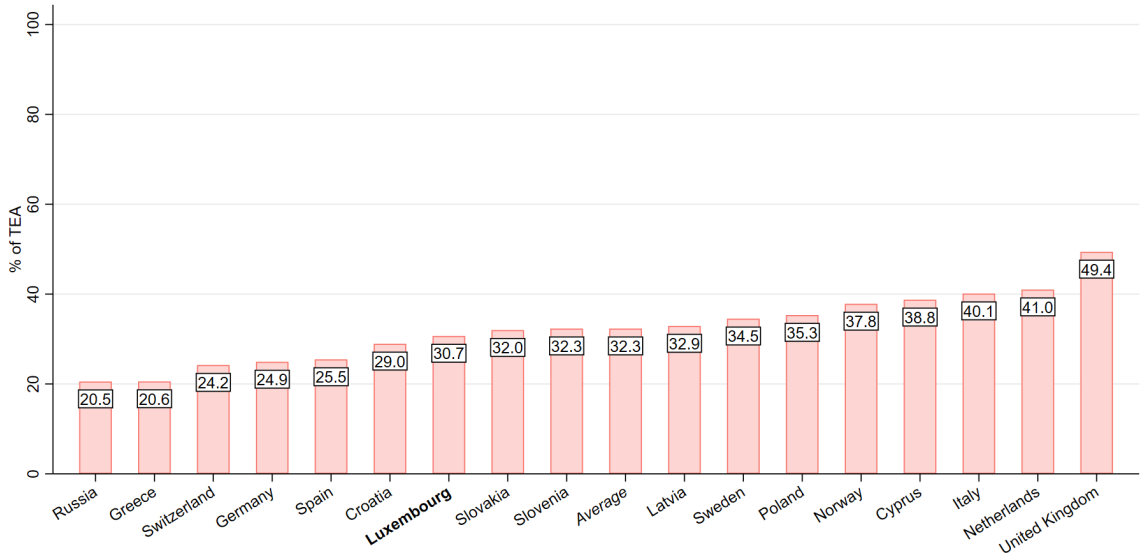
Source: 2020 GEM Global APS data.

Despite worsened economic conditions, recessions are also regarded as times of "creative destruction" characterized by the emergence of successful entrepreneurs and innovative start-ups. Disney, Microsoft, Oracle, Hewlett-Packard, and, more recently, Airbnb, Dropbox, Pinterest, Uber, and WhatsApp, were all founded during economic downturns. An additional example is Alibaba's Taobao founded during the SARS pandemic in China. While representing a considerable challenge, the COVID-19 crisis also provides new opportunities for entrepreneurs (Li-Ying and Nell, 2020). In the short-term, the crisis has given entrepreneurs the opportunities to introduce radical innovations in tele-medicine, remote personal

care, home delivery, food processing, teleworking, online education, and contact tracing (OECD, 2020b). In the long-term, the COVID-19 outbreak may provide valuable opportunities for those entrepreneurs that are able to anticipate permanent changes involving, for example, demand for remote working, e-commerce, education and health services.

In this regard, the GEM APS asked individuals engaging in TEA whether the coronavirus pandemic has provided new business opportunities they intend to pursue. EBOs were asked whether the coronavirus pandemic provided new business opportunities that they are currently pursuing.

Figure 3.22: New opportunities thanks to the pandemic (% of TEA)



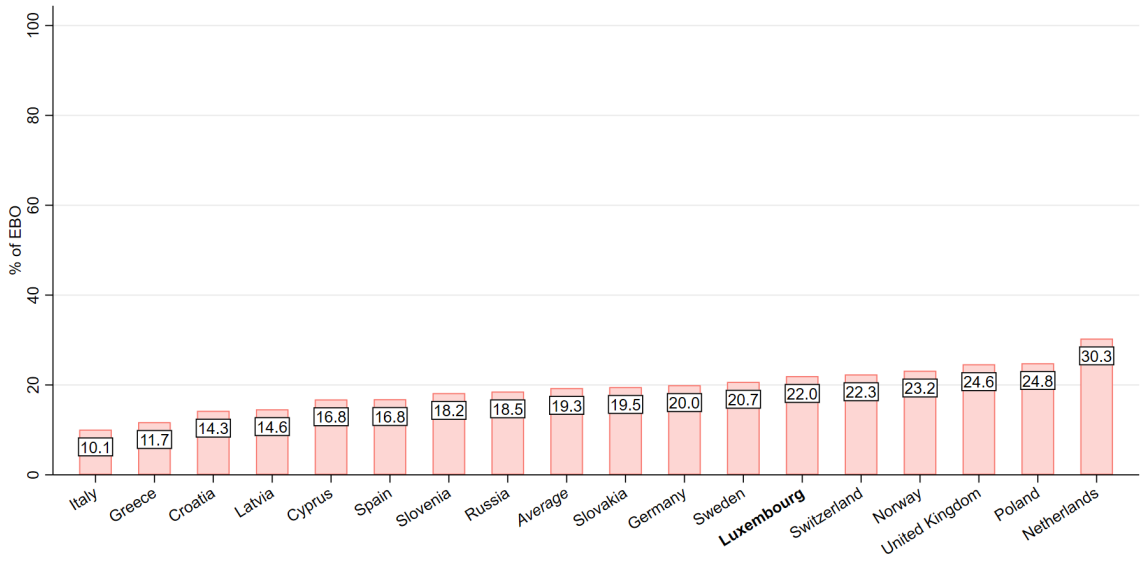
Source: 2020 GEM Global APS data.

Figures 3.22 and 3.23 present results for these questions for, respectively, TEA and EBOs. On average, around one third of adults engaged in TEA agreed that the pandemic provided new opportunities to pursue. This supports the view that the current crisis represents a challenge but also an opportunity, at least potentially.[10] The figures for Luxembourg are very much in line with those reported for European countries on average.

Similar to what observed for growth expectations, the share of EBO perceiving new opportunities to pursue thanks to the pandemic is lower if compared with TEA. One possible reason is that early-stage entrepreneurs might be more alert to new opportunities. Additionally, they might be more flexible, innovative and thus better equipped to take up the challenges brought about by the pandemic as opposed to more mature businesses which have more consolidated practices and might struggle to adapt to the new economic scenario. Another

[10] Start-ups can be instrumental to combat the challenges presented by the economic, health and societal effects linked to the pandemic. For instance, the European Innovation Council of the European Commission has created a specific R&D grant call for start-ups with technologies related to treating, testing, monitoring or other aspects of the COVID-19 outbreak. In Luxembourg, the government has implemented specific measures to leverage start-ups' talent and innovative capabilities such as the Startup vs COVID-19 or Hack the Crisis (e.g. see `https://www.startupluxembourg.com/support-measures-startups`).

Figure 3.23: New opportunities thanks to the pandemic (% of EBO)



Source: 2020 GEM Global APS data.

reason could be that established business owners, in light of their past experience, have a more prudent view as opposed to early-stage entrepreneurs who might be inclined to be more optimistic about the future (Bosma et al., 2020b).

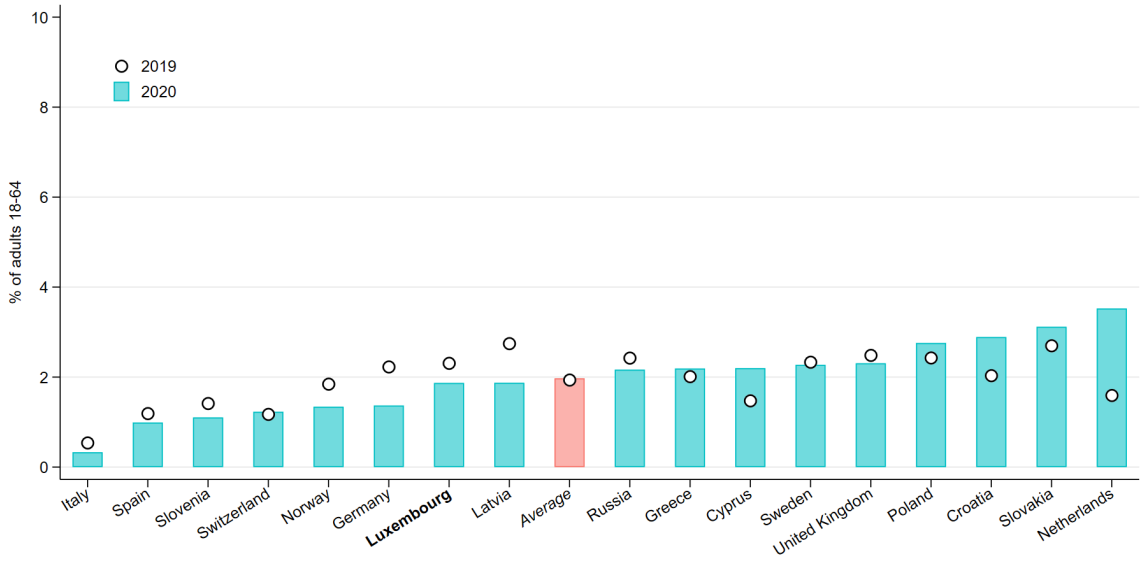
3.8 Entrepreneurial exit

The pandemic outbreak and the subsequent lockdowns have represented a substantial challenge for entrepreneurs. At the same time, differently from past economic downturns, government interventions has been rapid and unprecedented. It has allowed firms to access resources to stay afloat and avoid bankruptcy. In this section we examine the recent evolution in terms of business exits.

The GEM APS asked all respondents if they have discontinued or quit a business they owned and managed in the last 12 months. The results are plotted in Figure 3.24 and show some degree of heterogeneity. Out of the 17 European countries considered, 11 reported a stable or decreased share of discontinued businesses in 2020 with respect to 2019. Luxembourg saw a small decrease in the share of discontinued businesses in line with the other countries. This small drop does not reflect a reduction in the number of distressed firms. Rather, this is plausibly the result of the rapid governments interventions which, in many advanced economies, have financed job support programs to assist workers and to temporarily halt bankruptcy procedures – providing lifelines to keep firms alive through the crisis, at a time when premature bankruptcy could have worsened the recession (Muro, 2020). The

implementation of these interventions avoided a surge in business closures due to the severe contraction of economic activity during the first half of 2020 (Demmou et al., 2021).[11]

Figure 3.24: Share of adults discontinuing a business in the last 12 months (% of adults 18-64)



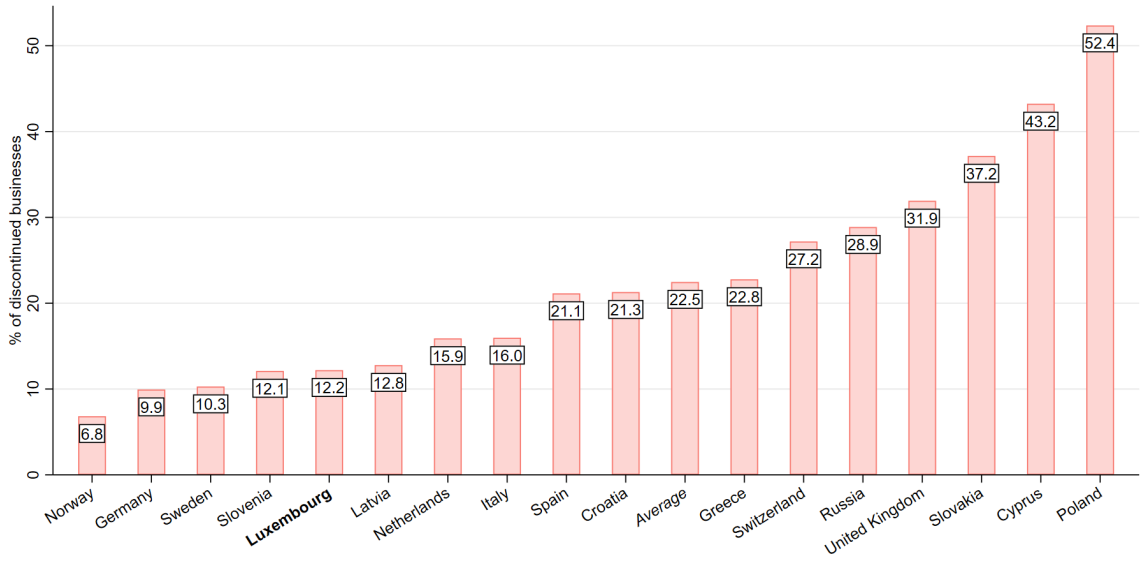
Source: 2020 and 2019 GEM Global APS data.

In order to better understand the impact of the pandemic on closures, the GEM APS asked those respondents who discontinued a business if this was due to the COVID-19 crisis. On average, around one fourth of all individuals who decided to halt their entrepreneurial engagement reported that the main reason was the pandemic (see Figure 3.25). As for other indicators, the results reveal a considerable heterogeneity across countries, going from the 6.8% reported in Norway to the 52% observed for Poland. For what concerns Luxembourg, the coronavirus did not appear as a central determinant of business closures, as this share was among the lowest within the European economies considered here (i.e. 12%).

In sum, the results reported in this section indicate that the first wave of the pandemic had limited impact in terms of business closures in Luxembourg, at least according to GEM data referring to mid-2020. It will be important to keep track of future developments in this regard, as a surge in business closures and bankruptcies might materialize during 2021 or later, as government support decreases, which may endanger entrepreneurial ventures that were previously able to survive.

[11] Gourinchas et al. (2020) using data from seventeen countries estimate that, absent government support, the failure rate of SMEs would have increased by 9.1 percentage points, representing 4.6 percent of private sector employment. According to Ebeke et al. (2021), the absence of a surge in business exits during 2020 might also be linked to the fact that businesses in advanced economies entered the COVID-19 pandemic in a much better shape in terms of corporate profitability, levels of indebtedness, and presence of initial cash buffers as compared to the Great Recession, when business exits spiked. Moreover, the closure of courts during the lockdowns and change in bankruptcy laws might also have played an important role in keeping bankruptcies low – at least for the time being (Fareed and Overvest, 2021).

Figure 3.25: Business discontinued due to the pandemic (% of those who discontinued a business)



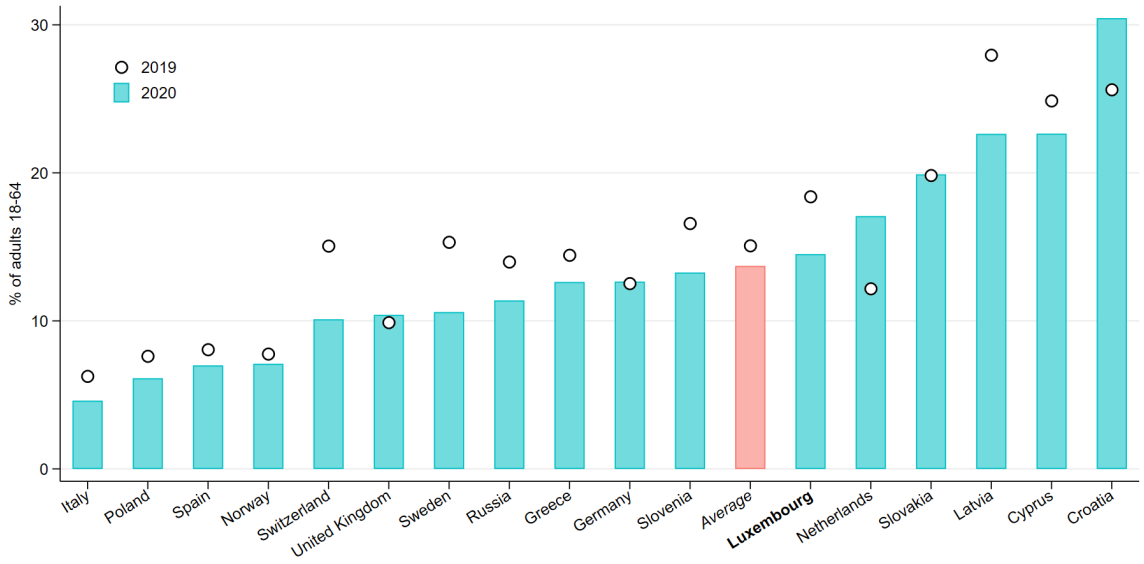
Source: 2020 GEM Global APS data.

3.9 Future entrepreneurial intentions

An important concern, one with potentially vast economic consequences, is the possibility that the COVID-19 crisis leads to a missing generation of entrepreneurs, that is, those that would have started a business if the pandemic had not happened. A missing generation of new firms has significant implications for economic outcomes. According to Sedlacek and Sterk (2020), the decline in the number of start-ups observed during the pandemic could result in more than 1,5 million job losses in the US. Similarly, the OECD (2020b) argues that a reduced number of start-ups has long-term implications in terms of aggregate employment. In particular, a 20% drop in the number of start-ups leads to an employment decline of 0.7% of aggregate employment 3 years after the shock, and still of 0.5% 14 years after.

Entrepreneurial intentions might be a useful ex-ante indicator of the relevance of the 'missing generation of firms', the firms that would have been established without COVID-19. On this, GEM asked respondents whether they intend to start a business during the next three years. Figure 3.26 displays the share of individuals with future entrepreneurial intentions in 2019 and 2020. In 2020, this share has dropped for all countries except the UK, the Netherlands and Croatia. This suggests that the current crisis dramatically increased uncertainty and, through this channel, has the potential to negatively impact entrepreneurship. The share of adults declaring future entrepreneurial intentions fell in Luxembourg, decreasing from 19% in 2019 to 15% in 2020. This is similar to what experienced by other European countries such as Switzerland, Sweden, and Slovenia.

Figure 3.26: Expecting to start a new business in the next three years (% of adults 18-64)



Source: 2020 and 2019 GEM Global APS data.

Whether those lessened entrepreneurial intentions will result in a reduced amount of entrepreneurs is a very important issue, with potentially severe consequences for aggregate economic outcomes (Sedlacek and Sterk, 2020; Benedetti Fasil et al., 2020). Hence, this aspect deserves further analysis and monitoring in future GEM data.

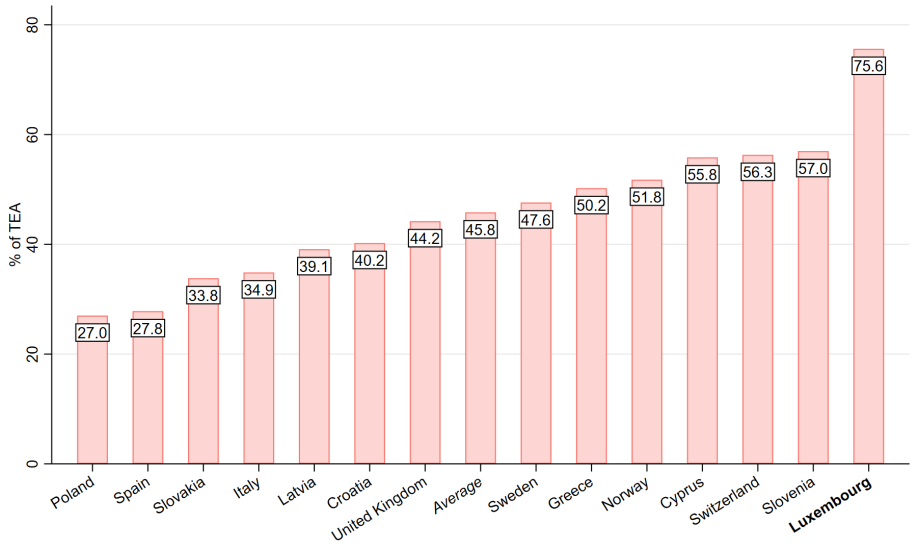
3.10 Governments' response to the pandemic

Governments across the globe responded quickly to mitigate the unprecedented challenges for entrepreneurs and small businesses facing the pandemic, through a wide range of stimulus and support measures. These measures were initially focused on emergency liquidity support in various forms and on safeguarding employment, but were gradually accompanied by more structural and broader recovery packages (OECD, 2021a).

In Luxembourg, the government's response included measures to help firms securing the necessary financial means to address cash shortages and prevent insolvency. Policy measures also addressed the difficulties of younger and smaller firms with interventions aimed at supporting innovative start-ups with extraordinary provisions. Additional programs were tailored to innovative business developing solutions against the COVID-19 pandemic through R&D grants.[12]

[12] A comprehensive list of measures adopted in Luxembourg to help startu-ps navigate the COVID-19 pandemic is available here: `https://www.cc.lu/en/covid19/business-support/complete-list/`. The government also set up schemes to alleviate the liquidity situation of businesses and self-employed individuals. Additionally, it expanded the short-time working scheme ("chômage partiel") to all companies affected by the crisis and facilitated extraordinary leave for those parents having to look after their children, due to school closures. A list of initial policy measures adopted in Luxembourg and other OECD countries to help businesses in response to the pandemic is available here : `https://www.oecd.org/coronavirus/policy-responses/coronavirus-covid-19-sme-policy-responses-04440101/#section-d1e18288`.

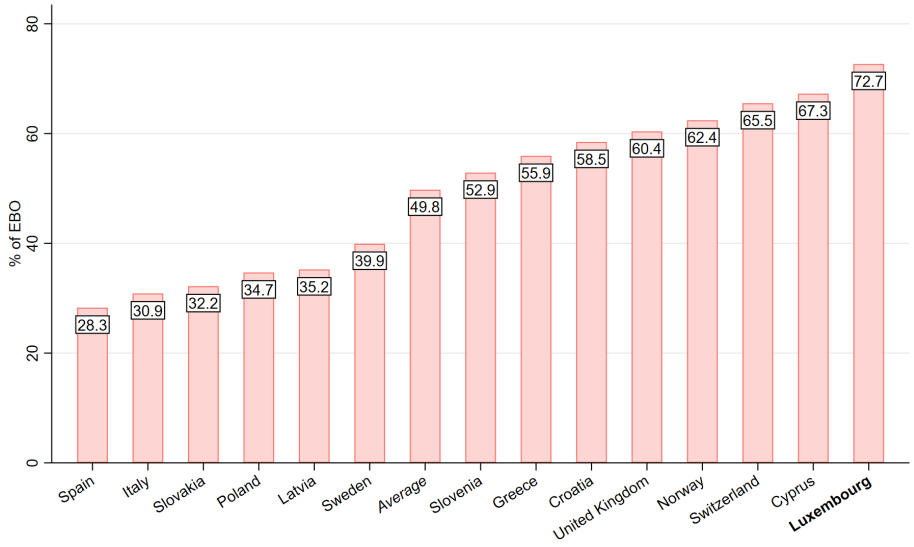
Figure 3.27: Government response to the economic consequences of the pandemic (% of TEA)



Source: 2020 GEM Global APS data. Data for Russia, Germany and Netherlands are not available.

While we do not have data concerning the appreciation of each measure, GEM asked entrepreneurs whether the government effectively responded to the economic consequences of the coronavirus. Data indicate an overall positive appreciation of government efforts in tackling the pandemic, with around 76% of early-stage entrepreneurs agreeing that the response was indeed satisfactory (Figure 3.27). A similar appreciation was reported by established business owners (Figure 3.28). Note that respondents were interviewed during June and July 2020, so the figures refer to the measures implemented by the government during the first wave of the pandemic.

Figure 3.28: Government response to the economic consequences of the pandemic (% of EBO)



Source: 2020 GEM Global APS data. Data for Russia, Germany and Netherlands are not available.

3.11 Entrepreneurial framework conditions

The GEM research project has traditionally emphasized the importance of the social, cultural and economic context for entrepreneurs to thrive. This section focuses on this aspect and provides an assessment of the environment for entrepreneurship characterizing Luxembourg in a cross-country perspective. To that end, it leverages data collected through the National Expert Survey (NES) (see Chapter 2 for a more detailed description).

GEM assesses the national contexts in terms of Entrepreneurship Framework Conditions (EFCs), which comprise a set of factors that have been shown to be connected with a thriving entrepreneurship. These EFCs are outlined in Table 3.1. The GEM NES surveys at least 36 national experts (four per EFC) for each economy. Each expert completes the NES questionnaire, which includes an assessment of the extent to which the statements about the EFCs are - on an 11-point Likert scale - completely untrue (0) to completely true (10). These pooled expert assessments are then converted into an overall score for each EFC. This provides 12 scores which evaluate the sufficiency of each framework condition for each economy, with a score of five representing "just sufficient". It is important however to stress that this assessment of sufficiency is itself set in a national context and that cross-country comparison, albeit useful, might be performed with caution. National experts in a given economy may have different views of sufficiency from national experts in a different country.

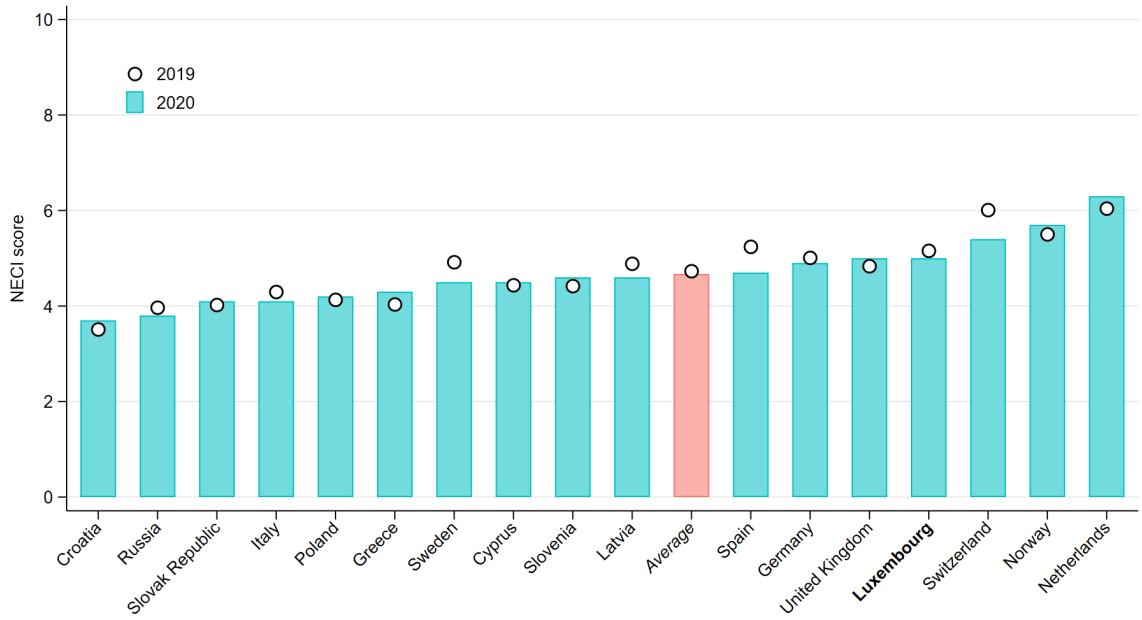
Table 3.1: GEM's entrepreneurship context: Entrepreneurial Framework Conditions (EFCs)

1.	**Access to entrepreneurial finance** Sufficient funds are available to new start-ups, from informal investment and bank loans to government grants and venture capital
2.1	**Government policy: support and relevance** Government policies promote entrepreneurship and support those starting a new business venture
2.2	**Government policy: taxes and bureaucracy** Business taxes and fees are affordable for the new enterprise. Rules and regulations are easy to manage, without undue burden on the new business.
3	**Government entrepreneurship programs** Quality support programs are available to the new entrepreneur at local, regional and national level
4.1	**Entrepreneurial education at school** School are introducing ideas of entrepreneurship and instilling students with entrepreneurial values such as enquiry, opportunity recognition and creativity
4.2	**Entrepreneurial education post-school** Colleges, universities and business schools offer effective courses in entrepreneurial subjects, alongside practical training in how to start a business
5.	**Research and development transfer** Research findings, including from universities and research centres, can readily be translated into commercial ventures
6.	**Commercial and professional infrastructure** There are sufficient affordable professional services such as lawyers and accountants to support the new venture, within a framework of property rights
7.1	**Ease of entry: market dynamics** There are free, open and growing markets where no large businesses control entry or prices
7.2	**Ease of entry: market burdens and regulations** Regulations facilitate, rather than restrict, entry
8.	**Physical infrastructure** Physical infrastructure (such as roads), Internet access and speed, the cost and availability of physical spaces is adequate and accessible to entrepreneurs
9	**Social and cultural norms** National culture encourages and celebrates entrepreneurship, including through the provision of role models and mentors, as well as social support for risk-taking

In 2018, the GEM introduced the National Entrepreneurship Context Index (NECI). This summarizes the average state of an economy's environment for entrepreneurship. The NECI score is the arithmetic mean of that economy's EFCs scores, hence, it is measured on a Likert scale from 0 to 10. Figure 3.30 reports the NECI scores for the 17 European countries considered here during the period 2019-2020. The NECI score reveals that only a small set of countries met the sufficient threshold of 5 points. These include Luxembourg along with the Netherlands, Norway, and Switzerland. This indicates the presence of some degree of heterogeneity in the quality of the environment for entrepreneurship, which is not necessarily determined by countries' levels of economic development. On average, the NECI scores did not reveal any substantial difference between 2019 and 2020, with very few countries exhibiting a clear drop (i.e. Spain, Switzerland).

We now delve into the different components of the EFCs and provide a comparison between Luxembourg and the European average. The areas in which Luxembourg performed better than the average are government entrepreneurship programs, R&D transfer, and taxes and bureaucracy. Conversely, the areas in which Luxembourg lagged behind are physical and services infrastructures, access to entrepreneurial finance, and ease of entry concerning market dynamics. Overall, the scores assigned by the national experts in Luxembourg did not vary substantially in 2020 compared to those given in the past (GEM, 2018b).

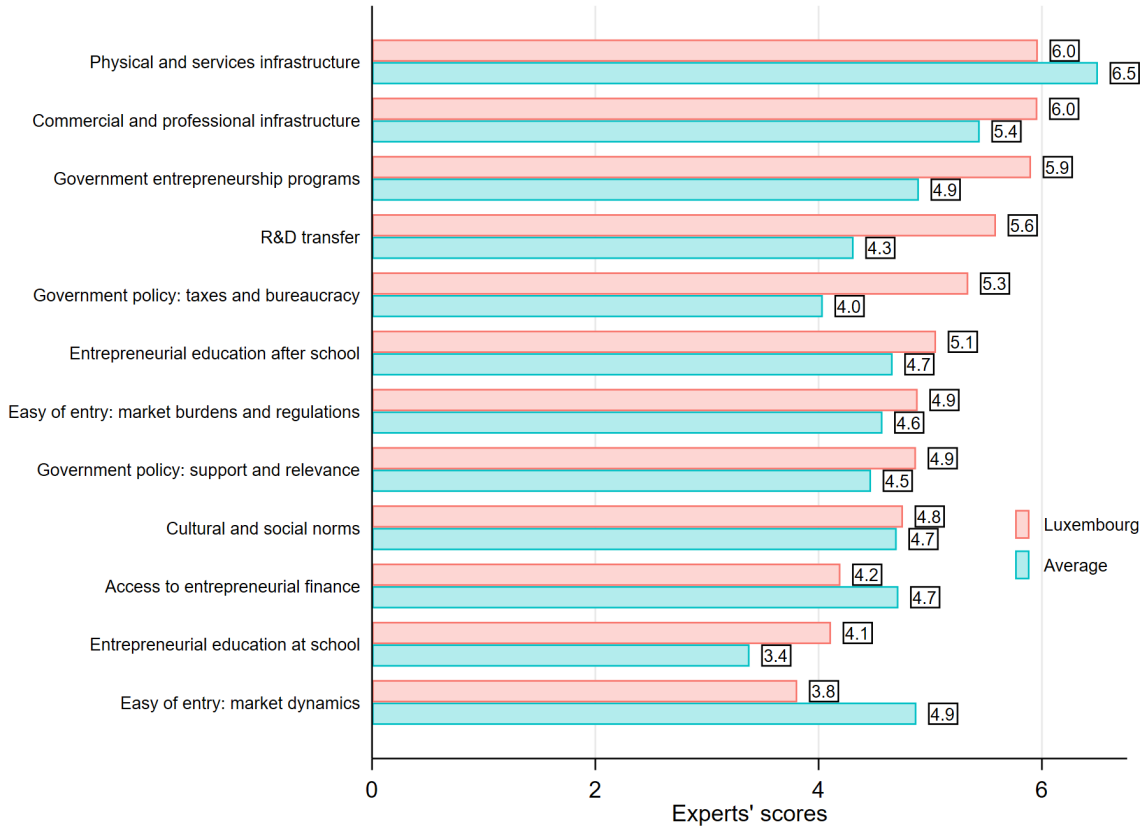
Figure 3.29: National Entrepreneurship Context Index



Source: 2020 and 2019 GEM Global NES data.

In response to the pandemic, the GEM introduced new questions in the NES aimed at understanding the national experts' assessment of the reaction of government and entrepreneurs to the economic effects of the pandemic.

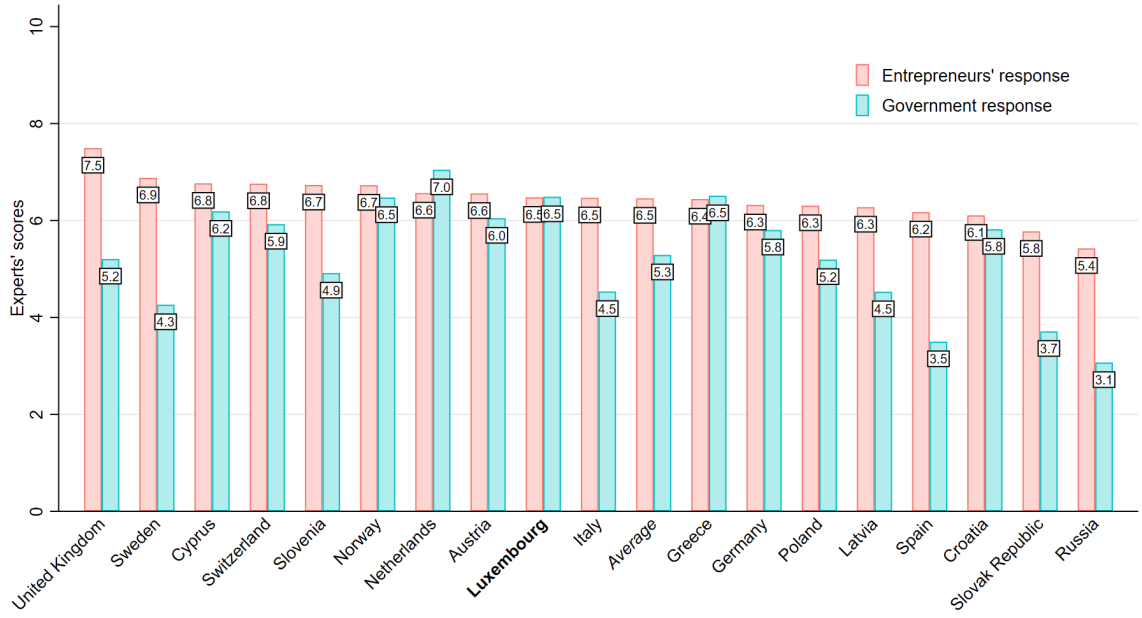
Figure 3.30: Experts' scores on Entrepreneurial Framework Conditions



Source: 2020 and 2019 GEM Global NES data.

In response to the pandemic, two new blocks of questions related to the pandemic were introduced in the NES in 2020. The new questions related to the entrepreneurial response in NES 2020 focused on whether entrepreneurs are, e.g. introducing new ways of doing business, promoting working from home, adjusting their products and services, or identifying new opportunities. The second block related to government responses to the consequences of the pandemic: whether they are effectively helping businesses to adjust, to avoid the loss of firms, protecting workers and customers, and whether governments are increasing digital delivery of regulations. According to national experts, entrepreneurs have on average responded more proactively than governments (6.5 vs 5.3).

Figure 3.31: Experts' assessment of responses to the pandemic



Source: 2020 GEM Global NES data.

4 Conclusion

Entrepreneurship plays a key role in fostering job creation and technological change, which indirectly contribute to aggregate productivity and economic growth. Every year, the Global Entrepreneurship Monitor (GEM) collects internationally comparable data to better understand the evolution, the characteristics, and the impact of entrepreneurial activities across countries. Based on survey data, the report gives an overview of entrepreneurship dynamics in Luxembourg by comparing it with that of other European countries participating to the GEM project. In light of the current COVID-19 crisis, the report has focused on portraying how entrepreneurs have responded to the pandemic in 2020.

The results contained in the report document a slowdown of entrepreneurial activities in the majority of European countries. This is not surprising as, during the first half of 2020, the lockdowns and containment policies hampered economic growth worldwide, resulting in disrupted supply-chains and inducing a contraction in aggregate demand. In Luxembourg, entrepreneurial activities have suffered in line with what observed in Europe. However, the implications on COVID-19 on entrepreneurship, and economic activity in general, are likely to be long-lasting and it still early to provide a complete depiction. It will be important to keep monitoring the response of entrepreneurs to understand whether any of the changes observed in 2020 are characterized by a temporary or permanent nature. As the economy slowly starts to emerge from the lockdown, a sustained increase in entrepreneurial activities may play a key role in fostering the recovery.

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