

Grow and Go?

Retaining Scale-ups in the Nordic Countries

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Scale-ups are small and medium-sized enterprises (SMEs) that grow by more than 72% within a three-year period. Scale-ups make important contributions to job creation and economic growth. This study uses granular firm, establishment and employee data to analyse the interplay of relocations, domestic expansions or foreign acquisitions with scale-ups' growth patterns before, during and after the scale-up phase. Around 95% of scale-ups remain in their "home" region over the 2014-20 period, reflecting the importance of owners' and managers' local business networks in driving growth. Instead of relocating, many scale-ups create new plants or branches in different regions to serve new customers, tap into new markets, or to gain access to new resources and capabilities. Scale-ups that relocate or expand continue to grow. However, relocations and expansions can be a challenge for talent retention, as they may lead existing employees to find other opportunities in new places. Foreign capital appears to be strongly intertwined with scaling up. Across the five Nordic countries, between 6% and 20% of scale-ups became foreign owned between 2014 and 2020, with investments taking place during the scaling-up period, rather than before or after, in the majority of cases.

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Reader's guide

Definitions and typologies

Key definitions	
Economic sectors	in which firms considered in this report are active cover the non-financial business economy. The non-financial business economy consists of the industrial sector, construction, distributive trades and services (NACE Rev.2 sections B to J and L to N and Division 95).
Firm	is the smallest combination of legal units that is an organisational unit producing goods or services, which benefits from a certain degree of autonomy in decision-making, especially for the allocation of its current resources. The report uses "firms" and "enterprises" interchangeably even though in the statistical definition the five Nordic countries collect data on enterprises. National accounts statistics define firms as entities that operate in one industry, and enterprises as firms or a combination of firms that engages in economic activities which are classified into multiple industries. In practice distinguishing between the two concepts is difficult and even official statistics often use the two terms interchangeably.
Establishments	are local production units that belong to the same legal entity as the enterprise but are physically separate from their headquarters.
Business group	is an association of firms bound together by legal and/or financial links
Scale-ups	are firms that satisfy two conditions: (i) a size of 10 or more employees, expressed in full time equivalent units (FTE), and an annual turnover of 2 or more million EUR three years before the year of observation; (ii) an average annualised growth in the number of employees (FTE) or in turnover in current prices greater than 20% over the three-year period preceding the year of observation (i.e., 73% over the three years). In this report, unless otherwise specified, "scale-ups" are companies that satisfy conditions i) and ii) at least once over the period 2011-20.
Comparable firms	are firms (i) that did not scale up and (ii) that had 10 or more employees and annual turnover of min. 2 million EUR at least once over the period of analysis (2011-20).
Ownership	is defined in terms of control. Control shall mean the ability to determine the general policy of a firm, for example by choosing appropriate directors, if necessary. Foreign ownership means that the ultimate controlling firm is resident in a different country from the one where the firm over which it has control is resident.
Relocation	happens in a year when a firm is observed in a new region for the first time. In most cases, this variable uses information about the OECD large (TL2) regions.
Expansion	happens in a year when a firm opens or acquires establishment(s) in a TL2 region in which the firm did not have any establishments in previous years.
Foreign acquisition	happens in a year when a firm changes its ultimate country of ownership from domestic to foreign.
Groups and classifications	
Size class	Firms are attributed to the following size classes based on their employment level: 10-49 employees, 50-99 employees, 100-249 employees, and 250+ employees.
Age class	Firms are classified as young (0-5 years of activity), middle-age (6-10), or mature (11+ years of activity).
Sector group	Firms belong to one of the following activity groups: (i) low-tech and medium-low-technology manufacturing and extractive industries; (ii) medium-high and high-technology manufacturing; (iii) construction; (iv) ICT and professional services; (v) other services and utilities. The composition of each sector group is described in Annex B.
Territorial-level classification	The OECD large (TL2) regions typically represent the first administrative tier of subnational government. The OECD small (TL3) regions correspond to administrative regions, with the exception of Australia, Canada, Latvia and the United States. TL3 regions are contained in a TL2 region, with the exception of the United States. For Costa Rica, Israel and New Zealand, TL3 level is equivalent to TL2. All the regions are defined within national borders.

Source: Eurostat/OECD (2007^[1]), Eurostat-OECD Manual on Business Demography Statistics, <https://www.oecd.org/sdd/39974460.pdf>; OECD (2017^[2]), *The Geography of Firm Dynamics: Measuring Business Demography for Regional Development*, <https://dx.doi.org/10.1787/9789264286764-en>; Nordic Council (2021^[3]), *Scale-ups in the Nordics 2020*, <https://www.nordicinnovation.org/2022/scale-ups-nordics-2020>; OECD (2023^[4]), Territorial Grids, https://stats.oecd.org/index.aspx?DataSetCode=REGION_DEMOGR

Executive summary

Scale-ups are firms with 10 or more employees and at least EUR 2 million in turnover that grow by more than 72% over three years in employment, turnover or both. They are central for job creation and economic growth. This definition of “scale-ups” is commonly used in international studies to identify the small group of firms that contribute most new jobs. In Denmark, Finland, Iceland, Norway and Sweden, the five Nordic countries covered in this report, about 5 600 scale-ups created almost 200 000 additional jobs between 2017 and 2020, in line with the contribution of previous cohorts of scalers in the same decade. As a reference, the net employment variation in the five countries over the same period was equal to around 227 000 jobs.

The majority of scale-ups resemble the most common type of firm. They are small and medium-sized enterprises (SMEs) that have operated for 10 or more years and provide less knowledge-intensive services. Evidence from other OECD countries suggests that the majority of scale-ups consolidate the new scale after growing.

This report uses granular firm, establishment and employee data to understand how relocations, domestic expansions or foreign acquisitions impact the life cycle of scale-ups. The analysis relies on detailed firm- and establishment-level data to understand how these three types of events impact the life cycle of scale-ups operating in different sectors, of different age, initial size or those based in different locations. Employee-level data allows an assessment of the association of relocation, expansion and foreign acquisition with positive or negative outcomes for the affected workers. To track the development of scale-ups before, during and after their high-growth phase, all cohorts of scale-ups that started growing from 2011 until 2017 are included in the analysis. Interviews with Nordic entrepreneurs complement the findings from the quantitative analysis on important aspects that are difficult to measure, such as the personal network of the entrepreneurs.

Around 95% of scale-ups remain in their “home” region over the 2014-20 period. The majority of scale-ups choose to retain activity in the region where they are incorporated, reflecting several factors. These include the potential loss of skilled workers, the investment in immovable capital assets, and the cost associated with identifying suitable new locations. Interviews with scale-up entrepreneurs also point to the importance of their personal local business networks in driving growth. Scale-ups typically rely on direct contacts with local partners, including research centres, funders, customers, and suppliers. Relocating may weaken these networks, which could have a detrimental impact on the firm's growth, even if the relocation may be efficient from a pure cost of production perspective.

Instead of relocating, many scale-ups create new plants or branches in different regions to serve new customers, tap into new markets, or to gain access to new resources and capabilities. Expansions to new regions by opening new plants or branches are four times as frequent as complete relocations. Data for Denmark, Finland and Sweden show that around 17% of scale-ups expand to new regions over the 2014-20 period. Scale-ups are at least twice as likely as comparable firms to expand.

Expansions and relocations help increase the proximity to customers for companies providing non-tradable services. Expansions and relocations are twice as likely among scale-ups in service sectors than among medium-high and high-tech manufacturers. Manufacturing goods can be typically transported at a fraction of the cost of production, thus, “supply-side” factors, such as labour cost or access to transport infrastructure, are more important for the location and relocation decisions of manufacturers whereas local markets for their services or the access to skilled workers are more important in service sectors.

Regions closer to capital-city regions are more likely to be the destination of a relocation. The capital-city region is the main urban agglomeration in all Nordic countries. Scale-ups face a trade-off between higher labour productivity and higher wages in urban agglomerations. Urban agglomerations

typically provide a more skilled workforce, the potential of higher economies of scale, frequent interactions with different actors, and easy access to transport infrastructures and higher education institutions. However, firms in cities also bear higher labour costs, as wages need to compensate for higher housing prices and non-pecuniary costs, such as pollution, congestion and crime, which typically also increase with city size.

Scale-ups that relocate or expand continue to grow. Most scale-ups begin growing before relocating and maintain positive momentum in the new location. Average employment and turnover growth rates are positive in the three years preceding the relocation. Three years after relocating, scale-ups' employment levels are 27%-48% higher than in the relocation year. The increase in turnover levels is even larger (34-63%).

The 50 fastest-growing scale-ups in each country are more likely to relocate and expand than the average scale-up. The top 50 scale-ups increased their employment seven-fold and their turnover eleven-fold over the 2014-17 period. The relocation rate of the top 50 fastest employment scale-ups were 1.2 to 3.8 times as large as the entire group of employment scale-ups in Denmark, Finland, Norway and Sweden. Similarly, expansion rates of the top 50 employment scale-ups in Denmark and Sweden were two and three times as large, respectively, as the average employment scale-up.

Relocations and expansions can be a challenge for talent retention. Relocations and expansions contribute to increased employee turnover rates in scale-ups. Despite their high growth, 25% of workers leave a scale-up, on average, each year. When a scale-up relocates, workers are 10 percentage points more likely to leave than during other periods, and even during an expansion the share of workers leaving is up to five percentage points higher than in other periods. Relocations and expansions do not lead to higher unemployment or inactivity as the majority of workers who leave a scale-up during a relocation or an expansion join a firm in a different region than that of their prior job. While relocations and expansions to places with a larger labour pool may make it easier for scale-ups to recruit workers, they also lead existing employees to find other opportunities.

Scale-ups are significantly more likely to get acquired by foreign investors than comparable firms. Across the five Nordic countries, between 6% and 20% of scale-ups became foreign owned between 2014 and 2020. Foreign capital appears to support the growth process, providing the necessary resources to reach a new scale. Foreign acquisitions do not lead to a higher probability to exit the market, nor are they associated with negative or positive trends in productivity, on average. The fastest-growing scale-ups are more often the target of foreign acquisition than the average scale-up. The share of top 50 employment scale-ups (equivalent to the fastest growing 4-10% of employment scale-ups) that become foreign-owned ranges from 10% in Sweden to 36% in Norway. For the top 50 turnover scale-ups (equivalent to the fastest growing 3-6% of turnover scale-ups) the share ranges from 4% in Denmark to 32% in Norway. This may raise concerns about the reasons why domestic investors are not fully capitalising on their most promising ventures.

Foreign investors are more likely to target scale-ups operating in medium-high and high-tech manufacturing, or in ICT and professional services. In Denmark, Finland, Sweden and Norway, on average, 18% of scale-ups that provide ICT and professional services and 15% of scale-ups that operate in medium-high and high-tech manufacturing become foreign owned, compared to 4% in construction. The concentration of foreign acquisitions in the ICT sector is a common feature across OECD countries.

Workers leave at higher rates during foreign acquisitions. Separation rates are 2 to 9 percentage points higher in Finland, Iceland, Norway and Sweden but not in Denmark. Workers in middle-skilled occupations, such as clerical workers and machine operators, are more likely to leave during a foreign acquisition than workers in high- or low-skilled occupations, especially in Sweden and Finland. Conversely, foreign acquisitions do not increase separation rates for highly educated workers with one exception: the share of managers who leave a scale-up during a foreign acquisition is higher by 2-5 percentage points.

1 Scale-ups in the Nordic Countries

Key messages

- Scale-ups – firms that grow by more than 72% over three years – are central for job creation and economic growth. In Denmark, Finland, Iceland, Norway and Sweden, the five Nordic countries covered in this report, about 5 600 scale-ups created almost 200 000 additional jobs over the 2017-20 period.
- The majority of scale-ups resemble the most common type of small and medium-sized enterprise (SME), i.e. they are mature firms operating in less advanced service sectors. Young firms, firms providing professional business services or information and communication technologies (ICT) services have a higher probability to scale up than other SMEs, but they account for less than 20% of the entire population of scale-ups.
- To better understand the growth pattern of scale-ups and how the place where a scale-up operates affects their performance, this report considers three different events that may result in the full or partial transfer of the scale-ups' activities to a different region or country:
 - **relocation:** the firm transfers its headquarter to a different region;
 - **expansion:** the firm opens one or several establishments in new regions;
 - **foreign acquisition:** the ultimate owner of the company changes from domestic to foreign.
- The analysis relies on detailed firm- and establishment-level data to understand how these three types of events impact the life cycle of scale-ups across different sectors, size and age classes, and locations. In addition, novel analysis of employee-level data assesses whether relocation, expansion and foreign acquisition are associated with positive or negative outcomes for the affected workers. Qualitative interviews with Nordic entrepreneurs complement the findings from the quantitative analysis. Some of the “soft” factors that the entrepreneurs deem critical local assets are the ties with the local community and the embeddedness of the company culture with the physical workplace.

Scale-ups make an outsized contribution to job creation and economic growth

About 5 600 scale-ups in five Nordic countries added almost 200 000 additional jobs over the 2017-20 period. Scale-ups are small and medium-sized enterprises with at least 10 employees and EUR 2 million in turnover that grow by more than 20% per year on average in employment or turnover over a three-year period (see Box 1.1 for a discussion of the definition of scale-ups). The most recent figures show that in 2020, 5 600 scale-ups employed 456 000 workers (full-time equivalent) and accounted for 234 billion EUR in turnover in Denmark, Finland, Iceland, Norway and Sweden. Collectively, those scale-ups added 197 000 net new jobs and 122.6 billion EUR in additional turnover between 2017 and 2020.

The majority of Nordic scale-ups are small firms with less than 50 employees at the beginning of the growth period, which operate in lower value-added services.¹ The Nordic Scale-ups are closely monitored by a series of reports published by Nordic Innovations (see Box 1.2 for further detail).

Recent OECD research confirms that scale-ups provide a similar outsized contribution to job creation in other countries. Harmonised analysis of firm-level data for five pilot countries – Finland, Italy, Portugal, the Slovak Republic and Spain – shows that between 3% to 6% of SMEs with 10 to 249 employees (non-micro SMEs) were employment scale ups in 2017, accounting for 26% to 50% of all jobs added by non-micro SMEs between 2014 and 2017 (OECD, 2021^[5]).

Scale-ups are diverse

Around one in five firms with at least 10 employees scaled up at least once in Nordic Countries between 2011 and 2020. = Across the five Nordic countries, 16% to 23% of non-micro firms scaled up at least once in either employment or turnover over the 2011-20 period (Figure 1.1).² Among those, 45% scaled-up in turnover only, 18% scaled-up in employment only, and the remaining 37% scaled-up in both employment and turnover simultaneously.

Box 1.1. The definition of scale-ups

The definition of “scale-ups” adopted in this report mirrors the approach adopted in the statistical reports produced by Nordic Innovation. In any given year, scale-ups are firms that satisfy two conditions:

- a) A size of 10 or more employees, expressed in full time equivalent units (FTE), and an annual turnover of 2 or more million EUR three years before the year of observation;
- b) An average annualised growth in the number of employees (FTE) and/or in turnover in current prices greater than 20% over the three-year period preceding the year of observation (i.e., 73% over the three years). Such growth can either be organic (internally generated) or non-organic (through mergers and acquisitions, joint-ventures or alliances).

In this report, unless otherwise specified, “scale-ups” are companies that satisfy conditions a) and b) at least once over the period 2014-20, growing either in employment *or* in turnover. As the database covers the period 2011-20, scaling up over the triennium 2011-14 is also included. Whenever relevant, results are shown separately for employment scale-ups and for turnover scale-ups. Each of the two groups includes firms that scale up simultaneously in both employment and turnover.

The definition of scale-ups adopted in this report builds upon The *Eurostat-OECD Manual on Business Demography Statistics*, which recommends the same definition to identify “high growth firms”. The Eurostat-OECD definition has been widely adopted in the economic and business literature. Therefore, one of its advantages is its comparability. Two differences are introduced to align the definition with that adopted in the reports by Nordic Innovation: the Eurostat-OECD definition does not include the initial turnover condition and only organic growth is considered.

The 20% threshold for the annualised growth rate was set considering previous research from individual countries. Further work by Eurostat and the OECD focused also on so-called “medium-growth firms”,

¹ See Table A B.1 for a list of economic sectors that are included in the “professional and ICT services” and in the “Other services and utilities” group.

² Whenever informative, distinct statistics for scale-ups considering only growth in employment or turnover are also considered (see Box 1.1 for a detailed description of the definitions of scale-ups).

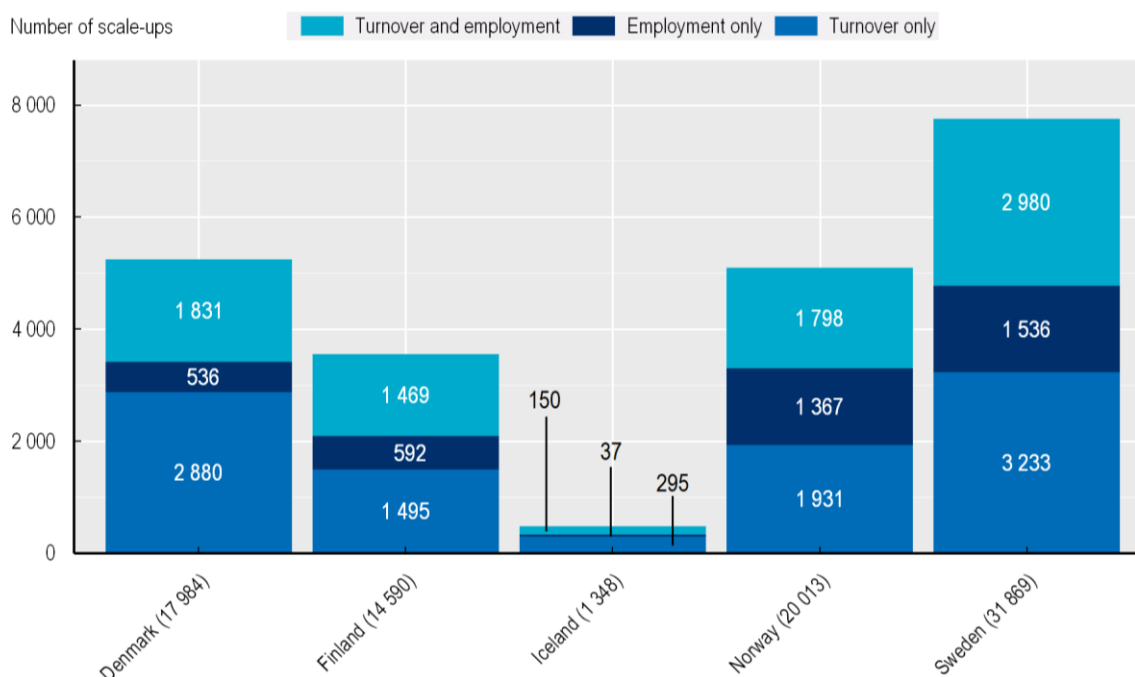
which include firms growing at an annualised growth rate of at least 10% for three consecutive years. The 10% annual growth rate results in 33.1% growth over three years.

Source: Eurostat/OECD (2007^[1]), Eurostat-OECD Manual on Business Demography Statistics, <https://www.oecd.org/sdd/39974460.pdf>; Ahmad, N. (2008^[6]), "A proposed framework for business demography statistics", https://dx.doi.org/10.1007/978-0-387-72288-7_7; OECD (2017^[2]), *The Geography of Firm Dynamics: Measuring Business Demography for Regional Development*, <https://dx.doi.org/10.1787/9789264286764-en>; Nordic Council (2021^[3]), *Scale-ups in the Nordics 2020*, <https://www.nordicinnovation.org/2022/scale-ups-nordics-2020>.

The typical Nordic scale-up is a mature SME. Between 96% and 98% of scale-ups have less than 250 employees and thus are classified as SMEs according to the OECD definition. Furthermore, between 59% and 83% of scale-ups are mature firms that have been operating for more than 10 years (Figure 1.2). This high share of mature firms is in part a function of the definition of scale-up, which excludes smaller firms with less than 10 employees and EUR 2 million of turnover. These size requirements have been selected to avoid creating significant distortions, for example a firm with turnover of 1 Euro in one year and 10 Euros three years later would, without thresholds, be included in scope. Indeed, the few young and middle-age firms that do meet the initial size requirements have a higher propensity to scale up than mature firms that have operated for more than 10 years already (Figure A A.1). Nevertheless, periods of high growth are common also among mature businesses and they represent the largest share of the population of non-micro firms. These factors explain why the majority of scale-ups are mature firms.

Figure 1.1. Around one in five firms scale up at least once over a 10-year period

Number of firms with 10+ employees and EUR 2 million in turnover that scale up at least once, 2011-20

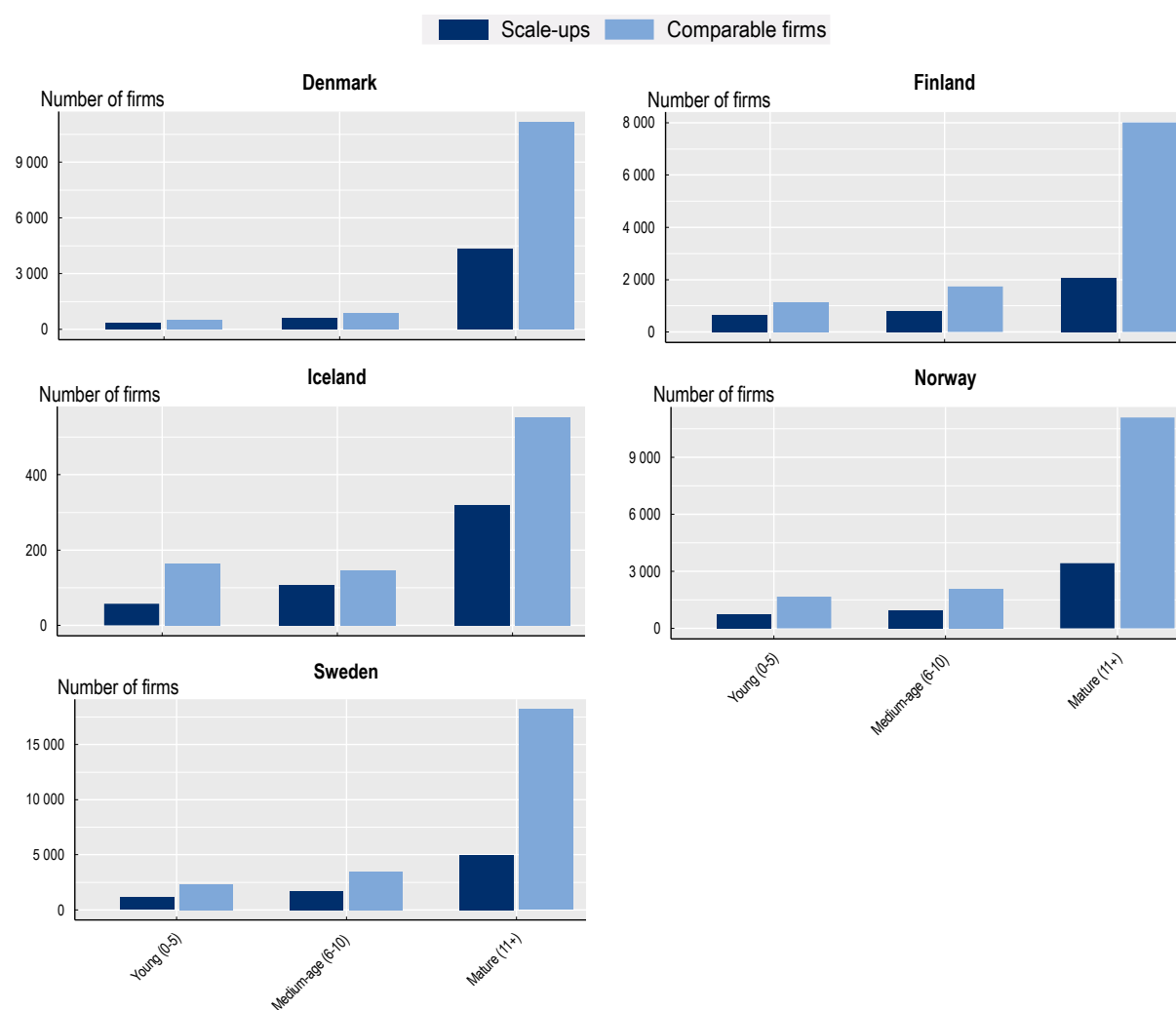


Note: Total number of firms with 10+ employees and EUR 2 million in turnover in parentheses. Scale-ups are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. Box 1.1 provides further details for the definition of scale-ups.

Source: Calculations based on microdata sources from five countries. See Annex B for more information.

Figure 1.2. Most Nordic scale-ups are mature firms

Number of firms by age class, 2014-20



Note: Scale-ups are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. Box 1.1 provides further details for the definition of scale-ups. Comparable firms are firms (i) that did not scale up and (ii) that had 10 or more employees and annual turnover of min. 2 million EUR at least once over the period of analysis (2011-20). Total number of observations: 17 771 in Denmark, 14 432 in Finland, 1 348 in Iceland, 19 942 in Norway, and 31 767 in Sweden. Firms are assigned to their most common age category over the period in all countries but Iceland. In Iceland, median age categories are used (2011-2020). Source: Calculations based on microdata sources from five countries. See Annex B for more information.

Box 1.2. Monitoring Nordic scale-ups

Nordic scale-ups are closely monitored by a series of reports published by Nordic Innovation in collaboration with the statistical offices of the Nordic countries. Their analyses build upon harmonised databases established in each national statistical office and a definition of scale-ups that encompasses high growth in either employment or turnover (see Box 1.1 for the methodological details).

The reports provide a detailed portrait of Nordic scale-ups that goes beyond accounting for their contribution to economic growth in terms of employment and turnover creation. One key finding is that nearly half of the total increase in turnover attributable to scale-ups between 2017 and 2020 was created by the 25 scale-ups with the largest growth in turnover in absolute figures in each Nordic country (i.e., 2% of the entire scale-ups population). The type of growth is another aspect that is investigated, with 81% of scale-ups growing organically between 2017 and 2020, and the remaining 19% expanding through mergers and acquisitions. The reports also look at foreign ownership, highlighting that one in five scale-ups is foreign-owned. Foreign-owned Danish scale-ups have mainly European and British ownership, while Nordic ownership prevails in Norway, and Sweden's scale-ups are primarily owned by companies from non-European countries.

In this report, scale-ups are defined as companies that had at least one high-growth phase in either employment or turnover between 2011 and 2020. The resulting figures on the scale-up population are thus slightly different from those reported in the analyses by Nordic Innovation that looks only at a specific triennium (e.g., 2017-20 in the most recent publication).

Source: Nordic Innovation (2017^[7]), "Scale-ups in the Nordics – statistical portrait 2008-2016"; Nordic Innovation (2019^[8]), "Scale-ups in the Nordics 2017". Nordic Innovation (2021^[3]), "Scale-ups in the Nordics 2020".

The majority of scale-ups operate in lower value-added service sectors such as accommodation, food services, wholesale and retail trade. The probability to scale up is, at 32%, highest for firms operating in professional and ICT services (Figure 1.3). As these sectors account for a relatively small share of the overall firm population compared to other sectors, they account for less than 20% of all scale-ups. The largest share of scale-ups, between 39% (in Finland) and 51% (in Iceland), operate in the "other services and utilities" sector, the sector with the most firms in the overall economy (Figure 1.4). This group includes activities such as wholesale and retail trade, accommodation and food services, transport and storage and utilities. Other differences in the sectoral composition of scale-ups are relatively minor across the five Nordic countries. Denmark and Finland have higher shares of scale-ups operating in medium-high and high-tech manufacturing (7% in both countries, compared to 5% in Norway and Sweden and 3% in Iceland). Sweden has the highest share (20%) of scale-ups providing professional and ICT services, followed by Finland (17%) and Denmark (16%). These shares broadly reflect the relative weights of the different sectors in the overall national economy of the Nordic countries.

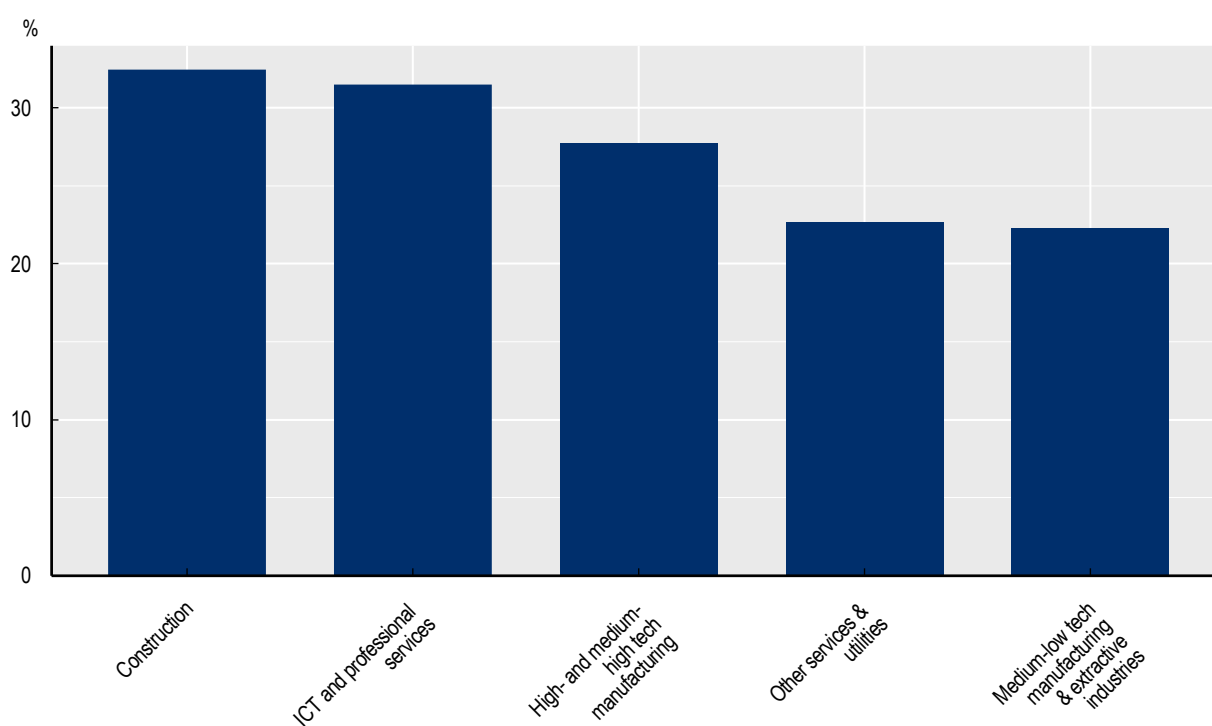
The top 50 fastest growing scale-ups in each country contributed up to one third of all jobs created by all scale-ups. The top 50 fastest-growing employment or turnover scale-ups are identified for the period 2014-17, in order to observe them also after the high-growth phase. On average, the workforce of the top 50 employment scale-ups was seven times larger in 2017 than in 2014. Similarly, the turnover of the top 50 turnover scale-ups increased 11-fold over the same period (Table 1.1). The top 50 employment scale-ups in each country contributed 17% to 36% of all jobs created by scale-ups in Denmark, Finland, Norway and Sweden between 2014 and 2017, while representing 4% to 10% of all scale-ups.³ The top 50 scale-

³ Due to the smaller population of firms, the top 50 scale-ups in Iceland corresponds to almost the entire population of scale-ups, especially for employment scale-ups.

ups are younger, more likely to operate in the “other services & utilities” sector group and less likely to operate in the construction sector compared to the full sample of scale-ups (except in Iceland). Their size distribution is comparable to that of all scale-ups, and their average size in 2014, before growing, ranges from 30 to 52 depending on the country. The contribution of the top 50 scale-ups reflects a well-known fact in the analysis of firm growth patterns. The large majority of companies do not grow in employment. Among the small share of companies that grow, a few grow very fast and they account for a disproportionate share of new jobs in the economy. Therefore, even within the selected group of scale-ups, there is a strong concentration of growth in the small group of top performers.

Figure 1.3. High value-added services and construction sectors have the highest shares of scale-ups

Share of scale-ups in each sector group, 2014-20



Note: The chart shows the average shares of scale-ups in the total population of firms, i.e. scale-ups and comparable firms, in each sector group. The averages are weighted by the size of the total-firm population in the respective country and sector. See Box 1.1 for the definition of scale-ups. Table A B.1 provides details for five sector groups. Firms are assigned to their most common sector group over the period. Comparable firms are firms (i) that did not scale up and (ii) that had 10 or more employees and annual turnover of min. 2 million EUR at least once over the period of analysis (2011-20).

Source: Calculations based on microdata sources from five countries. See Annex B for more information.

Table 1.1. The top 50 employment scale-ups created 54 600 jobs from 2014 to 2017

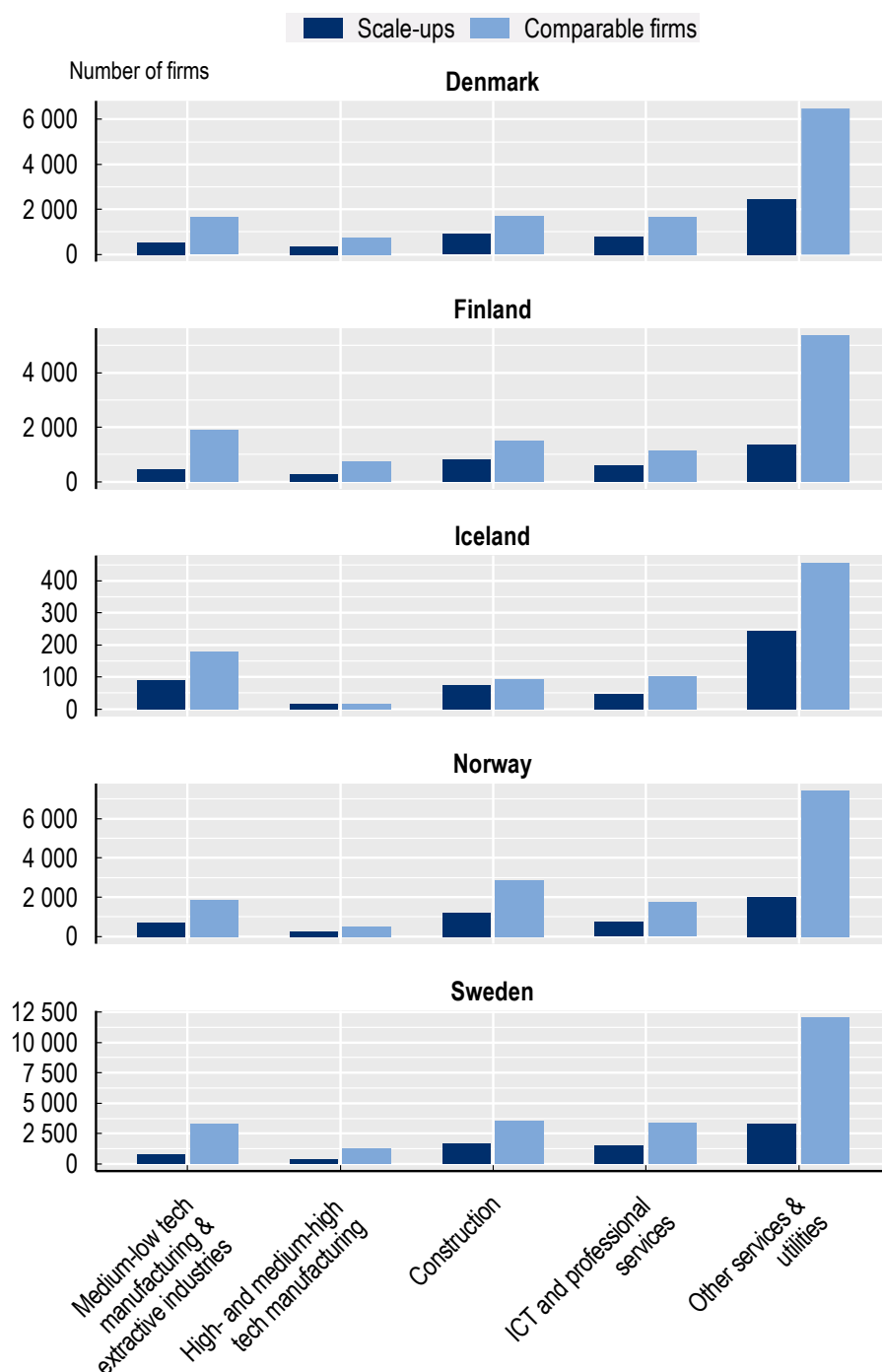
	Denmark	Iceland	Finland	Norway	Sweden
50 fastest-growing employment scale-ups					
Total employment (full-time equivalent)					
Year 2014	1 503	2 489	2 256	1 493	2 636
Year 2017	8 956	6 692	18 318	14 692	16 393
Change 2014-17	496%	169%	712%	884%	522%
Total turnover (1 000s euro)					
Year 2014	564 859	410 829	620 403	822 731	882 875
Year 2017	2 099 272	1 625 292	6 787 331	8 644 600	3 465 449
Change 2014-17	272%	296%	994%	951%	293%
50 fastest-growing turnover scale-ups					
Total employment (full-time equivalent)					
Year 2014	1 139	2 673	3 263	2 609	2 374
Year 2017	4 456	6 325	15 432	9 621	7 628
Change 2014-17	291%	137%	373%	269%	221%
Total turnover (1 000s euro)					
Year 2014	369 461	530 121	991 014	547 150	414 983
Year 2017	5 314 637	2 128 673	11 087 954	9 739 970	4 026 673
Change 2014-17	1 338%	302%	1 019%	1 680%	870%

Note: Top 50 employment and turnover scale-ups are defined in each country based on the employment or turnover growth rates between 2014 and 2017. A firm may belong to both groups. All employment or turnover scale-ups include firms that grew in employment or turnover, respectively, at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. See Box 1.1 for further details on the definition of scale-ups. Table A B.4 explains how employment and turnover were measured.

Source: Estimations based on microdata sources from five countries. See Annex B for more information.

Figure 1.4. Most Nordic scale-ups operate in the “other services and utilities” sector

Number of firms by sector group, 2014-20



Note: Scale-ups are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. Box 1.1 provides further details for the definition of scale-ups. Comparable firms are firms (i) that did not scale up and (ii) that had 10 or more employees and annual turnover of min. 2 million EUR at least once over the period of analysis (2011-20). Total number of observations: 17 240 in Denmark, 14 097 in Finland, 1 320 in Iceland, 19 353 in Norway, and 30 977 in Sweden. Table A.B.1 provides details on five sector groups. Firms are assigned to their most common sector group over the period.

Source: Calculations based on microdata sources from five countries. See Annex B for more information.

Designing effective policies by understanding scale-ups' location choices

Scale-ups are an integral part of a local development strategy. For instance, in the European Union (EU) the European Regional Development Fund (ERDF) is the largest source supporting enterprises. The ERDF aims to strengthen economic, social and territorial cohesion in the European Union by correcting imbalances between its regions. Over the 2014-2020 programming period, the ERDF provided over EUR 69 billion to programmes targeting entrepreneurship and SMEs' competitiveness, with emphasis on innovation and high-growth firms. Nordic countries are also very active in supporting firms with high-growth potential with local policies. In Finland, "Development Allowance for Firms" (*Yritysten kehittämisavustus*) is the most predominant form of public financial support for firm growth. The programme is locally managed by 15 regional Centres for Economic Development, Transport, and the Environment (ELY-keskus). The allowances are directed at SMEs striving for growth or internationalisation and can be used for either product development or for investments in both tangibles and intangibles. Innovation Norway offers several support schemes for growth-oriented businesses, including innovation loans and a growth guarantee scheme, which aims to strengthen access to bank finance for innovative or fast-growing SMEs.

Understanding the location choices of scale-ups can support the design of effective policy interventions that can leverage their potential for the wider ecosystem. Scale-ups may leave the area where they "grow up" and relocate to different regions or countries. The relocation of scale-ups may be driven by the need to access a wider talent pool or to reduce the cost of wages and rents. Accessibility through transport infrastructures or the size of the local market can also attract firms to new locations. These factors may explain why in the Nordic countries around half of scale-ups operate in the capital region. Greater Copenhagen (Denmark) hosts 46% of scale-ups, Helsinki-Uusimaa (Finland) 52%, and Oslo and Akershus (Norway) and Stockholm (Sweden) both host 41% of all scale-ups in the country. The concentration of scale-ups in the capital region is higher than what would be expected given the overall concentration of economic activities, as the capital regions of those countries account for around 30-40% of national GDP.

Some scale-ups "move" by expanding domestically into new regions, while retaining their headquarter in the original location. Opening a new establishment is a common way for successful businesses to expand. For example, Cao et al. (2019^[9]) show that the increase in average firm size registered in the United States over the 1990-2014 period was entirely driven by an increase in the number of (domestic) establishments per firm, rather than the number of employees per establishment. However, expansions through new establishments have been little studied in the economic and business literature due to data limitations, as most analyses are limited to firm-level sources. If the establishment is located in proximity of the headquarters, it may simply serve the need of additional space for employees and equipment (excluding the case of retail activities, which may need local branches to serve a higher number of customers). However, if the new establishment is located in a different region, it may reflect a company's strategic choice of moving part of its activities to a different place. Scale-ups can also expand by operating new establishments abroad, but these operations are not visible in administrative data and thus are not part of the current analysis (see Box 1.3 for further details).⁴

4 The bias is likely to be bigger for smaller countries, as firms in larger countries have more opportunities to invest domestically.

Box 1.3. Reporting scale-ups' location and movements

The analysis in this report builds upon the definition of three main “moves” of scale-ups as well as comparable firms: relocation, expansion in a new region, and foreign acquisition.

- **Relocation:** the region in which the firm is located in the given year is different from the previous year.
- **Expansion (to a new region):** in the given year the firm has at least one new establishment in a region in which the firm did not have any establishments in previous years.
- **Foreign acquisition:** in the given year, the ultimate country of ownership is a foreign country, while the ultimate country of ownership is the home country in the previous year.

The definition of expansion requires establishment-level data that are available for Denmark, Finland and Sweden, and are not available for Iceland and Norway. Establishments are local production units that belong to the same legal entity as the enterprise but are physically separate from their headquarters.

Another important channel through which companies may move part of their activities elsewhere is through foreign affiliates. However, in administrative data information on enterprises is limited by national boundaries. Foreign entities appear as new enterprises in the host countries and administrative data do not allow to systematically link foreign affiliates to the firm that owns and controls them. While other sources of data, such as commercial repositories, may be able to provide information on multi-national business groups to fill in this gap, this would require a dedicated analysis that is beyond the scope of the current analysis.

The headquarter bias

The location of scale-ups and other companies in a given TL2 region is defined based on information on the location of the firm, as reported in the business register or similar data sources. Larger companies may operate a substantial number of plants and employ workers outside of the region where the headquarters are located, and headquarters are typically more likely to be located in capital regions or in regions hosting large urban agglomeration. The “headquarter bias” is the measurement error resulting from attributing all economic activities of multi-establishment firms to the headquarter region.

The headquarter bias can be reduced by using establishment-level information. Establishment-level data for the current analysis are available for Denmark, Finland, and Sweden, and are used to define expansions to new regions. In future research, they can be used also to develop alternative indicators in which the location of multi-establishment companies is not entirely attributed to the location of the headquarter, but is distributed across all locations in which it operates establishments, e.g. with shares that are proportional to the number of employees in each location.

Definition of regions

If not otherwise specified, all mentions to “regions” in this report refer to large (Territorial Level 2, or TL2) regions for all countries. TL2 regions typically correspond to the first administrative tier of subnational government. In Denmark they correspond to the five *Regioner*; in Finland to the five *Suurlaueet*; in Iceland to the 2 *Regions*; in Norway to the seven *Landsdeler*; and in Sweden to the eight *Riksomraden*.

Foreign acquisitions of scale-ups can result in the transfer of some activities abroad. Foreign acquisitions can have positive consequences for both the acquired firm and the host region. Positive effects of foreign acquisitions on target firms include access to new resources and technology, connections to new markets and improved financial performance through economies of scale. A foreign capital inflow means that more resources are made available for the company to invest and grow. Foreign owners may also improve the company management (Fons-Rosen et al., 2021^[10]). Linkages between acquired firms and local SMEs may boost productivity and innovation in the region (Lembcke and Wildnerova, 2020^[11]). However, acquisitions by foreign investors could also weaken the links between a company and the home region. The acquisition by larger multinational groups can result in organisational changes and restructuring. In order to exploit synergies at group level and reduce costs, key staff or activities may be downsized or moved elsewhere. In some cases, this may lead to a “hollowing out” or even to the entire relocation of the acquired firm.

This report assesses the extent to which scale-ups leave their home region, either entirely or partially, using detailed firm-level data for the Nordic countries. There is little systematic knowledge that would allow for cross-country comparison of the post-growth trajectories of scale-ups. This report focuses on three distinct events that may mark the scale-up life cycle: the relocation of the entire firm to a new location; the expansion to a new region through the opening of an establishment; and the acquisition of the firm by foreign investors. Box 1.3 provides a detailed description of the definitions of these events. For the first time, the analysis on Nordic scale-ups combines information at firm-level with employee-level data. The data combine social security data and related administrative data sources. While still experimental in nature, the new data provide interesting insights on how workers are affected by relocations, expansions, and foreign acquisitions, exploring differences across worker groups.

Qualitative interviews with Nordic entrepreneurs complement the findings from the quantitative analysis and highlight some important “soft” factors that are difficult to quantify. Semi-structured interviews with Nordic scale-ups complement the quantitative analysis. The interviews included questions on whether the company relocated in the past, whether it considered relocating, and which factors contributed to the final decision.

2 Expansions and moves of Nordic scale-ups

Key messages

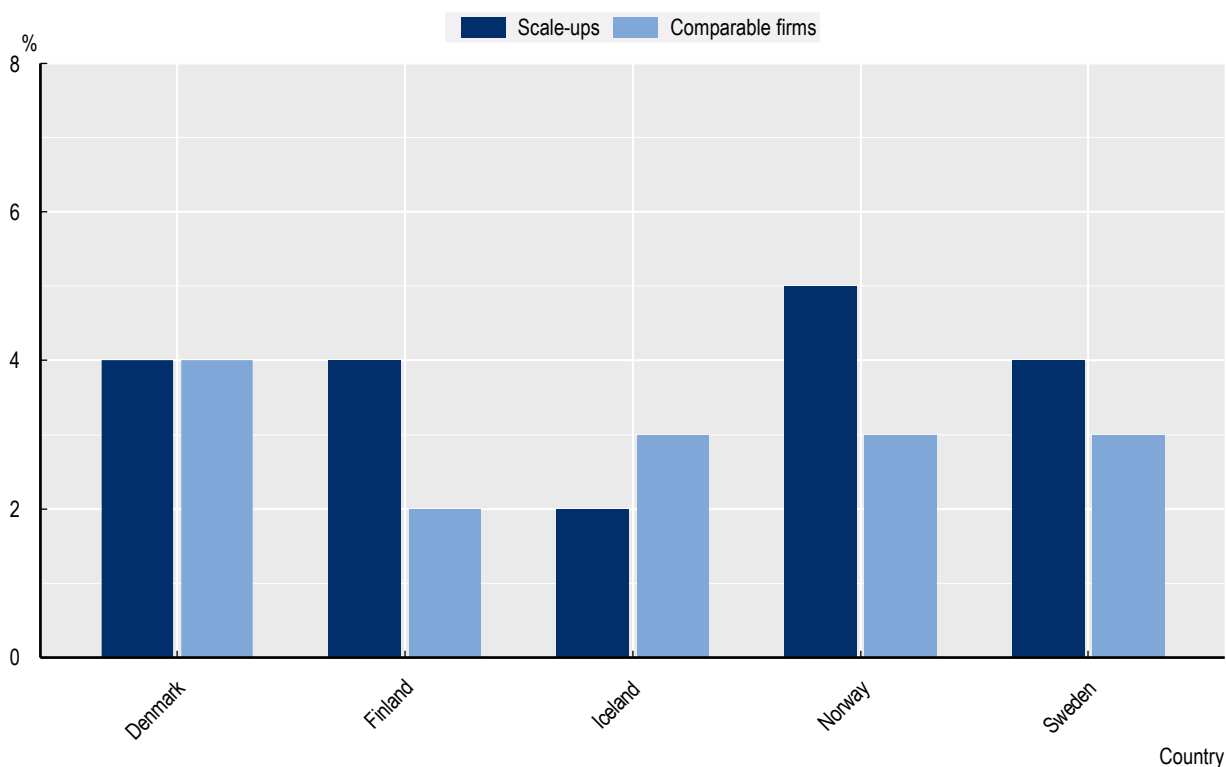
- Between 2% and 5% of scale-ups relocate by moving their headquarter to a different region over the 2014-20 period.
- Interviews with managers of scale-ups point to the importance of frequent direct contacts with local partners. Relocating may weaken this business network, which could have a detrimental impact on growth, even if the relocation may be efficient from a pure cost of production perspective. Additional factors that contribute to retaining scale-ups in their original location include the potential loss of skilled workers, the investment in immovable capital assets, and the cost associated with identifying suitable new locations.
- Expansions to new regions are more common than complete relocations. Around 15-19% of scale-ups open an establishment in a new region over the 2014-20 period, while retaining some presence in the home region.
- Expansions and relocations are twice as likely among scale-ups in service sectors than in medium/high-tech manufacturing. The difference may depend on the higher importance of proximity to customers for “non-tradable services”, i.e. services that are provided and consumed locally.
- Relocations appear to follow and support the continuation of a first period of growth, rather than to initiate it. Scale-ups begin growing before relocating and maintain positive momentum in the new location. Three years after relocation, scale-ups’ employment levels are 27%-48% higher. Turnover shows even larger increases before and after relocations. The 50 fastest-growing scale-ups in each country are more likely to relocate than the average scale-up. The relocation rate of the top 50 fastest employment scale-ups are up to 4 times higher than the average employment scale-ups in Denmark, Finland, Norway and Sweden.
- Expansions are more likely to take place during rather than before the high-growth period. In Denmark, Finland and Sweden, expansions take place at the beginning of a period of rapid growth in both employment and turnover. Expansion rates of the top 50 employment scale-ups in Denmark and Sweden are two and three times, respectively, the rate of the average employment scale-up.

Relocation is a rare event in the life cycle of a scale-up

The share of scale-ups that relocate to a different region over the 2014-20 period ranges from 2% in Iceland to 5% in Norway (Figure 2.1).⁵ In Finland, Norway and Sweden scale-ups are more likely to relocate than comparable firms. Comparable firms have 10 or more employees and at least EUR 2 million turnover but do not scale up. In Denmark, the share of firms that relocate is similar, with 4% of scale-ups and comparable firms changing their location, and in Iceland the share of scale-ups that relocate is slightly lower than the share of comparable firms. Figure A A.2 provides insights on the differences between employment and turnover scale-ups.

Figure 2.1. At least 95% of scale-ups do not relocate over a 7-year period

Share of firms that relocated to a different TL2 region at least once, 2014-20



Note: Scale-ups are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. Box 1.1 provides further details for the definition of scale-ups. Comparable firms are firms (i) that did not scale up and (ii) that had 10 or more employees and annual turnover of min. 2 million EUR at least once over the period 2011-20. See Box 1.3 for further details on the definition of relocations.

Source: Calculations based on microdata sources from five countries. See Annex B for more information.

Firms consider supply and demand factors when choosing locations. Supply-side factors include all aspects that relate to the needs of firms to produce their goods and services. These factors include the local availability of the production inputs required by the firm, such as skilled labour force or specific natural resources (or the presence of the transport infrastructure to supply them). The local networks of suppliers

⁵ The finding is consistent with evidence from the United States' manufacturing sector, which shows that very few firms relocate across state lines in any given year. The vast majority of those that do are small in size and move to adjoining states (Conroy, Deller and Tsvetkova, 2016[42]).

or of research institutions with whom the company collaborate are also part of the supply side factors. Demand factors relate to the aspects that determine the demand for goods and services for firms. These factors include access to customers – either directly in case of non-tradable goods or services, or indirectly through transport infrastructure in the case of tradable goods or services. Demand-side factors are important for firms providing non-tradable services that are sold locally, such as retail trade of perishable goods or cleaning services. For firms producing tradable goods or services, it may still be important to be close to transport infrastructure to deliver them to the final consumers.

Most scale-ups consider their local business network essential for growth. Scale-ups typically have many direct contacts with local partners, such as customers, suppliers, funders or research centres (OECD, 2021^[12]; OECD, 2019^[13]). A relocation may weaken this local business network and thus be detrimental to the firm's growth prospects. The personal network of the founders has a strong local dimension and often plays a key role in hiring, finding new business partners, or in securing external finance. This explains why the share of entrepreneurs working in the region where they were born is significantly higher than the corresponding share of dependent workers (Michelacci and Silva, 2007^[14]; Motoyama and Desai, 2022^[15]). These aspects emerged clearly from the interviews with scale-ups (Box 2.1). Other factors that may play a role in retaining scale-ups in the original location include the risk of losing part of the workforce, the sunk investments in capital assets that are difficult to move and the costs that companies need to face to identify suitable locations.

Employment scale-ups are more likely to relocate than comparable firms or turnover scale-ups.

While the shares of employment scale-ups that relocate remain below 10%, employment scale-ups show a higher likelihood to relocate than turnover scale-ups across all countries except Norway. This suggests that some relocations may be driven by the need to cope with a rapid workforce expansion. In a new location it may be easier to find larger offices to accommodate new employees. Relocations to large urban agglomerations allow access to a bigger talent pool, making it easier to hire skilled workers. Conversely, scale-ups may move to less densely populated areas to take advantage of relatively lower wages in low- and medium-skilled occupations.

Young scale-ups are twice as likely to relocate than mature ones. About 9% of young scale-ups that have been active for five years or less relocate. The share of scale-ups that relocate decreases to 5% among 6- to 10-year-old scale-ups and to 4% in the group of scale-ups operating for more than 10 years. Younger scale-ups may spend the first two-three years of activity in refining their business model and in learning about their customers. After this initial phase, they may realise that other places may be a better fit for their long-term growth plans and thus relocate to a different region. Conversely, mature scale-ups are more likely to have developed stronger linkages with their home region, including through networks and investment in physical assets, both of which would increase the costs of a potential relocation.

Expansions to new regions are more common than complete relocations

Expansions are instrumental to serve new customers, tap into new markets, or gain access to new resources and capabilities. Rather than relocating the entire company, firms may create additional plants, branches or subsidiaries in new locations. Between 15% and 19% of scale-ups open (or acquire) an establishment in a new region over the 7-year period covered in this report for the three Nordic countries with available data (Figure 2.2). Expansions can help firms to increase their market share, as well as to improve their operational efficiency and competitiveness. New establishments may operate in the same region where the headquarter is located, or in a different region. Local establishments in close proximity to the main headquarter may simply be driven by the need to accommodate an increasing workforce. . Expansions to different regions, instead, are a strategic choice of the firm to operate and grow in different places.

Box 2.1. Why do scale-ups relocate? And why do scale-ups stay?

Between September 2022 and February 2023, the OECD conducted a series of semi-structured interviews with Nordic scale-ups. The objective of the interviews was to complement with qualitative information the quantitative findings reported in this report. The interviews included questions on whether the company relocated in the past, whether it considered relocating, and which were the factors that contributed to the final decision. The interviews also enquired about the advantages and disadvantages of the current location. The companies were selected among the nominees of the Nordic Scale up Award and a list of similar companies was obtained from a commercial database. Given the selected target sample, the findings from the interviews are not statistically representative of the entire population of Nordic scale-ups. For instance, most of these companies operate in the ICT and professional services sector. Nevertheless, the resulting insights are extremely valuable to provide additional context to the findings from the quantitative analysis.

Why do scale-ups relocate?

According to the interviewees, the hunt for talent is the main reason why a company may want to relocate, either entirely or by opening new establishments elsewhere (expansions). Difficulty in hiring and the lack of an adequate talent pool are also the factors that are most recurrently mentioned by scale-ups when asked what they miss in the current location. Another reason that was mentioned is the need to have venture capitalists or other potential investors in close proximity, in order to have more opportunities to meet in person and obtain funding. The founder of a company that relocated from downtown Stockholm to the suburbs also highlighted that is very important to have an accessible, functional workplace where employees can work physically together, and facilities further away from the central urban locations are more affordable and better suitable for such purpose.

Why do scale-ups stay?

The importance of the local personal network of the founders and senior managers of the company is the reason that is mentioned most often to explain why the company has not relocated:

- *“We are from here and we have a strong network here. Business wise was not the best place to start but this is where we are”;*
- *“I was sure that when switching from academia to start-up, the community would have supported me”;*
- *“The owners have a strong network here and it helps a lot with recruiting”.*

Another “retain” factor is the sizeable sunk investments in specialised equipment that would be lost if the company were to move elsewhere. Also, a potential relocation would require investing sizeable resources to identify a suitable region. In addition, scale-ups located in capital cities also value the proximity to leading universities, which facilitates hiring of newly graduated workers. Access to local policy support is also mentioned as a competitive advantage in some cases:

- *“We have been supported by every possible authority in the field, mainly Business Finland – with loan instruments that were critical in product development and go-to-market phases”.*

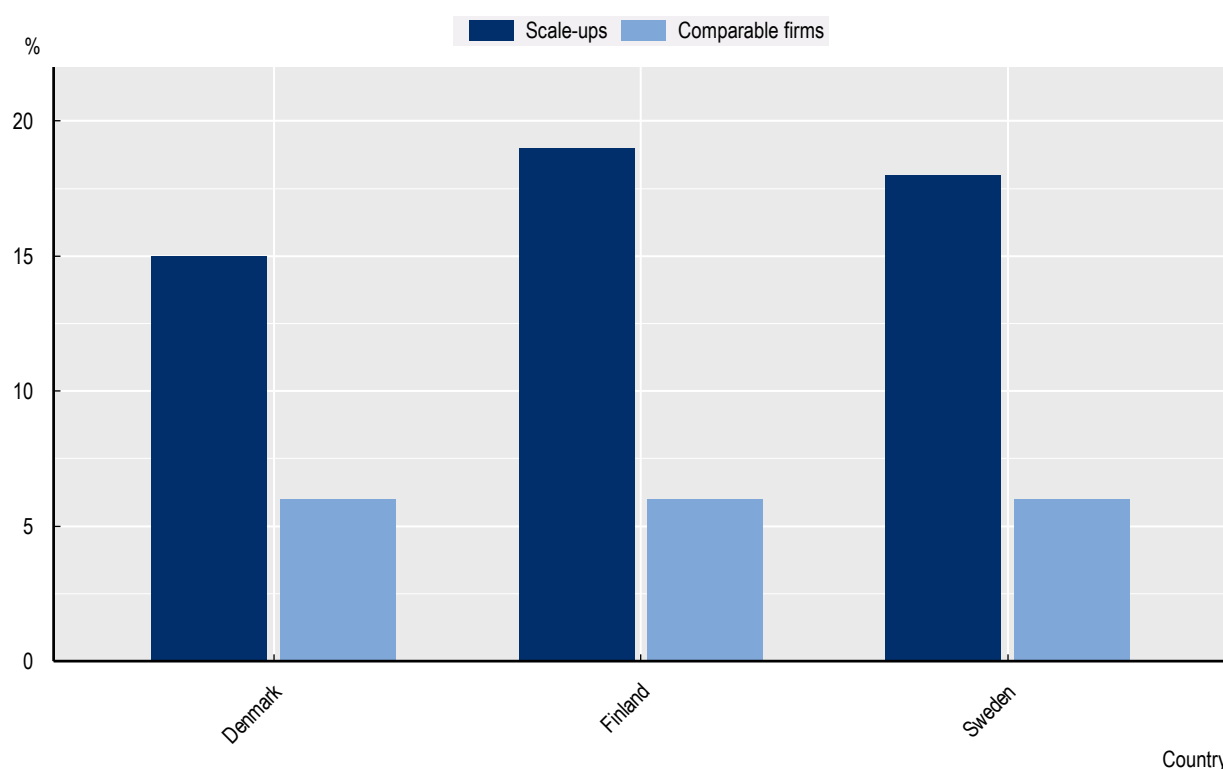
The geography of Nordic countries affects relocation and expansion choices of scale-ups.

Denmark, Finland and Norway have around 5.5 million residents, but the land area of Denmark is approximately one tenth the size of the other two countries. Sweden’s land area is about 20% wider than Finland and Norway but is twice as populated. Iceland has around 375 000 inhabitants in an area that is about twice as big as Denmark. As a result, the population density of Denmark is one order of magnitude higher than in the other countries, and the distance between the peripheral regions and the main urban

agglomerations is a fraction of the equivalent distance in Sweden or Norway. Scale-ups in Denmark, therefore, are typically closer to a large final market and a thick talent pool, which may partially explain the lower relocation rate.

Figure 2.2. Up to 19% of scale-ups open a new establishment in a new region over a 7-year period

Share of firms that opened establishment(s) in a new TL2 region at least once, 2014-20



Note: Establishment-level data are not available for Iceland and Norway. Scale-ups are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. Box 1.1 provides further details for the definition of scale-ups. Comparable firms are firms (i) that did not scale up and (ii) that had 10 or more employees and annual turnover of min. 2 million EUR at least once over the period of analysis (2011-20). See Box 1.3 for the definition of expansions.

Source: Calculations based on microdata sources from three countries. See Annex B for more information.

Relocations and expansions are more frequent in the service sectors

Scale-ups in service sectors are more mobile compared to scale-ups in manufacturing and construction industries. Less than 3% of scale-ups in medium/high-tech manufacturing sectors relocate, compared to 5% of scale-ups providing “other services & utilities” (Figure A A.7). Similarly, expansions to new regions are twice as likely among scale-ups in service sectors as in medium/high-tech manufacturing. On average across Denmark, Finland and Sweden, 24% of scale-ups in ICT and professional services and 20% of scale-ups providing other services or utilities, e.g., wholesale and retail trade or accommodation and food service activities, expand to new regions, compared to 12% and 11% in medium/high-tech manufacturing and construction, respectively (Figure 2.3). Further analysis confirms that these differences are not explained by other characteristics of scalers that can vary across sectors, such as age, size or the average growth rate.

Scale-ups in service sectors reap larger benefits from being close to their customers than manufacturing firms. Most firms operating in the service sectors provide “non-tradable” services, i.e., they need to be located in proximity of their final customers to be able to sell their services (OECD, 2018_[16]).⁶ According to interviews with managers of scale-ups, access to new markets appear to be the main driver of expansions (Box 2.2). This motive is less relevant for manufacturing firms as they typically produce goods that can be easily transported domestically at a cost that, at least for the period covered in this report, was a fraction of the final price, especially for lightweight consumer goods, such as electronics or clothing. Therefore, domestic expansions in manufacturing are more likely to be driven by the need to access a different local labour market or other production inputs. Manufacturing firms are also more likely to invest in physical capital equipment that may be costly to relocate, making relocations less advantageous.

Box 2.2. (Dis)advantages of expansions: the scale-ups’ view

Semi-structured interviews of founders and senior management of a selected group of Nordic scale-ups (see Box 1.1) revealed the trade-offs that entrepreneurs face when considering whether to expand to new regions.

Access to new markets appears to be the main driver of expansions. For example, the manager of a company providing innovative boat renting services said that they analyse the data to identify the locations where there is high demand for their services and then open a branch there:

- *“We analyse scanner data and look at cities where we see there is demand for our services”.*

Another motive of expansions that is recurrently mentioned by the interviewees is the need to access a larger talent pool. Indeed, some representative quotes include the following:

- *“If we chose a new location now, we would want to be close to where competent people will be.”*

Another driver of expansions is placing staff within the relevant local professional network to help build personal connections. E.g., the manager of a company that helps start-ups dealing with regulatory compliance in the medical and pharmaceutical sectors explained that their strategy is to have offices within all the relevant industrial parks.

- *“Closeness, proximity is very important in our business. Without a local presence and relationship building, it’s hard to become big.”*

However, expansions also bring some risks. In particular, the interviewees were concerned that spreading the workforce across distant locations may weaken the company culture, which is often mentioned to be a key ingredient of the scaling-up process. Culture is an asset that is physically embedded in the headquarter location:

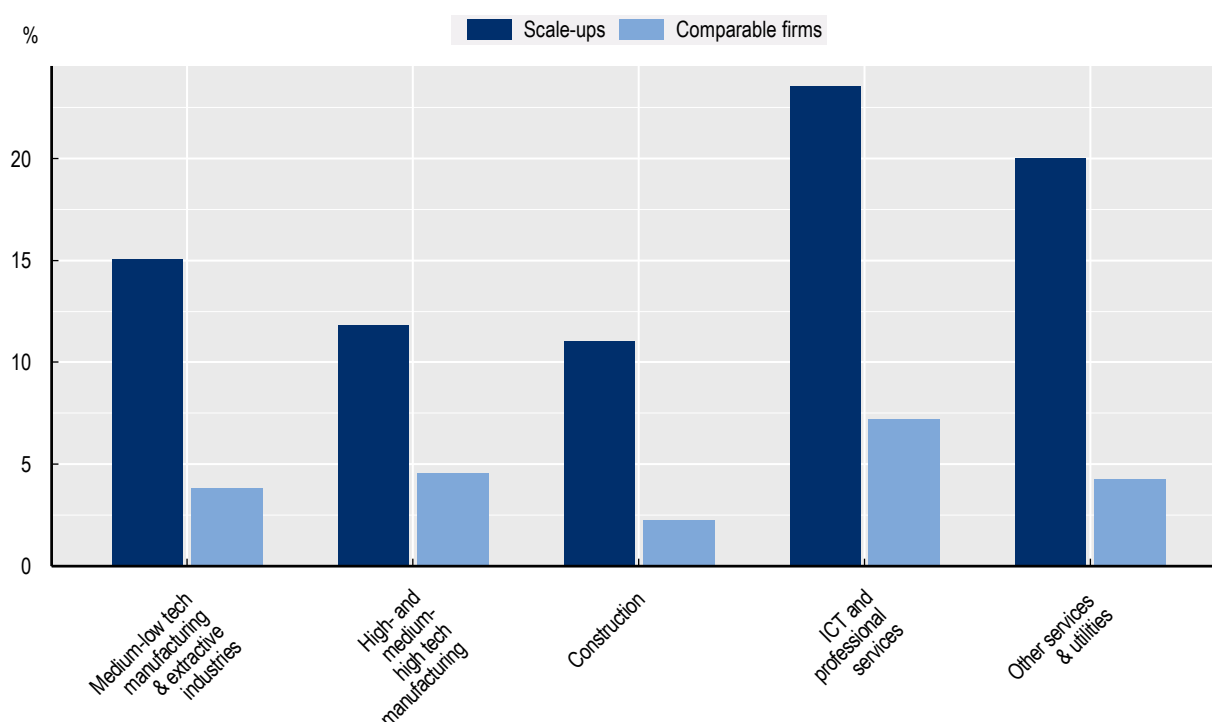
- *“If we’re not all together physically some things will fall through the cracks”;*
- *“The pandemics made it slightly easier to have people off site thanks to teleworking but still hard to build company culture remotely”.*

The importance of the company culture and the role of spatial proximity to ensure it is shared among employees through frequent interaction is one of the key aspects that emerged from the interviews.

⁶ Non-tradable services typically include governmental services, education, health care, the construction sector and retail. A growing range of business and technical services is becoming increasingly tradable, but a large percentage remains local. Marketing or public relations agencies have a global reach, lawyers much less so and cleaning services are clearly a locally provided and non-tradable service.

Figure 2.3. Scale-ups in the service sectors are more likely to expand to new regions

Share of firms by sector that opened establishment(s) in a new TL2 region at least once, 2014-20



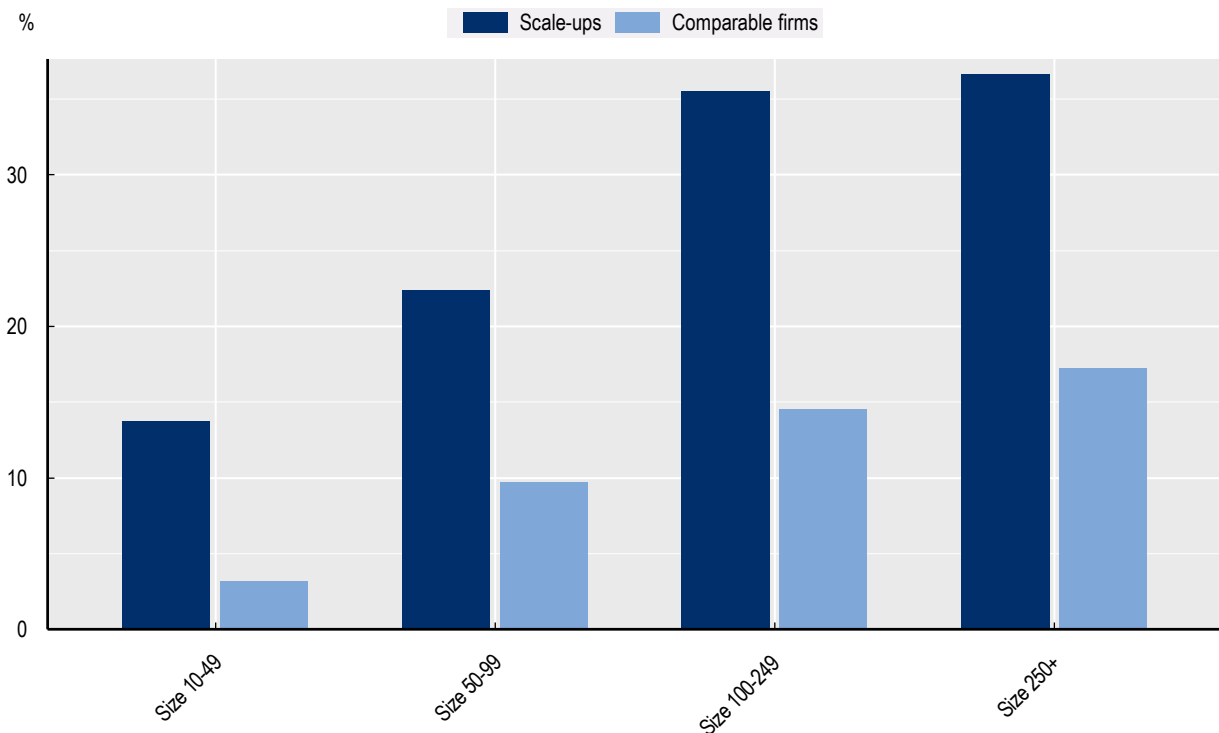
Note: The Nordic countries included are Denmark, Finland, and Sweden. Weighted averages. Scale-ups are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. See Box 1.1 for further details on the definition of scale-ups. Comparable firms are firms (i) that did not scale up and (ii) that had 10 or more employees and annual turnover of min. 2 million EUR at least once over the period of analysis (2011-20). See Box 1.3 for the definition of expansions. Table A B.1 provides details on five sector groups. Firms are allocated to the most frequent sector group in the period before the first expansion happens. In the absence of expansion, the most frequent sector group is calculated over the whole period 2014-20.

Source: Calculations based on microdata sources from three countries. See Annex B for more information.

More than one third of scale-ups with 100 or more employees engaged in domestic expansions over the 2014-20 period, suggesting that larger scale-ups may reach a point of “saturation” in the local market. Scale-ups and comparable firms are allocated to the size class in which they spend most years in the period before the (first) expansion happens. On average across Denmark, Finland and Sweden, the share of scale-ups that expand to new regions is equal to 35% for the size class 100-249, and 37% for the size class 250 employees and above (Figure 2.4). These shares are much larger relative to the 10-49 employees size class (14%) and the 50-99 size class (22%). Combined with the finding that expansions are more common in the service sector, the evidence suggests that for larger scale-ups there are natural boundaries determined by the size of the local market, which they can overcome by expanding in different regions.

Figure 2.4. Larger scale-ups are more likely to expand to new regions

Share of firms by size that opened establishment(s) in a new TL2 region at least once, 2014-20



Note: The Nordic countries included are Denmark, Finland, and Sweden. Weighted averages. Micro firms, i.e. firms with fewer than 10 employees, are excluded from the analysis. Scale-ups are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. See Box 1.1 for further details on the definition of scale-ups. Comparable firms are firms (i) that did not scale up and (ii) that had 10 or more employees and annual turnover of min. 2 million EUR at least once over the period of analysis (2011-20). See Box 1.3 for the definition of expansions. Firms are allocated to the most frequent size group in the period before the first expansion happens. In absence of expansion, the most frequent size group is calculated over the whole period 2014-20.

Source: Calculations based on microdata sources from three countries. See Annex B for more information.

Scale-ups that relocate or expand continue growing

Some scale-ups relocate in the middle of an extended growth period, after an initial period of growth in the home region. In all five countries, before the high-growth period begins, prospective scale-ups are as likely to relocate as comparable firms that never scale up. For the majority of firms that undergo at least a scale-up episode over the 2014-20 period, relocations appear to follow and support the continuation of a first period of growth, rather than to initiate it. In Finland, for example, mean employment of scale-ups grew by 15% in the year preceding the relocation.⁷ In Norway, scale-ups' employment rises by 7% on an annual basis already two years before the relocation. Scale-ups in Denmark, Finland, Norway and Sweden continued to expand their workforce after relocating. Annual increases in their mean employment range from 4% in Denmark to 19% in Norway and Sweden the year after the event. Three years after relocating, scale-ups had average employment levels that were 27-48% higher than in the

⁷ The mean employment, turnover, or productivity refers to the geometric means of employment, turnover, or productivity that were calculated across all scale-ups within each period of time. This measure was chosen over arithmetic mean because it is less affected by extreme values.

relocation year (Figure 2.5, top panel). Turnover dynamics show even stronger increases (34-63%) in scale-ups' mean turnover accompanying their relocation (Figure A A.4). As a result, scale-ups' productivity (measured as value added per employee, see Table A B.4 for further details) also increased after the relocation in Denmark and Finland, while it was stable in Norway and Sweden (Figure 2.5, bottom panel).

In Denmark, Finland and Sweden expansions take place at the beginning of a period of rapid growth. Expansions are more likely to take place during rather than before the high-growth period (Figure A A.5). Across the three countries analysed, the beginning of a period of rapid growth coincides with the year of an expansion or the year prior, on average, across all scale-ups that expand. While it is expected that a new expansion is supported by additional workforce, this evidence suggests that output also expands by a similar extent and that the growth is sustained over time. In the case of Denmark and Finland, the average growth in employment and turnover tends to flatten two or three years after the expansion (Figure A A.6, top panel). Being an average, this may be the result of a combination of cases in which the growth persists and cases in which there is a contraction in size and output.

The fastest-growing scale-ups are more likely to relocate than the average scale-up. The relocation rates in the group of top 50 fastest employment scale-ups in each country are 1.2 to 3.8 times as large as in the entire group of employment scale-ups in Denmark, Finland, Norway and Sweden (Figure 2.6). In Denmark, Finland, and Sweden, top 50 turnover scale-ups are 2 to 3.5 times as likely to relocate as all turnover scale-ups. The top 50 turnover scale-ups in Norway and Iceland are exceptions to the overall trend. The former are slightly less likely to relocate than the average Norwegian scale-up. The latter do not relocate at all during 2014-20. The low rate in Iceland reflects the concentration of economic activity in one of the two regions of the country.

The fastest-growing scale-ups are also more likely to expand. The share of the top 50 fastest growing employment scale-ups that opened establishments in new regions during the 2014-20 period was equal to 35% in Finland, 50% in Sweden and 59% in Denmark. (Figure 2.7). For the top 50 turnover scale-ups the shares are slightly lower: 26% in Finland, 45% in Sweden, and 31% in Denmark. Expansions are therefore an important component of the growth and the transformation process of firms that grow very fast.

Relocations and expansions can support growth ambitions that go beyond the potential of the initial location. The 50 fastest growing scale-ups are among the most dynamic businesses in the country. On average, they increased their employment seven-fold and their turnover eleven-fold over the 2014-17 period (see Chapter 1). Some of them continued to grow beyond the first spurt to become global leaders in their industry, pushing the frontier in innovation, integration in global markets, or productivity growth (Srhøj, Coad and Walde, 2022^[17]). These high-performing firms are often called “superstar” firms in the literature for their outstanding performance (Satterthwaite and Hamilton, 2017^[18]). The higher relocation rates of the top 50 fastest growing scale-ups suggest that in some cases relocations are instrumental to achieving high growth. The most growth-oriented scale-ups may reach the limits of the potential of their current location and may need to relocate to continue growing. Indeed, those scale-ups that relocate tend to do so after an initial growth period. One of the limits that scale-ups may meet is the size of the local market, as scale-ups that operate in service sectors, which are more likely to provide non-tradable services, relocate more often than manufacturing firms. Another local obstacle for growth-oriented firms can be talent acquisition. Interviews with Nordic scale-ups highlighted that difficulties in hiring workers with specific skills is often a bottleneck to growth in the home region and could be a reason to relocate (see Box 2.1).

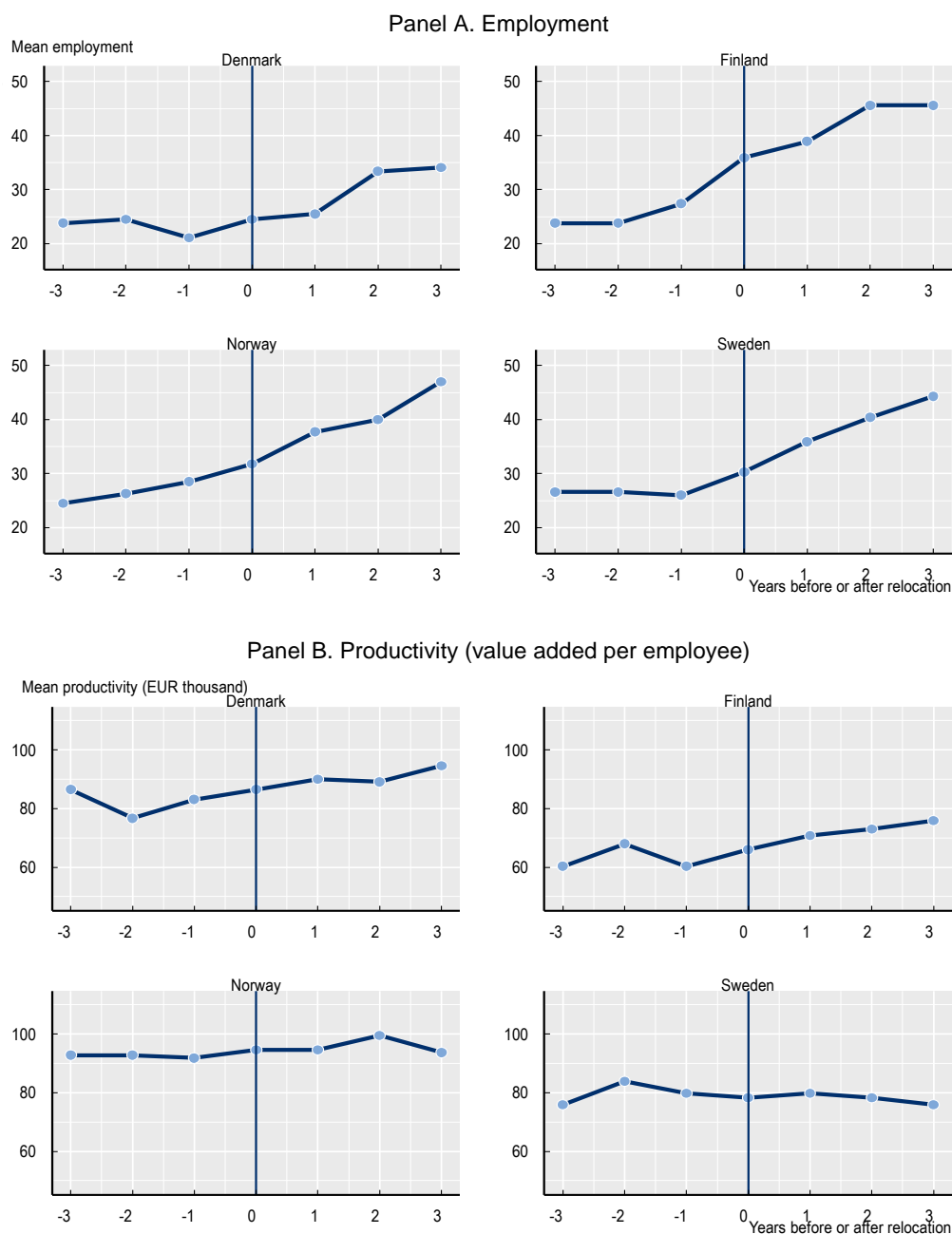
Productivity wanes in the years immediately before expansions and recovers afterwards. On average, productivity drops by 4% in the year preceding the expansion in Denmark and by 4-5% in the expansion year in Sweden and Finland (Figure 2.8). Considering that productivity is calculated as value added per employee, this evidence may have three explanations. First, the expansion may be a necessary investment to revert a slowdown in value added. Second, the drop in productivity may be due to a workforce increase predating the expansion. Third, the decrease in productivity may be due to an increase in costs as the expansion need to be prepared with additional investments and expenditures (e.g., building new

networks, administrative and logistic costs, building brand awareness in the new location, etc). The increase may be necessary to prepare for it and may not immediately result in additional output. In the years after the expansion, average productivity shows an increase that more than compensates for the initial drop in the three countries. This seems to suggest that the expansion investment “pays off” also in the short term and may sometimes be necessary to unleash the scale-up’s productivity growth potential.

Expansions can be complex. Expansions entail both direct and indirect costs for the firm. In some cases, the new establishment(s) may represent a significant and risky investment for the firm, especially in capital-intensive sectors. Opening establishments in new regions (or countries) also poses organisational and managerial challenges. For instance, managers may find it more difficult to oversee the production process if it is materially located in a different site, and the logistics of inventories and supplies also becomes much more complex. From the qualitative interviews, it also emerged that several companies are concerned that the “company culture” may weaken if the employees are spread out across multiple locations (Box 2.2).

Figure 2.5. Scale-ups continue to grow in employment and consolidate productivity gains after relocating

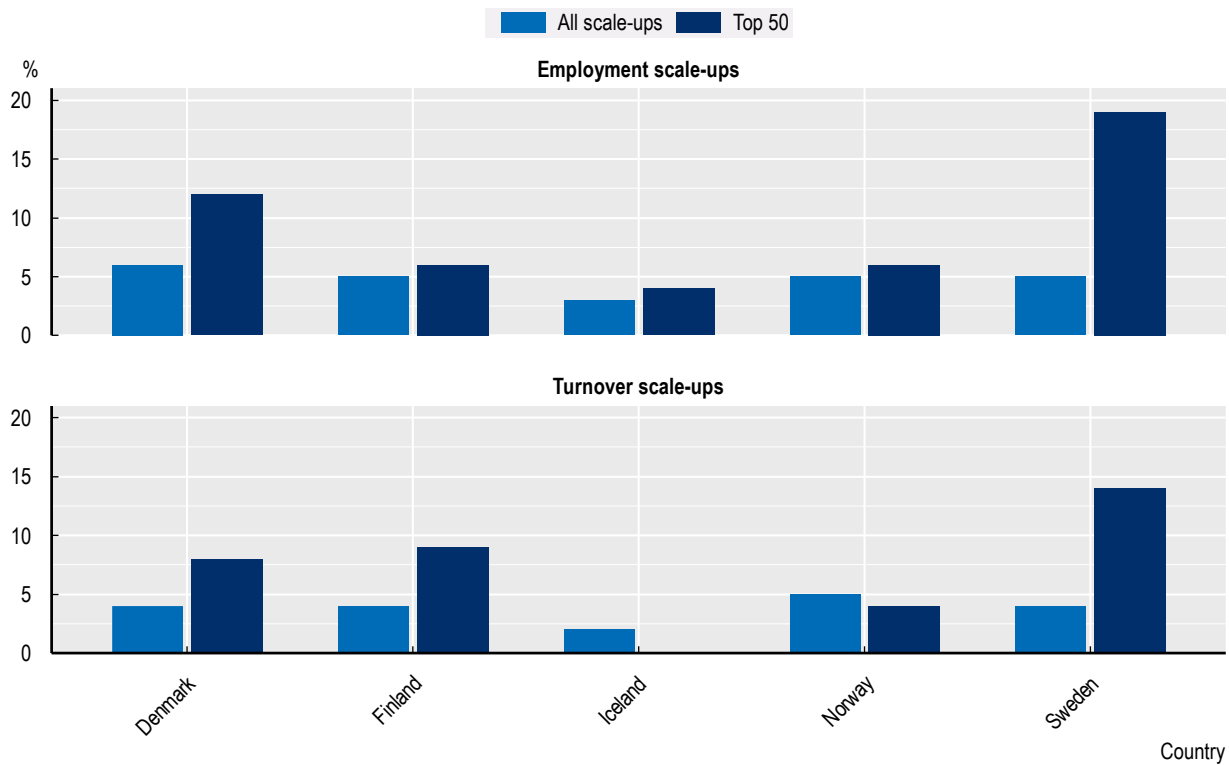
Trends in mean employment (top panel) and productivity (bottom panel) before and after relocating; scale-ups, 2014-20



Note: The graphs show annual changes in mean employment (Panel A) and productivity (Panel B) over the 7-year interval, which covers three years before and after the first relocation and the relocation year. Vertical lines indicate the relocation year. See Box 1.3 for the definition of relocations. Table A B.4 explains how employment and productivity were measured. The sample is limited to scale-ups, which are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. Box 1.1 provides further details for the definition of scale-ups. Iceland is excluded from the analysis due to a very small number of scale-ups that relocate. Source: Calculations based on microdata sources from four countries. See Annex B for more information.

Figure 2.6. The 50 fastest-growing scale-ups relocate more often than other scale-ups

Share of firms that relocated to a different TL2 region at least once, 2014-20

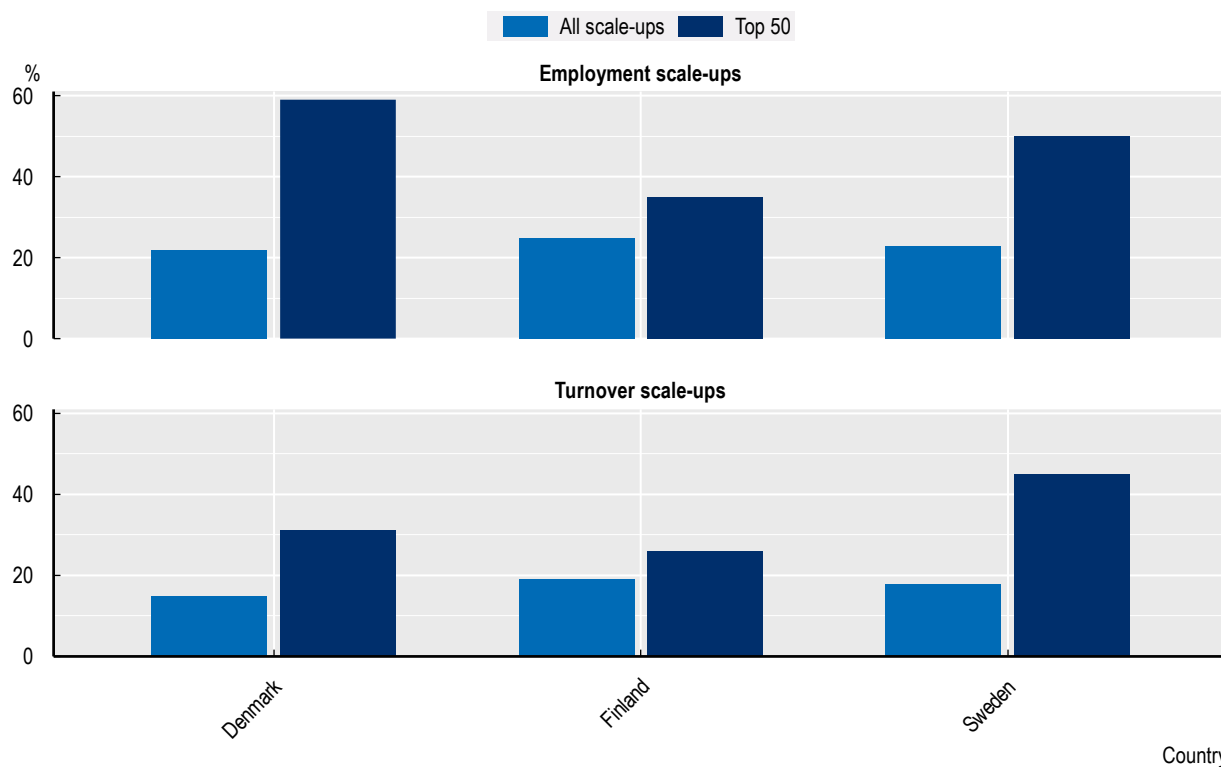


Note: Top 50 employment and turnover scale-ups are defined in each country based on the employment or turnover growth rates between 2014 and 2017. A firm may belong to both groups. All employment or turnover scale-ups include firms that grew in employment or turnover, respectively, at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. See Box 1.1 for further details on the definition of scale-ups and Box 1.3 for the definition of relocations.

Source: Calculations based on microdata sources from five countries. See Annex B for more information.

Figure 2.7. The 50 fastest growing scale-ups are more likely to expand to new regions than the average scale-up

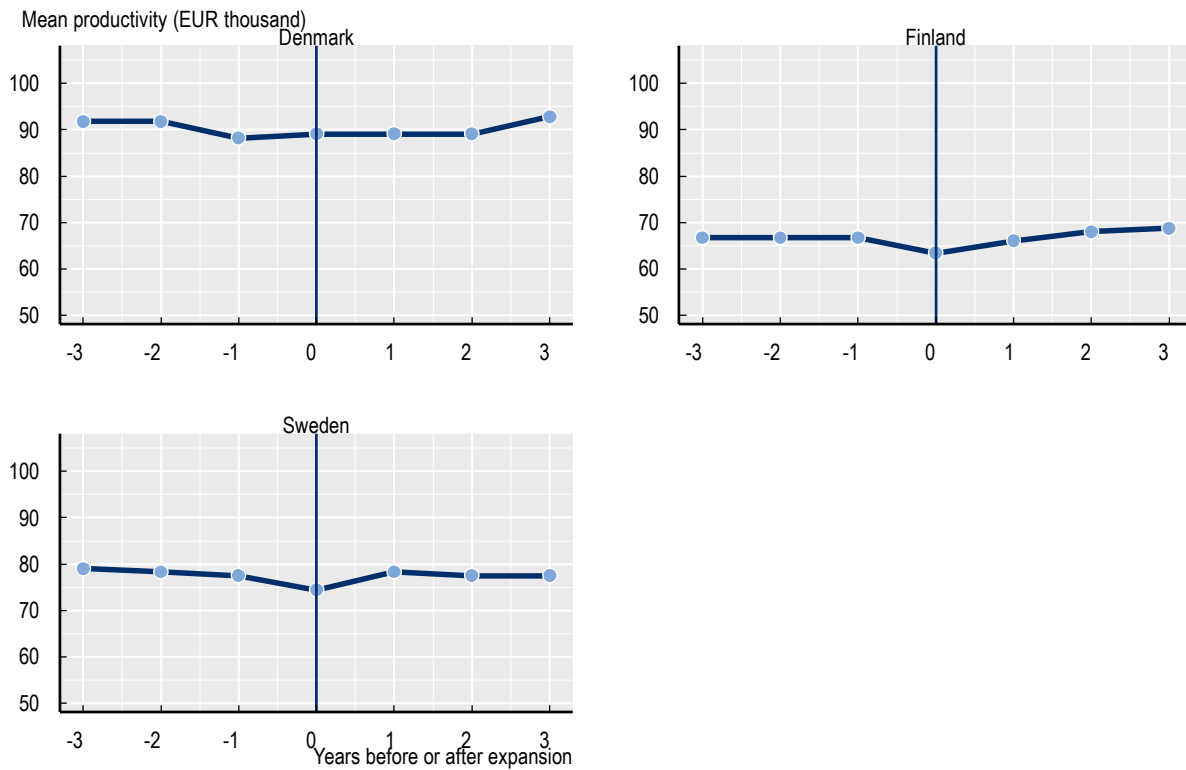
Share of scale-ups that expanded in a new TL2 region at least once, 2014-20



Note: Establishment-level data are not available for Iceland and Norway. Top 50 employment and turnover scale-ups are defined in each country based on the employment or turnover growth rates between 2014 and 2017. A firm may belong to both groups. All employment or turnover scale-ups include firms that grew in employment or turnover, respectively, at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. See Box 1.1 for further details on the definition of scale-ups and Box 1.3 for the definition of expansions.

Figure 2.8. Productivity wanes before the expansion and resumes growing afterwards

Trends in mean productivity (value added per employee) before and after expanding, 2014-20



Establishment-level data are not available for Iceland and Norway. The graphs show annual changes in mean productivity over the 7-year interval, which covers three years before and after the first expansion and the expansion year. Vertical lines indicate the expansion year. See Box 1.3 for further details on the definition of expansions. Table A B.4 explains how productivity is measured. The sample is limited to scale-ups, which are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. See Box 1.1 for further details on the definition of scale-ups.

Source: Calculations based on microdata sources from three countries. See Annex B for more information.

Firms that relocate or expand value proximity to urban centres

Regions closer to capital-city regions are more likely to be the destination of a relocation.

Econometric analysis of the relocation patterns of scale-ups shows that scale-ups are less likely to move to areas that are more distant from capital cities.⁸ Distance to the largest city and the degree of urbanisation capture a range of agglomeration-related benefits and costs. The capital-city region is the main urban agglomeration in all Nordic countries. Scale-ups may therefore relocate close to or within the capital-city regions to benefit from agglomeration benefits. Higher productivity is due to economies of scale in non-tradable sectors. The quality of the workforce also plays a role, as larger cities on average have a more educated population. Urban agglomerations also facilitate frequent interactions with different actors, such as suppliers or research partners. These factors create learning opportunities for workers, who increase their productivity faster as they move to larger cities (de la Roca and Puga, 2017^[19]). Shared goods, such

⁸ Other regional variables that are taken into consideration in the analysis – such as gross domestic product (GDP) per capita, share of highly educated workers, and proxies for institutional quality and innovation activity – do not provide any clearcut and statistically significant results. Given the relatively small number of TL2 regions in the Nordic countries, future research should expand the analysis to other OECD countries to obtain more informative estimates.

as transport infrastructures or higher education institutions, are also a driver of higher productivity in urban agglomerations. However, firms in cities bear higher labour costs, as wages need to compensate for higher housing prices and non-pecuniary costs, such as pollution, congestion and crime, which typically also increase with city size.

Scale-ups are more likely to relocate from regions close to capital-city regions. In Denmark, scale-ups have the highest probability to relocate from Zealand (7%), which is a region bordering the Copenhagen capital region. In Norway scale-ups with the highest probability to relocate are originally based in South East (8%) and Innlandet (9%), the closest regions to Oslo. In Sweden, scale-ups located in the most distant region from Stockholm (Upper Norrland) have the lowest probability (3%) of relocating. Finland is an exception, with the highest share of scale-ups' relocations originating from the West and Northern and Eastern Finland (6%), regions which are relatively distant from the capital Helsinki (Figure 2.9). Regions that are more distant from the capital city have therefore both a lower inflow and outflow of scale-ups.

Scale-ups face a trade-off between higher productivity and higher wages in urban agglomerations. Scale-ups may decide to relocate at a stage of their business life cycle when the benefits of agglomerations compensate for the higher wages. Through different channels bigger cities support higher productivity of both workers and firms (Ahrend et al., 2017^[20]). This would explain the higher inflow and outflow of scale-ups in proximity of the capital city. Urban agglomeration also offers a more diverse business environment that may prove suitable for a growth-oriented young firm that is experimenting with different production processes to realise their full potential. At this stage, the firm prefers to locate in a diversified urban agglomeration to avoid making a costly move after each trial. Once the firm finds its ideal production process, it chooses to migrate to a specialised area where it can access a specialised labour pool and other sector-specific resources, without having to face the high costs of a diversified urban agglomeration (Duranton and Puga, 2001^[21]).

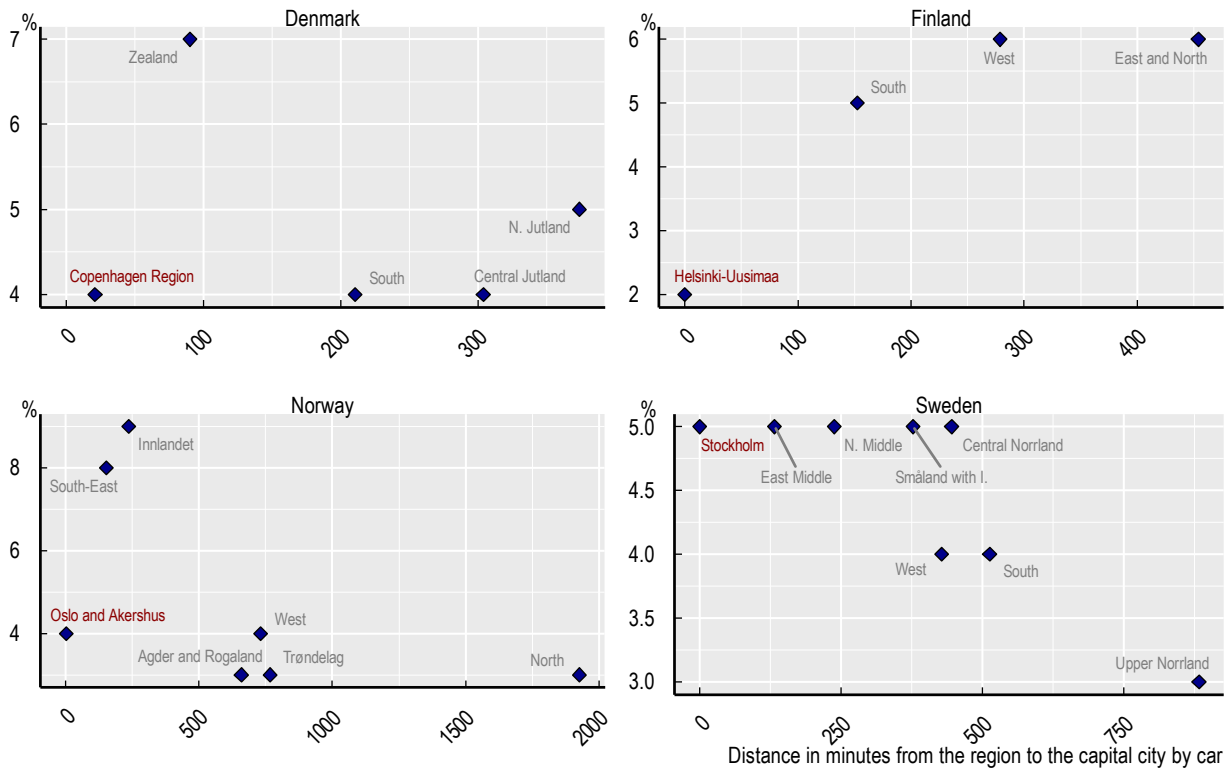
Scale-ups tend to choose a nearby location when they relocate. Firms aim to minimise risks when planning a relocation and therefore prefer nearby destinations that are more accessible to explore beforehand. In nearby destinations it is also easier to establish contacts and acquire the necessary facilities before relocation. Areas that are close to the initial location allow firms to retain part of the workforce and maintain existing relations with customers and suppliers (Nilsen et al., 2020^[22]). For instance, in Denmark and Norway 69% and 92% of the relocations across different small (TL3) regions are confined within the same T2 region, respectively. The share is equal to 34% in Finland and to 28% in Sweden.

Scale-ups mainly relocate to areas with a similar or higher degree of urbanisation. In most cases, origin and destination small regions are both predominantly urban or have intermediate population density (Figure 2.10).⁹ E.g., 31% of Norwegian scale-ups that change location move to and from intermediate regions, and 22% to and from urban regions. The distribution of relocations is similar in Denmark and Sweden, in which 30% of relocations happen to and from predominantly urban regions. Some scale-ups also relocate to areas with higher levels of urbanisation than the original region. In Denmark and Sweden, about one third of relocations have a more urban region as destination, and in Finland this is the most prevalent category (42%).

9 Additional analysis classifies small regions (TL3) into four groups depending on their level of urbanisation – predominantly urban, intermediate, predominantly rural close to city, or predominantly rural remote – and calculates the share of relocations for each of the 16 possible origin-destination combinations.

Figure 2.9. Scale-ups relocate from regions close to the capital-city regions

Share of scale-ups that relocate to a different region (vertical axis) in all scale-ups located in the region and distance to the capital city by car in minutes (horizontal axis)

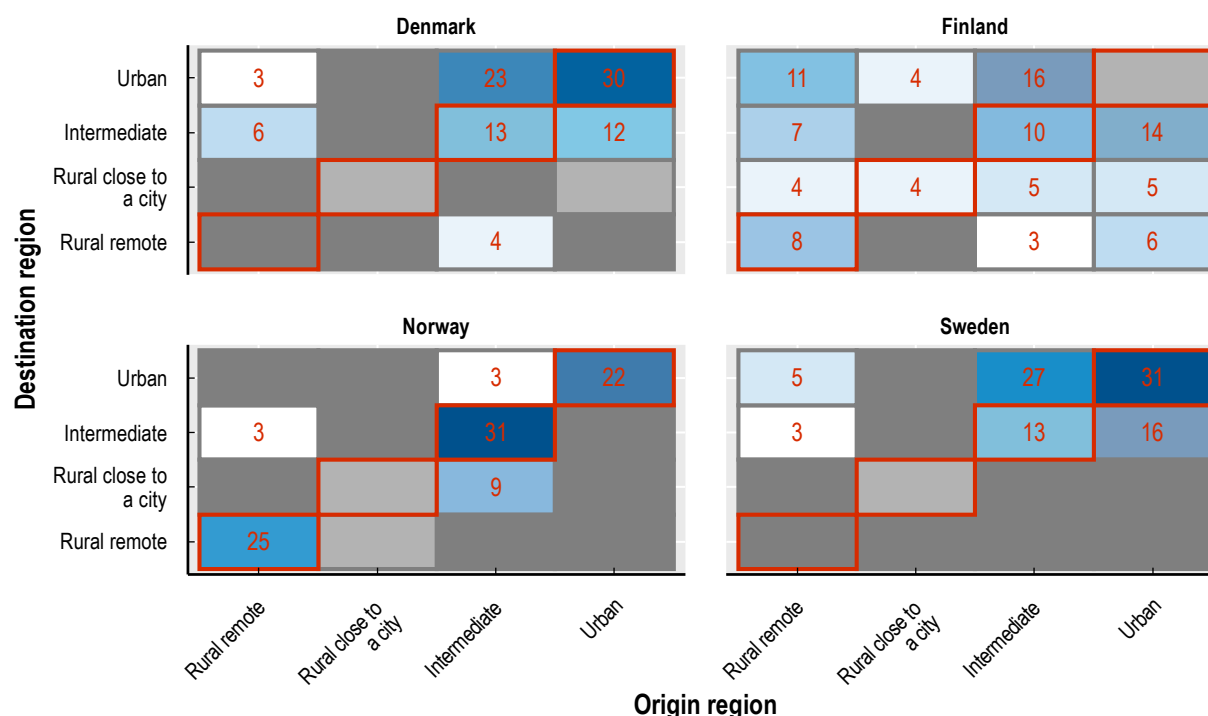


Note: The sample is limited to scale-ups, which are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. Box 1.1 provides further details for the definition of scale-ups. Regions indicate the location in which the firm spent the longest period before relocating. See Box 1.3 for the definition of expansions. Åland is excluded from the analysis due to a small number of scale-ups ($N < 30$). Data disaggregated by the initial location (origin region) are not available for Iceland due to the small population of scale-ups. Table A B.4 explains how driving distance in minutes from the region to the capital city was constructed.

Source: Calculations based on microdata sources from four countries. See Annex B for more information. Data on road travel time was extracted from ESPON Database (2020_[23]).

Figure 2.10. Scale-ups relocate mainly between non-rural regions

Share of origin-destination pairs in all scale-ups' relocations by typology of small (TL3) region, 2014-20



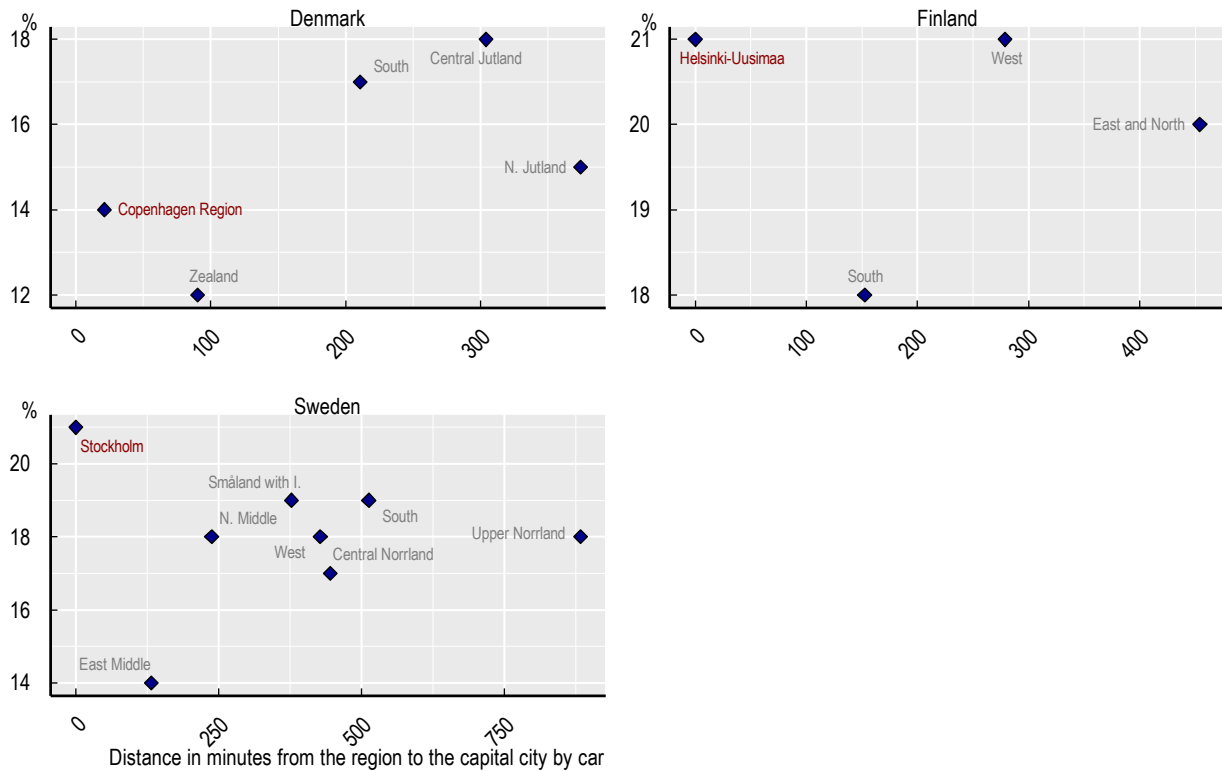
Note: Share of all relocations at the TL3 level. The sample is limited to scale-ups, which are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. The origin and destination small regions (TL3) are classified as (predominantly) urban, intermediate, (predominantly) rural close to city, or (predominantly) rural remote based on the OECD Extended Regional Typology – see [OECD \(2011\)](#) for further details. Light grey indicates that a combination does not exist because there is only one or no TL3 region in the given typology in the country. Dark grey indicates that a combination accounts for less than 3% of all relocations at the TL3 level in a given country. Firm location at the TL3 level is not available for Iceland.

Source: Calculations based on microdata sources from four countries. See Annex B for more information. Regional types were extracted from OECD.stats (2022^[24]).

Scale-ups in less central regions may expand to regions closer to the capital city to access a larger market. Scale-ups in regions that are at a driving distance of 3-4 hours from the capital city have a share of expanding scale-ups that is 3 to 6 percentage points higher than the share for scale-ups close to the capital-city regions in the three countries with available data (Figure 2.11). Expansions appear to be mainly demand-driven as they are more frequent in the service sector. Scale-ups that are not located in the proximity of the capital-city region may need to open new facilities to access new markets. Scale-ups that are already headquartered in proximity of the capital-city region, instead, may already be able to serve that market, which would explain the low expansion rate. However, in Sweden and Finland scale-ups headquartered in the capital-city region also have a relatively high expansion rate. In this case, supply factors, such as the need to reduce costs by moving the production phases in areas with lower wages, may be the primary reason to expand to other regions.

Figure 2.11. Scale-ups in regions farther away from the capital-city region are more likely to expand

Share of scale-ups that expand to a new region (vertical axis) in all scale-ups located in the region and distance to the capital city by car in minutes (horizontal axis)



Note: Establishment-level data are not available for Iceland and Norway. The sample is limited to scale-ups, which are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. Box 1.1 provides further details for the definition of scale-ups. Regions indicate the location in which the firm spent the longest period before expanding. See Box 1.3 for further details on the definition of expansions. Åland is excluded from the analysis due to a small number of scale-ups (N<30). Table A B.4 explains how driving distance in minutes from the region to the capital city was constructed.

Source: Calculations based on microdata sources from three countries. See Annex B for more information. Data on road travel time was extracted from ESPON Database (2020^[23]).

3 How do scale-ups' relocations and expansions affect workers?

Key messages

- Despite their rapid growth, 20-25% of workers leave a scale-up each year, on average, in the Nordic countries.
- Relocations and expansions increase the worker separation rate in scale-ups. Workers are up to 10 percentage points more likely to leave a scale-up during a relocation than in other periods. This may, in part, explain why most scale-ups do not relocate. Workers are also up to 5 percentage points more likely to leave a scale-up during an expansion.
- The increase in the share of separations during relocations and expansions, compared to other periods, is due to workers joining other companies.
- Up to 47% of workers who leave a scale-up during a relocation or an expansion join a firm in a new region. The share of scale-ups' workers who leave to a new region in all separations is 11-20 percentage points higher during relocations than in other periods. In the case of expansions, the difference is 2-8 percentage points. The pattern holds across all education and occupation groups, but differences are larger for more educated workers and workers in high-skill occupations.
- Scale-ups' managers consistently mention attracting and retaining talents as the most important challenge in growing their businesses. In this regard, relocations and expansions can be a double-edged sword. While, on the one hand, relocations and expansions to places with a larger labour pool may make it easier for scale-ups to recruit talented workers, it can, on the other hand, also make it easier for existing employees to find other opportunities.

Workers leave scale-ups at a higher rate during relocations and expansions

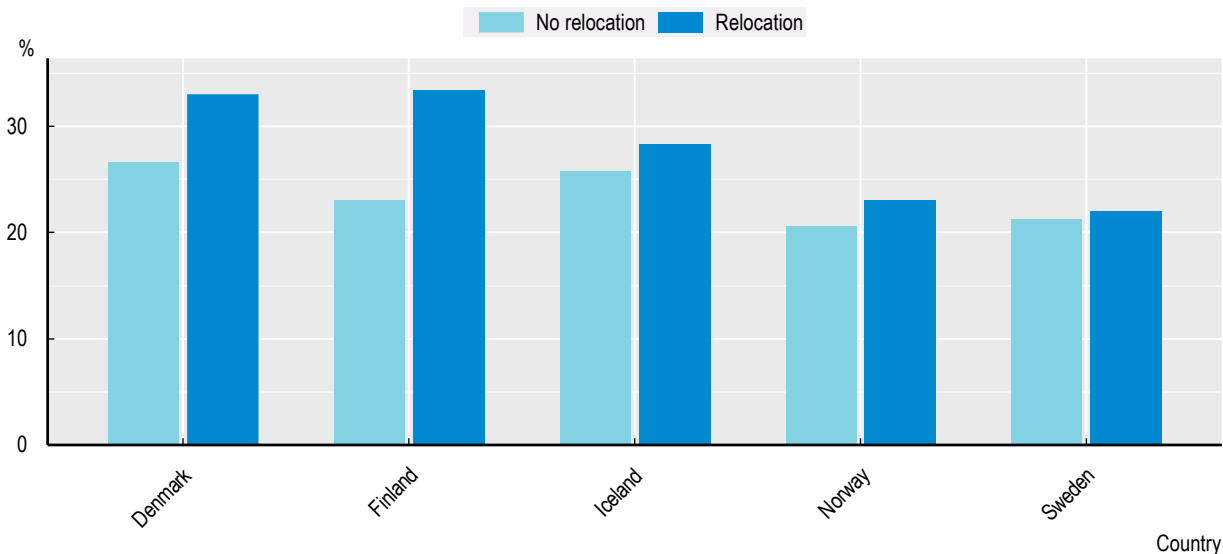
On average, 20-25% of workers leave a scale-up each year. The share of workers who leave a scale-up is 27% in Denmark, 23-24% in Finland, 26% in Iceland, 21% in Norway and 21% in Sweden. Scale-ups have a larger share of workers that have shorter tenure in the company, as they hire many new workers over a short period of time. Workers with shorter tenure are more likely to leave a company than workers with a longer tenure (OECD, 1993^[25]). Scale-ups also have more volatile growth patterns than companies that grow at a slower rate, which means that in some cases a high-growth period with many hirings is followed by a contraction phase with many separations (Coad, 2007^[26]; OECD, 2021^[5]).

Workers are up to 10 percentage points more likely to leave a scale-up during a relocation. In the relocation year and in the year immediately before or after, the average share of workers who leave a

scale-up ranges from 22% in Sweden to 33% in Denmark and Finland.¹⁰ This corresponds to a difference of 1 (Sweden) to 10 (Finland) percentage points compared to the same scale-ups in other periods or to scale-ups that do not relocate at all (Figure 3.1).¹¹ Therefore, relocations further increase the already high level of worker turnover in scale-ups, which may act as an additional impediment to firms considering relocating.

Figure 3.1. Workers are more likely to leave a scale-up during a relocation

Share of workers who leave a scale-up; 2012-19



Note: The sample is limited to scale-ups' workers. See Box 1.1 for further details on the definition of scale-ups. The relocation period includes the year when the scale-up is observed for the first time in a new region and the year immediately before and after. No relocation includes (i) years outside the three-year relocation window and (ii) scale-ups that never change location during the observation period. In all countries but Norway, the graph uses data for years 2012-19; in Norway, the graph uses data for years 2015-19, due to reduced data availability in the underlying data sources. See Table A B.4 for the definition of workers who leave a scale-up.

Source: Calculations based on microdata sources from five countries. See Annex B for more information.

High worker turnover can have both advantages and disadvantages for scale-ups. An advantage of high worker turnover is that it provides access to fresh talent and improves flexibility. It can help scale-ups adapt quickly to new market trends and changing customer needs.¹² Disadvantages of high worker turnover are that it can lead to high recruitment and training costs, disruptions to productivity, and a negative impact on workers' motivation and company culture. High turnover of highly skilled workers may be particularly detrimental to productivity, as it can result in the loss of expertise and knowledge.

Even partly moving activities through an expansion leads to higher outflow of workers. Workers are up to five percentage points more likely to leave a scale-up as it expands than during other periods. When worker characteristics such as age, gender, education and occupation are also taken into account, the

¹⁰ The data do not allow to distinguish voluntary from involuntary separations.

¹¹ In Sweden the difference is smaller because workers leave at a higher rate already two years before the relocation takes place, as confirmed by further analysis on the exact timing of the separations.

¹² High worker turnover can also be a strategy to compress salaries and increase profitability, as the company can hire new employees at a lower salary than the previous ones. However, this aspect should not be prominent for growing companies such as scale-ups.

difference in the probability to leave is equal to about 4 percentage points in Denmark, 5 percentage points in Finland, and 2 percentage points in Sweden. In all three countries, higher separation rates persist beyond the third year after the first expansion took place, which means that scale-ups have to replace a higher-than-usual number of workers who leave in addition to the hiring that underpins their growth.

Relocations and expansions do not lead to unemployment or inactivity, as workers who leave join other firms. In the case of both relocations and expansions, the higher shares of separations are driven by workers who join other firms. The share of workers for which there is no information on their next location, which includes individuals becoming unemployed or inactive, is not significantly different during relocations or expansions compared to other periods.

All types of workers are more likely to leave a scale-up as it relocates

During a relocation, separation rates tend to increase for workers with all education levels. In Denmark and Sweden, separation rates among workers with university education increase more than for other workers. In Denmark, workers with university education are 41% more likely to leave during a relocation than in other periods, compared to 27% for workers with at most secondary education and 4% for workers with at most primary education. In Sweden, the separation rate for workers with university education is 31% higher during a relocation. In contrast, separation rates for workers with secondary or primary education are 2% and 9% lower, respectively, during a relocation than during other periods. In Norway, the separation rates for workers with primary and university education show the largest difference (around 17-18%), while in Iceland the largest increase is for workers with secondary education (23% difference). In Finland the values are similar across education groups. The differences for other vulnerable or potentially less mobile categories of workers, such as females, foreigners or low-educated, are small in magnitude across the four countries.

Attractive wage offers from other firms may be one of the reasons why highly educated workers leave scale-ups that move. After a scale-up relocates, highly educated workers in Denmark and Sweden earn on average about 2% and 6% less, respectively, than comparable workers in the new location. This difference may reflect a delay of relocating scale-ups in adjusting their wages to the higher living costs that their workers face in larger urban agglomerations. Lower salaries point to a possible side effect of relocations. Scale-ups may lose some of their key workers in a tighter labour market where employers face more competition for talent. For other worker groups there are no significant wage premia or gaps. Therefore, when it comes to interactions with the local labour market, relocations and expansions can be a double-edged sword. While on the one hand relocations and expansions may make it easier for scale-ups to find the talent they need, on the other hand they also make it easier for existing employees to find other opportunities in a tighter local labour market.¹³ The potential impact of relocations and expansions on workers' mobility should be considered when designing policies that aim to attract companies to a given region (Box 3.1).

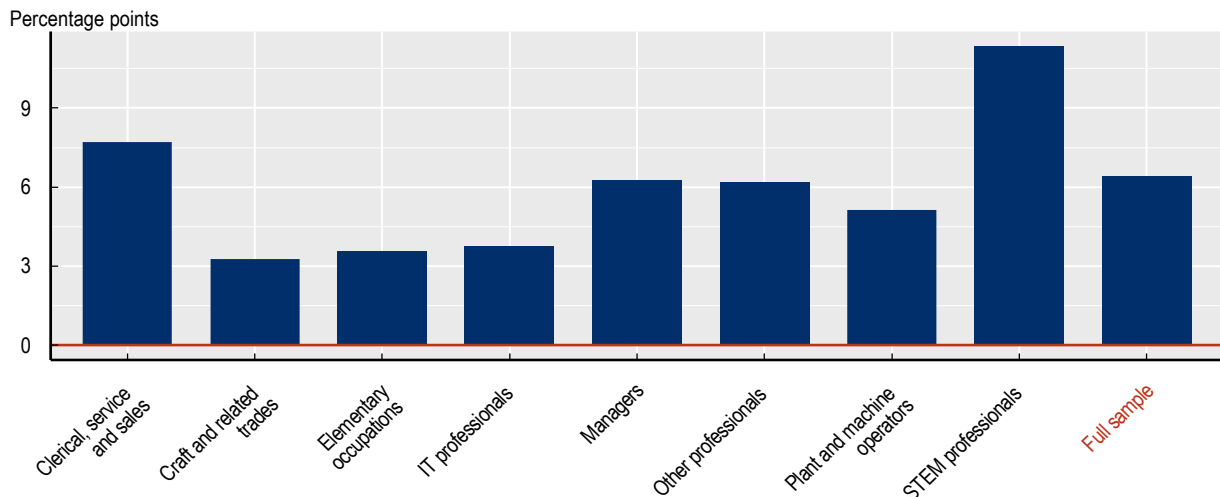
During a relocation, separations tend to increase across all skill groups. Science, technology, engineering and mathematics (STEM) professionals are the occupation group with the largest difference in the probability to leave a scale-up during a relocation compared to other periods in all countries except Norway. In the case of Denmark, for instance, the difference between the relocation and non-relocation period is 11 percentage points (Figure 3.2). Workers in the low or middle skill groups, such as elementary or clerical occupations, plant and machine operators, are more likely to leave in Denmark, Finland, Iceland

¹³ Firms that relocate their workers from establishments in remote locations to headquarters in large cities often lose these workers to competitors in the destination region (Choudhury, Sevchenko and Khanna, 2018[44]). Similarly, high-skilled workers move to a different establishment within the same firm because it is a convenient first step to explore broader opportunities in new locations (Tavares, Carneiro and Varejão, 2018[45]).

and Norway. For example, in Norway clerical, service and sales workers are 7 percentage points more likely to leave in the event of relocation, compared to 2 percentage points across the whole workforce (Figure 3.3). Conversely, in the case of Sweden, plant and machine operators are 4 percentage points less likely to leave in the event of relocation. As Sweden adopts a classification of occupations that is not fully comparable with those of other countries, comparisons with other Nordic countries should be interpreted with caution (see Annex B for additional details).

Figure 3.2. In Denmark, STEM professionals are more likely to leave during a relocation

Differences in separation rates by occupation during a relocation and in other periods; Danish scale-ups, 2012-19

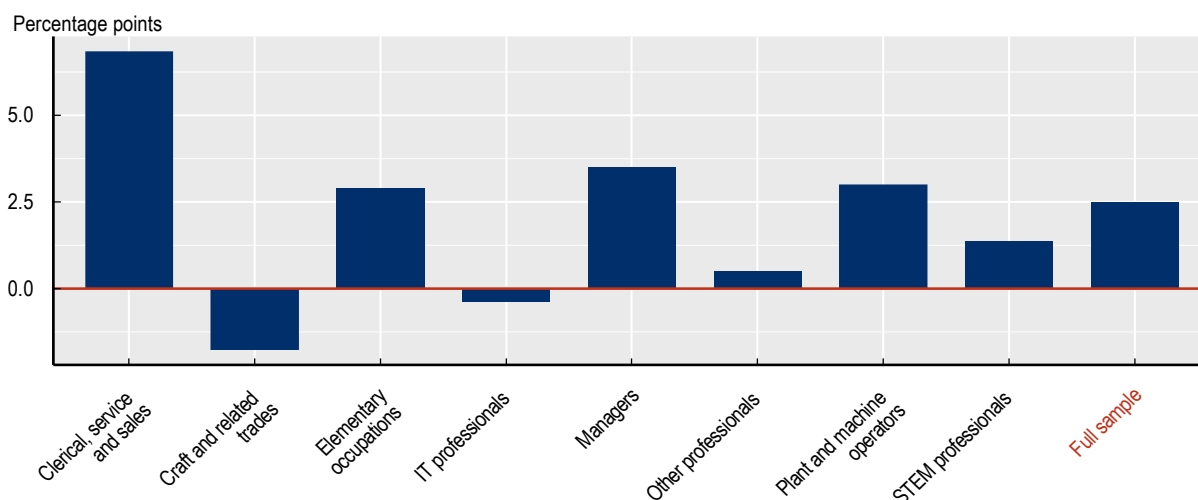


Note: The sample covers only scale-ups' workers for whom information on their occupation is available. See Box 1.1 for further details on the definition of scale-ups. See Table A B.2 for composition of individual occupation groups. For each occupation group, the bars indicate difference in separation rates in scale-ups during relocation years and the same scale-ups in other periods or scale-ups that do not relocate at all.

Source: Calculations based on microdata sources from Denmark. See Annex B for more information.

Figure 3.3. In Norway, workers in middle- and low-skilled occupations are more likely to leave during a relocation

Differences in separation rates by occupation during a relocation compared to other periods; Norwegian scale-ups, 2015-19



Note: The sample covers only scale-ups' workers for whom information on their occupation is available. See Box 1.1 for further details on the definition of scale-ups. See Table A B.2 for composition of individual occupation groups. For each occupation group, the bars indicate difference in separation rates in scale-ups during relocation years and the same scale-ups in other periods or scale-ups that do not relocate at all. Source: Calculations based on microdata sources from Norway. See Annex B for more information.

The increase in separations is driven by workers who join firms in new regions

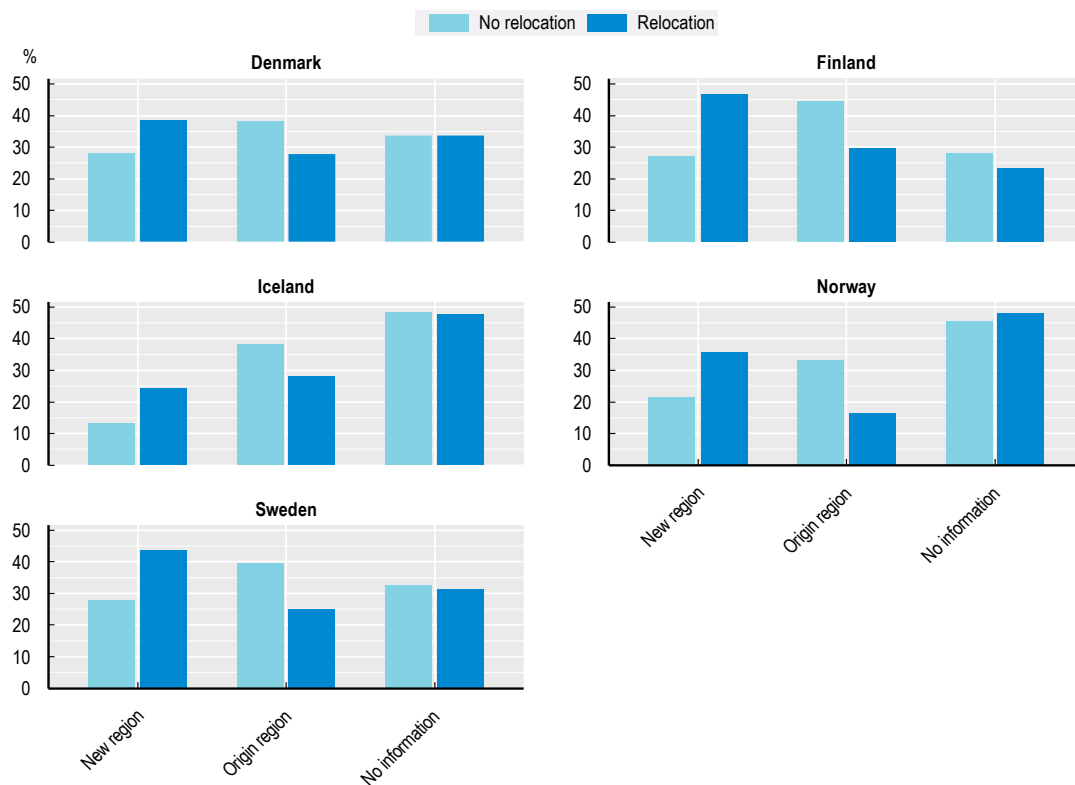
During relocations and expansions, workers who leave a scale-up join firms in a different region than the one where they were originally located. Workers who leave during a relocation or an expansion are classified into three groups: workers who join a new firm in the same region where the previous firm was originally located; workers who join a new firm in a different region than the one where they were originally located; and workers for which no information is available. The share of workers who leave to a new region (in all separations) is higher by 11-20 percentage points during relocations than in the comparison group (the same scale-ups in other periods or scale-ups that do not relocate) (Figure 3.4). For instance, in Finland in the event of relocation 47% of all workers who leave the scale-ups move to a new region, compared to 27% in absence of relocation. Differences are smaller in the case of expansions. Workers who leave a scale-up during an expansion are 2 to 8 percentage points more likely to move to a new region than workers who leave in other periods.

Workers across all education and occupation groups leave to new regions at higher rates during relocations and expansions, but differences are larger for highly educated workers and those in more skill-intensive occupations. During relocations, workers with university education and workers with high-skill jobs tend to be relatively more likely to move to a new region, although with different nuances across countries. For example, in Iceland the share of workers with university degree who leave to a new region (out of all separations) is 23 percentage points higher in the event of a relocation than in the absence of it. For workers with primary or secondary education the shares of separations are 2 and 11 percentage points higher, respectively (Figure 3.5). Denmark and Finland show a similar pattern, while in Norway and Sweden workers with secondary education are relatively more likely to leave to a new region than workers with university or primary education. Workers in high-skilled occupations (managers, ICT and STEM professionals) are also more likely to find a new job in a new region during relocation than workers in low-

skilled occupations in all countries except Norway (see e.g. Figure A A.9 for Denmark). Expansions are characterised by similar dynamics, although with smaller differences in the share of workers that leave the scale-up.¹⁴

Figure 3.4. Workers who leave during a relocation are more likely to move to a new region

Share of separations by destination location in all separations; scale-ups, 2012-19



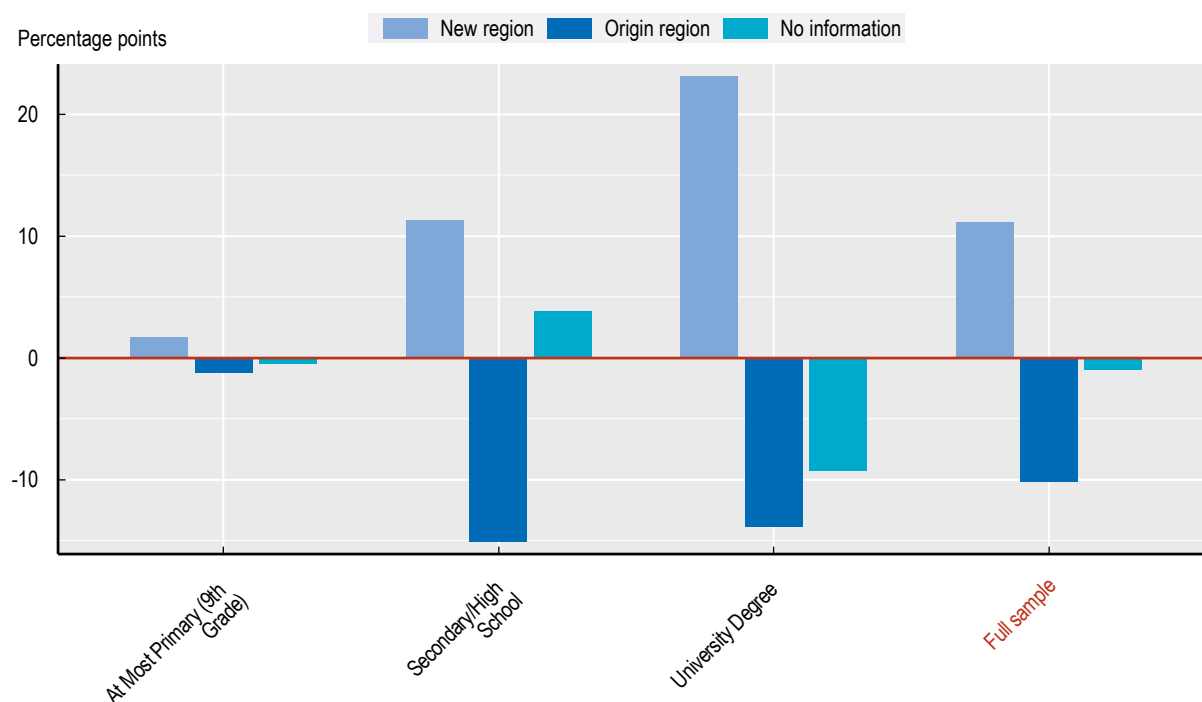
Note: The sample is limited to workers who leave a scale-up. See Box 1.1 for details on the definition of scale-ups. The relocation period includes the year when the scale-up is observed for the first time in a new region and the year immediately before and after. No relocation includes (i) years outside the three-year relocation window and (ii) scale-ups that never change location during the observation period. “New region” destination includes workers who are observed for the first time in the following year in a different firm located in a region different from the worker’s origin region. See Table A B.4 for the definition of a worker’s origin region. “Origin region” destination includes workers who are employed in the following year for the first time in a different firm located in the same region as the worker’s origin region. The “no information” category includes scale-ups’ workers who are observed for the last time in the given year. Data for Norway cover the period 2015-19.

Source: Calculations based on microdata sources from Finland. See Annex B for more information.

14 In Denmark and Finland, highly educated workers who leave during an expansion are 3-4 percentage points more likely to find employment in a new region than workers with lower education achievements. In Denmark, Finland and Sweden workers in STEM or IT occupations and managers are 2-4 percentage points more likely to leave to a new region than the average worker.

Figure 3.5. In Iceland, highly educated workers who leave during a relocation are more likely to move to a new region than workers who leave in other periods

Shares of separations by destination in all separations for workers with different education levels; differences between the relocation period and other years; Iceland, 2012-19



Note: The sample covers workers who leave a scale-up and for whom information on their highest educational attainment is available. See Box 1.1 for further details on the definition of scale-ups and Annex B for composition of individual education groups. For each education group, the bars indicate the difference between the relocation period and no relocation in the shares of workers (in all separations) who leave to a firm in a new region, a firm in the origin region, or whose future employment status is not known. Table A B.4 provides further details on three types of separations. The relocation period includes the year when the scale-up is observed for the first time in a new region and the year immediately before and after. No relocation includes (i) years outside the three-year relocation window and (ii) scale-ups that never change location during the observation period.

Source: Calculations based on microdata sources from Iceland. See Annex B for more information.

Box 3.1. Lessons for local policies aimed at attracting businesses

National and subnational governments across the OECD often implement policies to attract businesses with high-growth potential to specific regions, with the objective of supporting local economic growth. These policies may include a variety of instruments including tax incentives, business support services, dedicated land use planning and zoning or the provision of transport infrastructure.

The findings of this report can inform better policy design by providing five lessons:

1. **Support business expansions to new locations rather than full relocations.** Incentivising relocations may not be the most effective way to support high-growth businesses. 95% of scale-ups retain activity in their home location over the 7-year period studied in this review. Expansions are a more natural process for companies to diversify their local presence and access new markets. Thus, policies that support expansions may be more effective in promoting growth while allowing companies to maintain their ties with their home regions. In practical terms, this would mean that public support should not be conditional on the location of the headquarter or of the entire firm, but on the location of some of the establishments.
2. **The fastest growing companies are more mobile than other firms.** The top 50 fastest growing companies are significantly more likely to relocate and expand than the average scale-up. In particular, expansions are a natural component of the growth process of the most successful scale-ups. Therefore, these companies may be more reactive to incentives to attract the localisation of their establishments to specific regions.
3. **Consider the potential impact on different sectors.** Policies aimed at attracting existing high-growth businesses will mostly attract firms in the service sectors, as those are the most likely to expand and relocate. The resulting increased local competition may have positive effects for consumers, but it may also create challenges for existing local businesses.
4. **Consider the possible impact on inequality across regions.** Scale-ups tend to relocate to regions that are closer to the largest urban agglomeration in the country. These regions are therefore more likely to benefit from interventions that support scale-ups' relocations that do not target specific places or regions. "Place-blind" interventions may therefore increase spatial inequalities. In more remote regions, policies should leverage local comparative advantages.

4 Are scale-ups more likely to become foreign owned?

Key messages

- The share of scale-ups that are acquired by foreign entities between 2014 and 2020 ranges from 6% in Sweden to 20% in Norway.
- Scale-ups grow at a similar pace before and after a foreign acquisition. Foreign capital appears to support the sustainability of the growth process, providing the necessary resources to consolidate at the new scale. Foreign acquisitions do not lead to a higher probability to exit the market and neither are they associated with negative nor positive trends in productivity, on average.
- The fastest-growing scale-ups are more often the target of foreign acquisitions than the average scale-up. The share of the top 50 fastest-growing employment scale-ups that become foreign-owned ranges from 6% in Iceland to 36% in Norway. For top 50 turnover scale-ups, the share ranges from 4% in Denmark to 32% in Norway.
- Across Denmark, Finland, Sweden and Norway, 18% of scale-ups that provide ICT or professional services and 15% of scale-ups that operate in medium/high-tech manufacturing become foreign owned, compared to only 4% in construction. The Nordic countries' comparative advantages, such as their skilled workforce and the innovative business environment, are reflected in the concentration of foreign investments in medium-high and high-tech manufacturing, as well as advanced business services.
- Workers in all countries but Denmark leave at higher rates during foreign acquisitions, with separation rates that are 2 to 9 percentage points higher than during other times. Workers in low- and middle-skill occupations are more likely to leave during a foreign acquisition than other workers, especially in Sweden and Finland. Workers in elementary occupations who leave a scale-up during a foreign acquisition face a higher risk to become unemployed. Conversely, foreign acquisitions do not increase separation rates for highly educated workers or those in high-skill occupations. Managers are an exception: the share of managers who leave a scale-up during a foreign acquisition is higher by 2-5 percentage points.

Foreign acquisitions can have both positive and negative consequences for the host region

An inflow of foreign capital can have a positive impact on the target companies and on their customers and suppliers. In general foreign ownership is typically associated with improved productivity and higher wages, both via direct effects on the target firms and indirect effects on other firms in the same area (Fons-Rosen et al., 2021^[10]; Setzler and Tintelnot, 2021^[27]). Direct positive effects of foreign acquisitions include access to new resources and technology, increased market access and improved

financial performance through economies of scale and cost reduction. Indirect effects on other firms, also referred to as spillovers, can materialise as firms improve their efficiency by adopting the technologies of foreign affiliates operating in the local market. This can be achieved through observation or by hiring workers who were trained by the foreign affiliates. Another type of spillover happens when multinational entry leads to increased competition in the host country market, prompting local firms to use their existing resources more efficiently or search for new technologies (Javorcik, 2004^[28]).

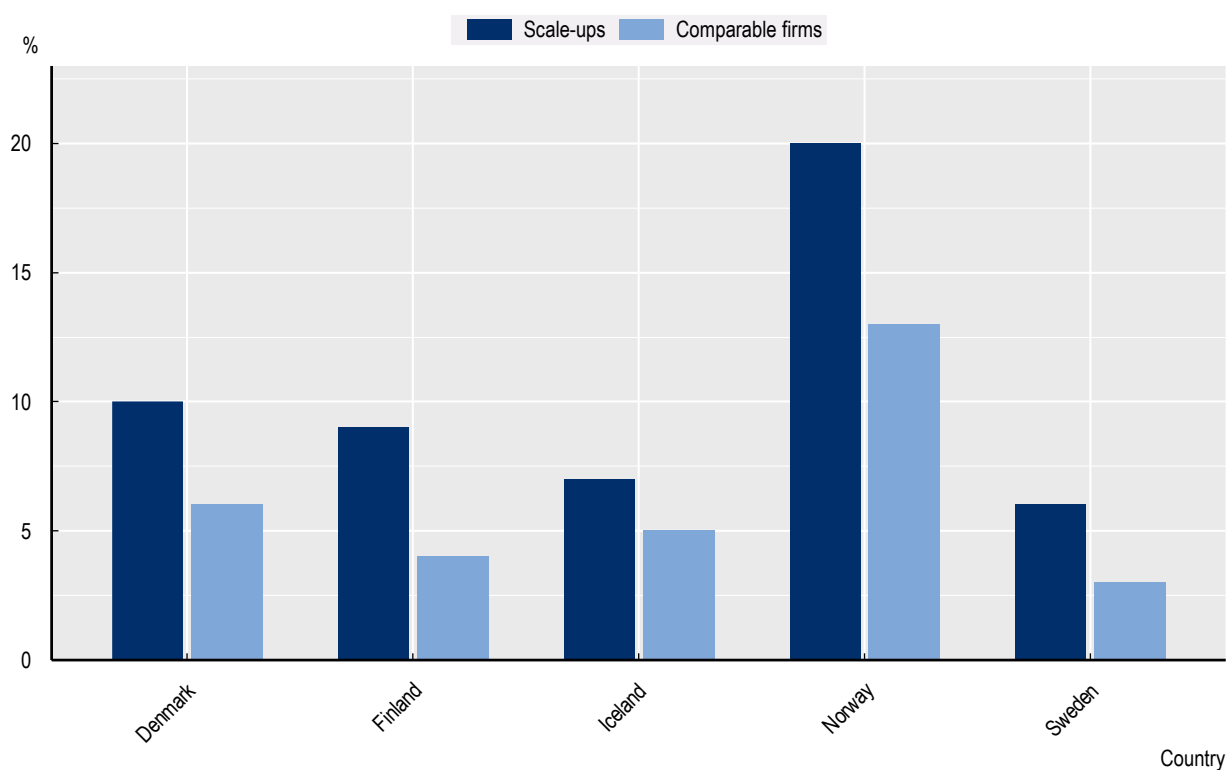
Foreign acquisitions may negatively affect the target firm and the host region as activities are transferred elsewhere or terminated. The acquiring group may decide to consolidate and restructure its operations after the acquisition to exploit economies of scale and avoid duplicated functions or activities. The restructuring may result in a reduction of the operations of the newly acquired company. Key staff may be transferred to a different location or may leave the company. In the most extreme cases, “killer acquisitions” by large companies may target entrepreneurial start-ups to shut down their projects before they become a competitive threat. An analysis of acquisitions in the pharmaceutical industry in the United States shows that 5.3% to 7.4% of acquisitions belong to this category (Cunningham, Ederer and Ma, 2021^[29]). While in principle the phenomenon encompasses both domestic and foreign acquisitions, in small open economies like the Nordic countries acquisitions by large groups are more likely to originate from abroad.

Foreign acquisitions support scaling up

Up to 20% of scale-ups undergo a foreign acquisition over the 2014-20 period. The share of scale-ups that experience a foreign acquisition ranges from 6% in Sweden to 20% in Norway (Figure 4.1). The figures are consistent with research from Nordic Innovation showing that 79% of Nordic scale-ups were domestically owned in both the start and end year of the growth period 2016-19 (Nordic Innovation, 2021^[3]). Scale-ups are more likely to get acquired by foreign investors than comparable firms, and the result holds even when other characteristics such as size, sector and location are taken into account. The difference is especially pronounced in Finland. The share of scale-ups with an ownership change from domestic to foreign is 5 percentage points higher than the corresponding share of comparable firms. Figure A A.11 illustrates that there are only small differences in the acquisition rates between employment and turnover scale-ups across the four countries.

Figure 4.1. Up to 20% of scale-ups are acquired by foreign investors over a 7-year period

Share of firms that were acquired by foreign investors; period 2014-20



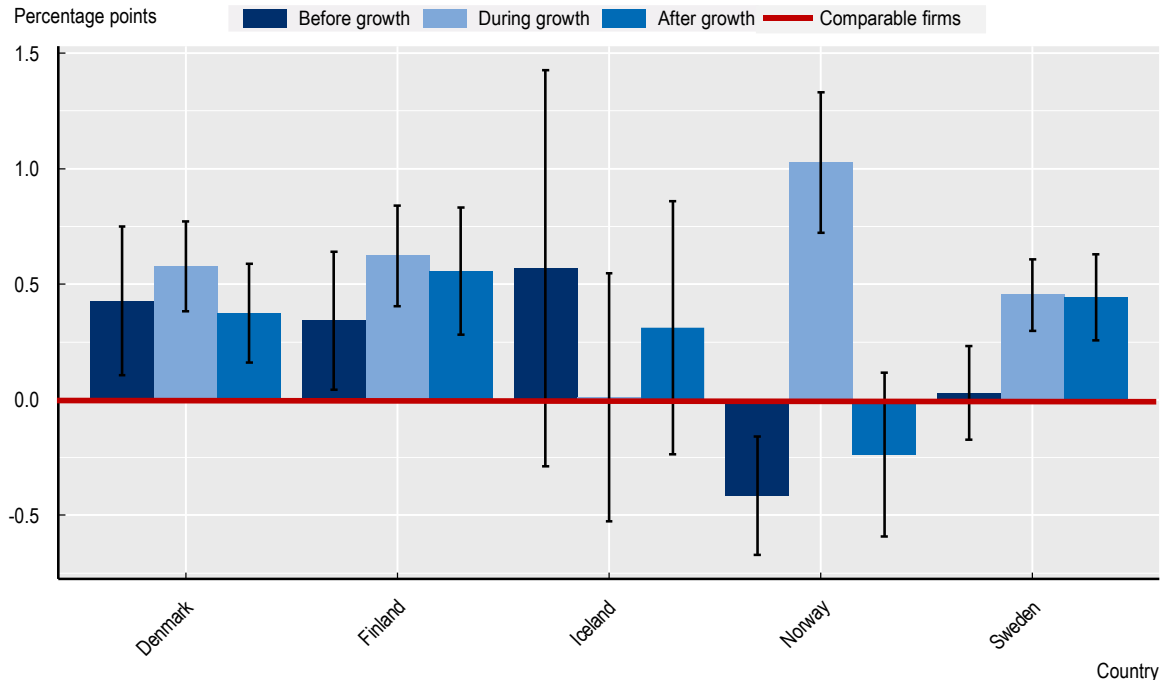
Note: Scale-ups are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. Box 1.1 provides further details for the definition of scale-ups. Comparable firms are firms (i) that did not scale up and (ii) that had 10 or more employees and annual turnover of min. 2 million EUR at least once over the period of analysis (2011-20). See Box 1.3 for the definition of foreign acquisitions.

Source: Calculations based on microdata sources from five countries. See Annex B for more information.

Foreign investors acquire scalars at different stages of their development. Scale-ups in Denmark and Finland are equally likely to get acquired by foreign investors before, during or after the high-growth phase, once other characteristics such as sector, size and location are taken into account. In Sweden and Norway, the inflow of foreign capital anticipates or accompanies the growth phase. In Sweden, the probability of foreign acquisition slightly increases as the high growth begins and remains at the same level afterwards, while in Norway it is significantly higher during the high-growth period than before and after (Figure 4.2).

Figure 4.2. Foreign acquisitions happen before, during or after the high-growth period

Estimated difference between scale-ups and comparable firms in the probability to get acquired by foreign investors, 2014-20



Note: The differences in the probability to get acquired by foreign investors before, during, and after the high-growth phase are calculated with a linear probability model. Values are expressed in percentage terms and are relative to comparable firms, i.e., firms (i) that did not scale up and (ii) that had 10 or more employees and annual turnover of min. 2 million EUR at least once over the period of analysis (2011-20). Scale-ups are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. See Box 1.1 for further details on the definition of scale-ups. The regressions control for employment, turnover, age group, year, sector and region fixed effects. See Annex B for a detailed description of the methodology and sample and Table A B.4 for the definition of three phases. The vertical lines represent 90% confidence intervals. The difference between scale-ups and comparable firms is statistically significant when the confidence interval does not intersect the horizontal line at zero.

Source: Estimations based on microdata sources from five countries. See Annex B for more information.

Scale-ups' growth patterns are similar before and after a foreign acquisition. In Denmark, Finland, Norway and Sweden, foreign acquisitions of scale-ups take place in the middle of a period of steady growth in both employment and turnover (Figure 4.3, upper and middle panel). Foreign acquisitions do not lead to a higher probability to exit the market (Figure A A.13) and do not appear to be strongly associated with either a negative or positive trend in productivity (Figure A A.12). This suggests that foreign acquisitions do not hinder growth in the aggregate. However, the general trend may mask some acquisitions that aim to reduce competition for incumbents that might, for example, be specific to a small group of young and innovative scale-ups.

Foreign capital may provide resources needed for the sustainability of scale-ups' growth. For small open economies, like the Nordic countries, integration in international capital markets is an attractive proposition for foreign investors. The stable growth of both employment and turnover of scale-ups that are targets of foreign acquisitions suggest that the inflow of foreign capital can be also a driver, and not only a consequence, of scaling up. Foreign capital can help sustain the growth process of scale-ups by providing the necessary resources to help the firm consolidate at a new scale.

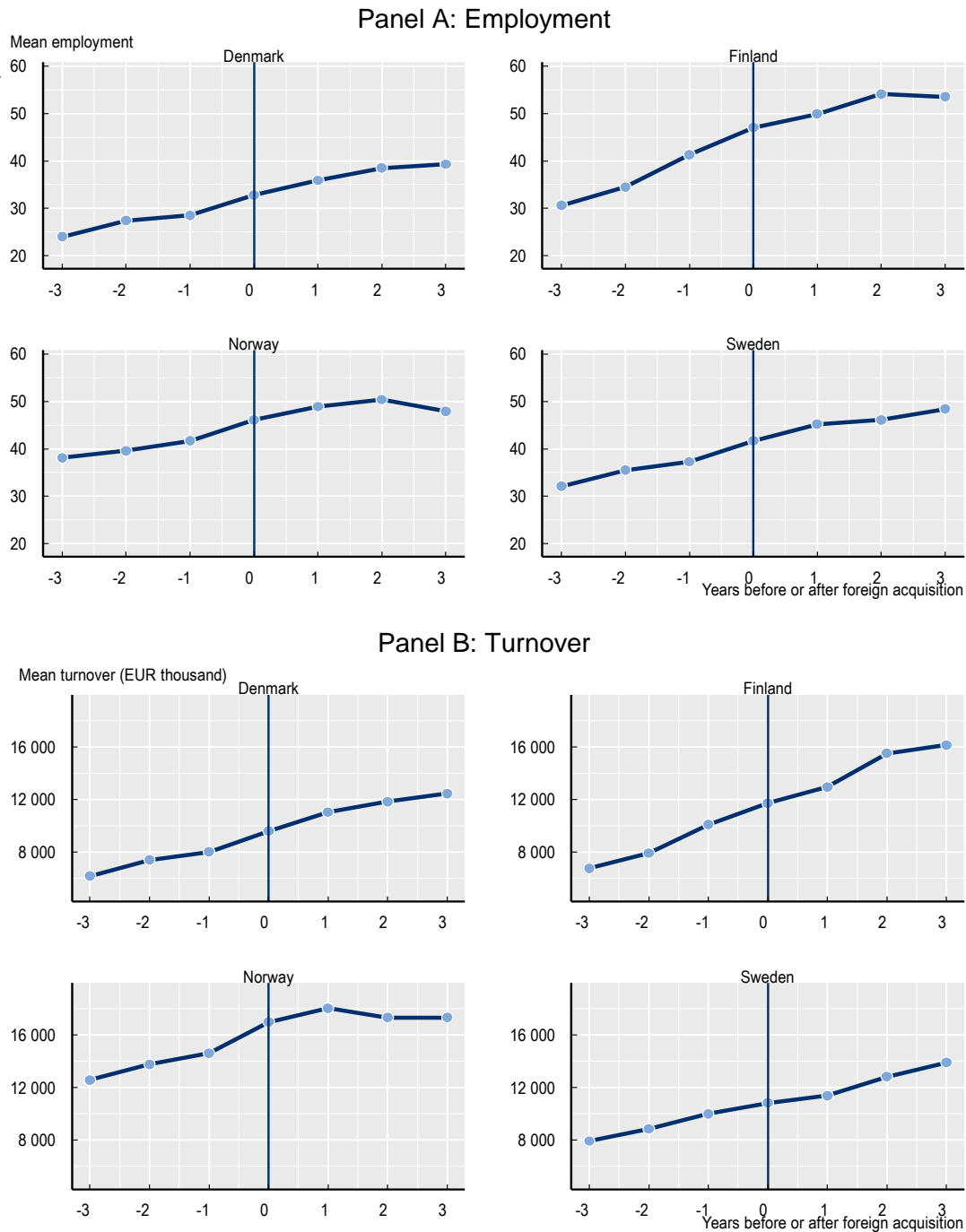
Foreign capital underpins exceptional growth, as the fastest-growing scale-ups are more often the target of foreign acquisitions. The share of top 50 employment scale-ups that become foreign-owned

ranges from 6% in Iceland to 36% in Norway (Figure 4.4, top panel). For top 50 turnover scale-ups, the share is slightly lower and ranges from 4% in Denmark to 32% in Norway. Foreign acquisition rates are higher for top 50 employment scale-ups than for the average scale-up in all countries and for top 50 turnover scale-ups in Finland, Norway, and Sweden.

International investors have greater capacities to invest in large-scale operations than domestic investors. The relatively high share of foreign acquisitions among the fastest growing scale-ups may also reflect the financial capacity of international investors, in particular those based in the United States and Asia, to invest in large-scale operations in the Nordics and in Europe. The necessity for domestic funds to diversify their exposures due to their smaller portfolio size limits their capacity to invest in larger deals. For instance, the biggest venture capital fund created in United States in 2021 was five times larger than the biggest European fund (Julien-Vauzelle, Jehle and Gossé, 2022^[30]).

Figure 4.3. Scale-ups continue growing after a foreign acquisition

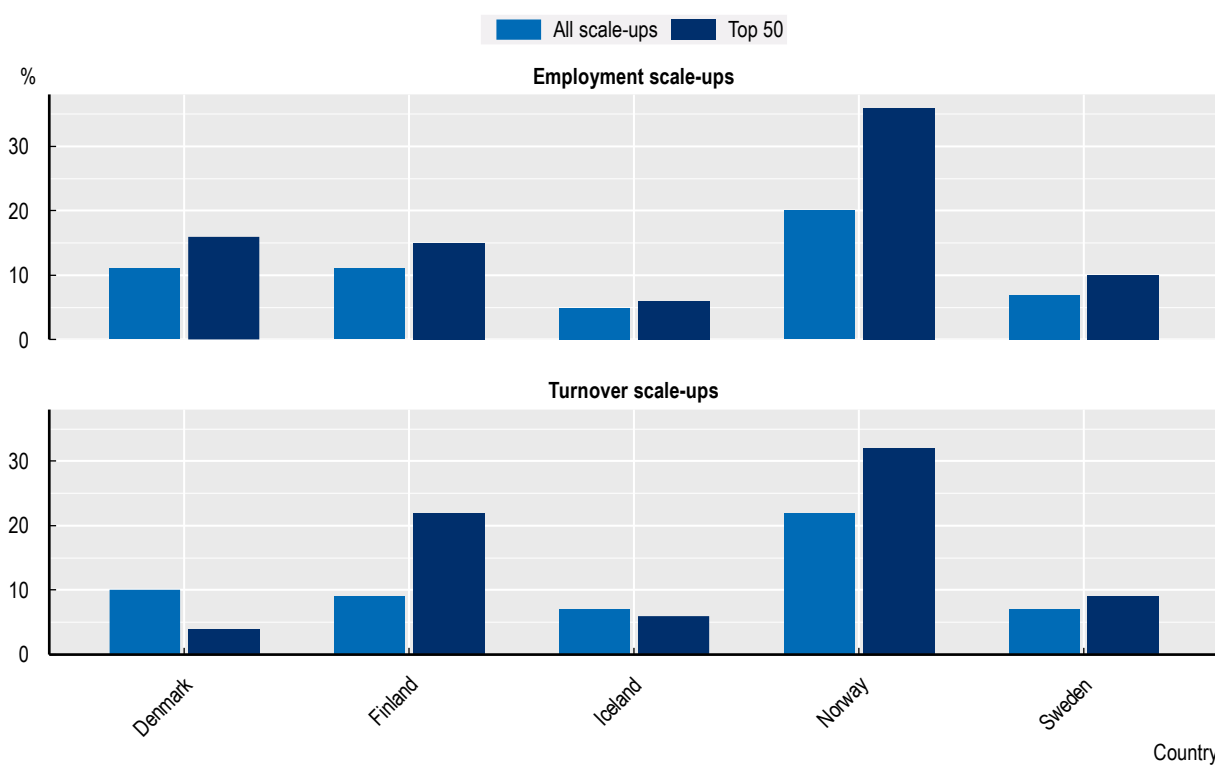
Mean employment (upper panel) and turnover (bottom panel) before and after foreign acquisition, 2014-20



Note: The graphs show annual changes in mean employment (Panel A) and turnover (Panel B) over the 7-year interval, which covers three years before and after the first foreign acquisition and the foreign-acquisition year. Vertical lines indicate the foreign-acquisition year. See Box 1.3 for further details on the definition of foreign acquisitions. Table A.B.4 explains how employment and turnover were measured. The sample is limited to scale-ups, which are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. See Box 1.1 for further details on the definition of scale-ups. Iceland is excluded due to the small sample of scale-ups. Source: Calculations based on microdata sources from four countries. See Annex B for more information.

Figure 4.4. The fastest-growing scale-ups are more likely to become foreign-owned

Share of firms that were acquired by foreign investors at least once, 2014-20



Note: Top 50 employment and turnover scale-ups are defined in each country based on the employment or turnover growth rates between 2014 and 2017. A firm may belong to both groups. All employment or turnover scale-ups include firms that grew in employment or turnover, respectively, at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. See Box 1.1 for further details on the definition of scale-ups and Box 1.3 for the definition of foreign acquisitions.

Source: Calculations based on microdata sources from five countries. See Annex B for more information.

Scale-ups in higher value-added activities are more likely to be the target of foreign acquisitions

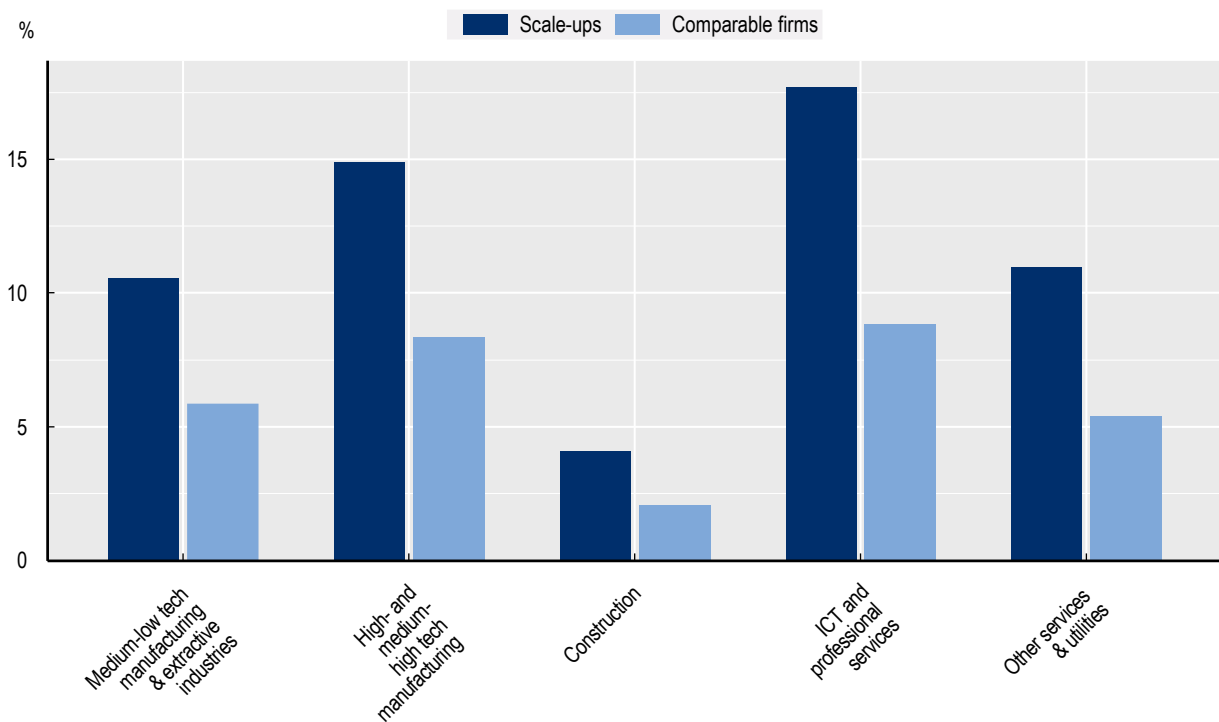
Foreign acquisitions target mainly scale-ups in medium/high-tech manufacturing or ICT and professional services. On average across Denmark, Finland, Sweden and Norway, 18% of scale-ups that provide ICT and professional services and 15% of scale-ups that operate in medium/high-tech manufacturing become foreign owned (Figure 4.5), compared to only 4% in construction. These differences persist when accounting for differences in firm age, size and location in a multivariate regression analysis. Furthermore, scale-ups are more likely to be the target of foreign acquisitions than comparable firms in all sector groups. The difference is particularly large in the service sectors, with scale-ups being twice as likely to be acquired than comparable firms.

The higher rate of foreign acquisitions in high-tech and knowledge intensive activities reflect the comparative advantages of Nordic countries, but is also aligned with international evidence. Nordic countries offer a skilled workforce and supportive business environment for R&D and innovation. Scale-ups in medium/high-tech manufacturing or ICT and professional services may be particularly attractive for foreign investors because of higher expected returns on investment (Wang and Tsai, 2004^[31]). However, the higher rate of foreign acquisitions in the Information and communication sector is not limited to the Nordic countries. At the global level, according to available statistics, cross-border mergers and

acquisitions (M&A) in this sector amounted to 135 US billions, compared to 73 US billions in Pharmaceuticals and 75 in finance and Insurance (UNCTAD, 2023^[32]).

Figure 4.5. Scale-ups providing ICT and professional services are more likely to be the target of a foreign acquisition

Share of firms by sector that were acquired by foreign investors at least once, 2014-20



Note: The Nordic countries included are Denmark, Finland, Norway, and Sweden. Weighted averages. Scale-ups are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. See Box 1.1 for further details on the definition of scale-ups. Comparable firms are firms (i) that did not scale up and (ii) that had 10 or more employees and annual turnover of min. 2 million EUR at least once over the period of analysis (2011-20). See Box 1.3 for further details on the definition of foreign acquisitions. Table A B.1 provides details on five sector groups. Firms are allocated to the most frequent sector group in the period before the first foreign acquisition happens. In the absence of foreign acquisition, the most frequent sector group is calculated over the whole period 2014-20.

Source: Calculations based on microdata sources from four countries. See Annex B for more information.

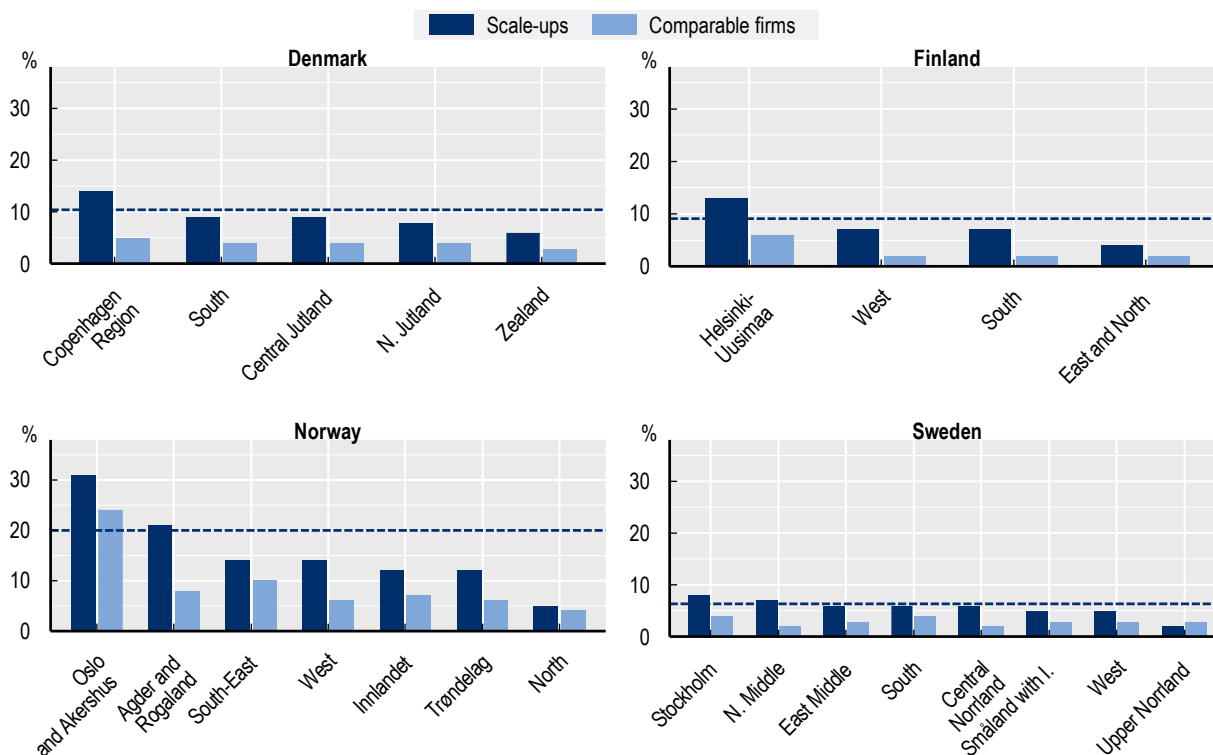
Capital-city regions are attractive for foreign investors due to infrastructure, human capital, and market opportunities. Capital-city regions tend to have higher GDP per capita and share of highly educated workforce than the rest of the country, as well as closer proximity to top universities. Capitals often offer the best transport accessibility in the country, which makes it easier for foreign investors to connect to the firms on which they invest. Furthermore, capital cities are also attractive to foreign investors seeking to establish relationships with government officials and key industry players. All these factors contribute to attract foreign investments (Wall, 2019^[33]; OECD, 2022^[34]).

Scale-ups in capital-city regions are more likely to be acquired. Capital-city regions have the highest shares of foreign acquisitions for both scale-ups (from 8% in Stockholm to 31% in Oslo region) and comparable firms (from 4% in Stockholm to 24% in Oslo region) in all four countries (Figure 4.6). Conversely, In Finland, Norway, and Sweden, the acquisition rates of scale-ups located in remote regions

do not exceed 5%. These differences are not driven by the specialisation of capital regions in ICT or professional services.¹⁵

Figure 4.6. Scale-ups located in the capital-city region are more likely to be target of a foreign acquisition

Share of firms by initial TL2 region that were acquired by foreign investors at least once, 2014-20



Note: Scale-ups are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. Box 1.1 provides further details on the definition of scale-ups. Comparable firms are firms (i) that did not scale up and (ii) that had 10 or more employees and annual turnover of min. 2 million EUR at least once over the period of analysis (2011-20). The regions indicate the location in which the firm spent the longest period before foreign acquisition. See Box 1.3 for further details on the definition of foreign acquisitions. Åland is excluded from the analysis due to a small number of scale-ups (N<30). Dashed lines indicate the weighted averages over regions (scale-ups only).

Source: Calculations based on microdata sources from four countries. See Annex B for more information.

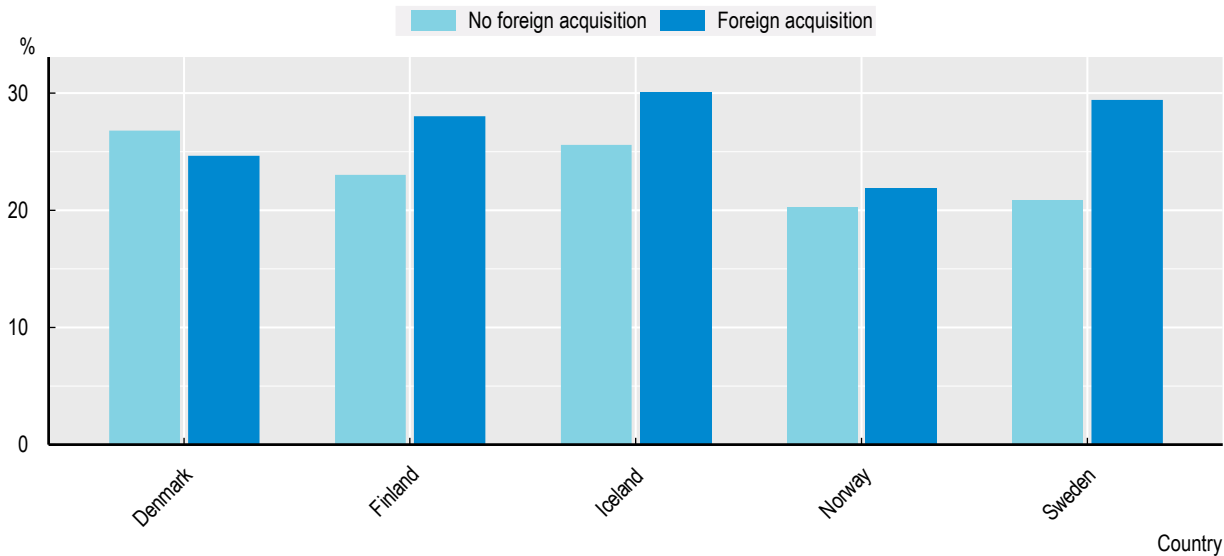
Workers in middle-skilled occupations leave disproportionately in the event of foreign acquisition

Workers in all countries but Denmark leave at higher rates during foreign acquisitions. In the foreign-acquisition year and in the year immediately before or after, between 22% (Norway) and 30% of workers (Iceland) leave the scale-up (Figure 4.7). In Denmark, the share of separations is 2 percentage points lower relative to scale-ups that experience no foreign acquisition. In the other four countries, dismissal rates are 2 to 9 percentage points higher.

¹⁵ The finding that more remote regions have a lower incidence of scale-ups' foreign acquisition than capital regions is supported by econometric analysis and it is robust to the inclusion of controls for the size, age and sector.

Figure 4.7. Workers leave at a higher rate during foreign acquisitions

Average share of workers who leave a scale-up each year; 2012-19



Note: The sample is limited to scale-ups' workers. See Box 1.1 for further details on the definition of scale-ups. The foreign-acquisition period includes the year when the scale-up has changed ownership from domestic to foreign one and the year immediately before and after. No foreign acquisition includes (i) years outside the three-year acquisition window and (ii) scale-ups that never get acquired by foreign investors during the observation period. In all countries but Norway, the graph uses data for years 2012-19; in Norway, the graph uses data for years 2015-19, due to reduced data availability in the underlying data sources. See Table A B.4 for the definition of workers who leave a scale-up.

Source: Calculations based on microdata sources from five countries. See Annex B for more information.

Workers in elementary and middle-skilled occupations are more likely to leave during a foreign acquisition in all countries except Denmark.

The higher separation rate observed during foreign acquisitions in all countries but Denmark is driven by workers in elementary occupations, such as manufacturing labourers, cleaners, packers and wrappers, and middle-skilled occupations, such as clerical workers and machine operators. For workers in elementary occupations, the difference in the probability to leave a scale-up during a foreign acquisition and in other periods is equal to 7 percentage points in Finland, 2 in Norway, and 4 in Sweden. Differences are higher for workers in middle-skilled occupations. For instance, the difference is above 10 percentage points for clerical, service and sales workers in Finland and Sweden, and above 15 percentage points for plant and machine operators in Sweden. In Norway, separation rates during foreign acquisitions are smaller and similar across all occupation groups. In Denmark, workers are less likely to leave during a foreign acquisition than in other periods across all skill groups, except managers.

Scale-ups that get acquired by foreign investors renew their management. Foreign acquisitions do not disproportionately increase separation rates for workers in high skill occupations, such as ICT and STEM professionals, with the exception of managers.¹⁶ The share of managers who leave a scale-up during a foreign acquisition is 2 (in Denmark and Norway) and 5 (in Finland and Sweden) percentage points higher than in the absence of it. This corresponds to 16-42% increases in the shares of leaving

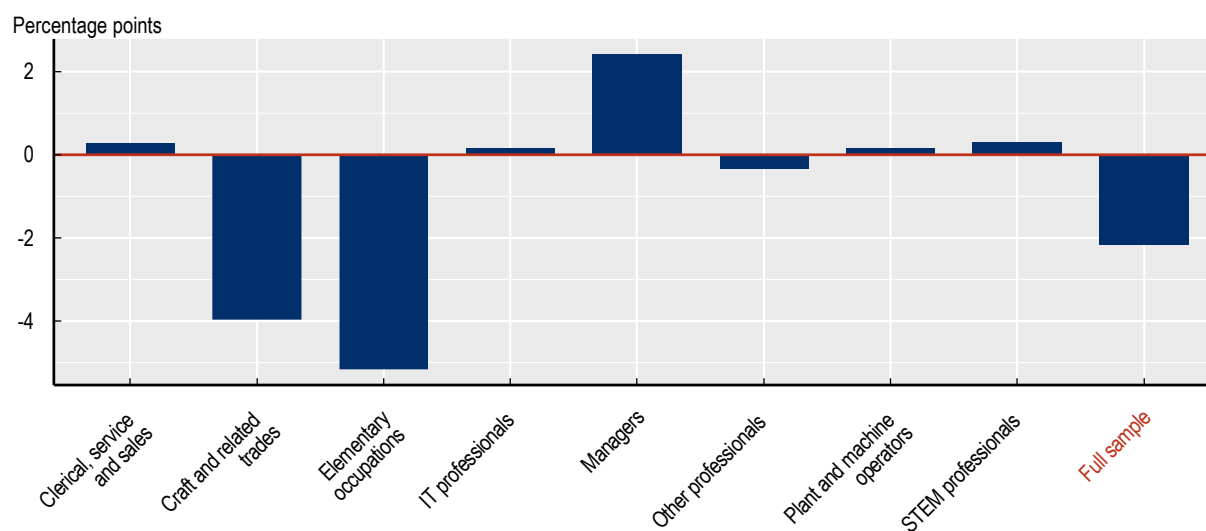
¹⁶ Separation rates for highly educated workers during foreign acquisitions are also aligned with the rates observed in other periods. In Denmark and Iceland, workers with university education are 2 percentage points less likely to leave during a foreign acquisition than in the absence of it. In Finland, Norway, and Sweden, foreign acquisitions are associated with higher leaving rates among highly educated workers, but the increases are similar to other education groups.

managers. Even in Denmark, where foreign acquisitions are associated with lower or similar leaving rates for most occupational groups, managers are an exception (Figure 4.8). The evidence is consistent with a large body of empirical research, mainly based on data for the United States, showing that turnover rates in top management teams of acquired companies are significantly higher than normal turnover rates (Walsh, 1988^[35]).

New managers can provide fresh perspectives and expertise, but high manager turnover can lead to disruptions and decreased productivity. The renewal of management can be one of the ways in which corporate takeovers create value for investors. By replacing ineffective managers, the new investors can increase productivity and profitability (Martin and McConnell, 1991^[36]). Indeed, the renewal of management that occurs after a foreign acquisition turnover can lead to new perspectives and fresh ideas. New managers may bring in valuable expertise and international networks that can help the company expand and enter new markets. Manager turnover could be a viable incentive mechanism for improving future enterprise performance (Aivazian, Ge and Qiu, 2005^[37]). However, frequent turnover can disrupt internal operations and reduce the institutional knowledge that is built up over time. This can lead to inefficiencies and decreased productivity in the short term.

Figure 4.8. Managers are more likely to leave a scale-up that is target of a foreign acquisition

Differences in separation rates by occupation between the foreign acquisition period and other periods; scale-ups, Denmark, 2012-19



Note: The sample covers only scale-ups' workers for whom information on their occupation is available. See Box 1.1 for further details on the definition of scale-ups. See Table A.B.2 for composition of individual occupation groups. For each occupation group, the bars indicate the difference in separation rates in scale-ups during foreign-acquisition years and the same scale-ups in other periods or scale-ups that do not get acquired by foreign investors at all.

Source: Calculations based on microdata sources from Denmark. See Annex B for more information.

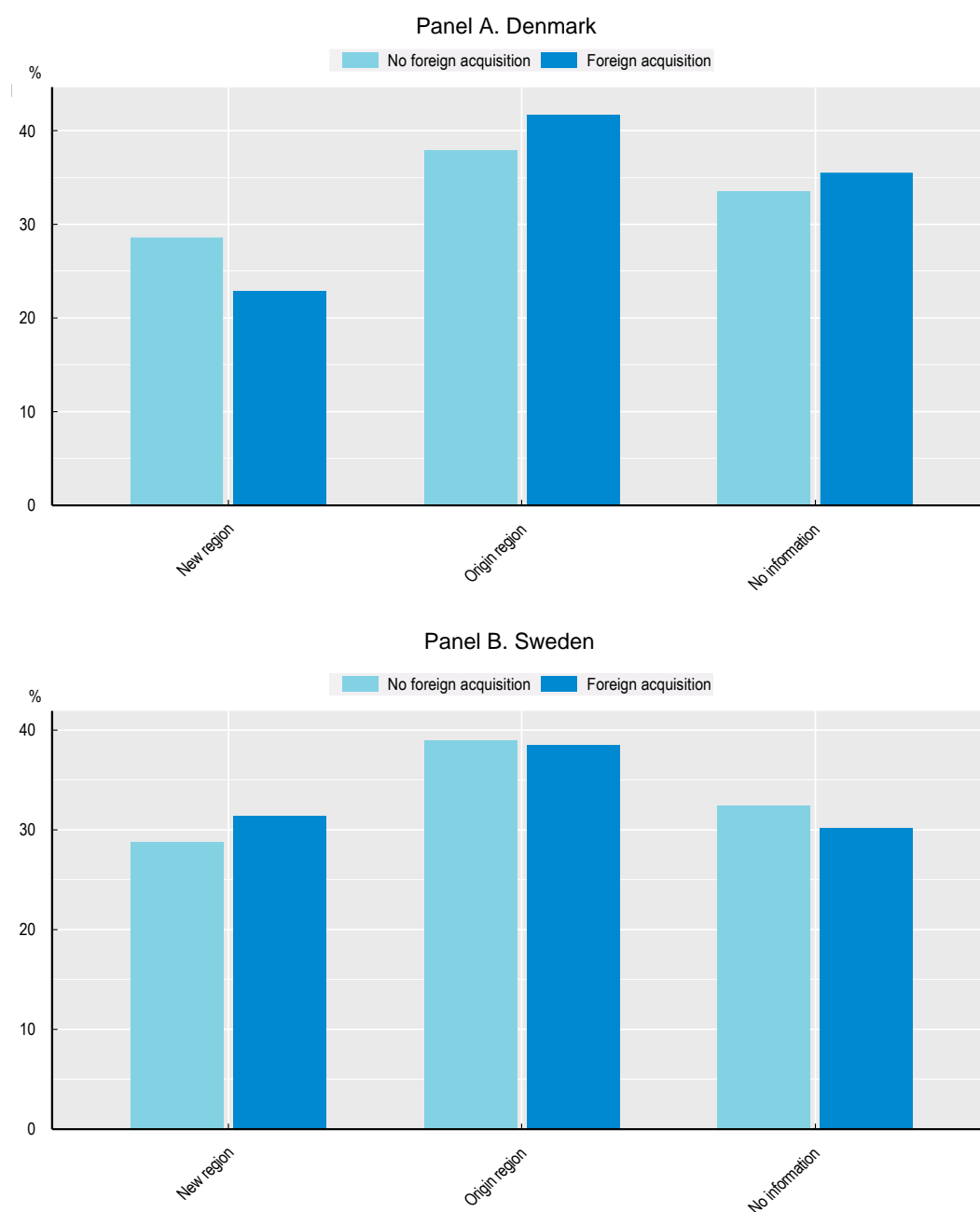
Workers who leave a scale-up during a foreign acquisition tend to stay in their region. In Denmark, Finland and Norway, the share of workers who join a firm in a new region in all separations is 1 to 6 percentage points lower during a foreign acquisition than in other periods (see Panel A of Figure 4.9 for the example of Denmark). In Sweden it is 3 percentage points higher (Panel B of Figure 4.9). Highly educated or high-skilled workers are no more likely to leave a firm and find employment in a new region than workers with lower education levels (except for Iceland) as a firm undergoes a foreign acquisition. This is in contrast to the case of relocation and expansions (see Chapter 3).

Workers in elementary occupations who leave a scale-up during a foreign acquisition face a higher risk to become unemployed. For around one third of workers who leave a scale-up there is no information on the next job, possibly indicating underemployment, unemployment or inactivity (although other outcomes such as self-employment and employment in the public sector are also possible – see Table A B.4 for further information). Workers in elementary occupations appear to be particularly at risk. In Denmark, Finland, and Norway, foreign acquisitions are associated with an increase of 5-15 percentage points in the share of workers in elementary occupations for whom there is no information on a subsequent job. In contrast, the average worker is only 2 percentage points more likely to fall into the “no-information” category in Denmark, and 3 and 4 percentage points less likely in Finland and Sweden, respectively. (Figure A A.14).

Targeted support to workers in elementary and middle-skilled occupations who are affected by foreign acquisitions could help their transition to new jobs. There are several policy options that could potentially mitigate the negative effects of foreign acquisitions on workers in elementary and middle-skilled occupations. One option is to provide training programmes for affected workers, helping them acquire skills that are in demand in other sectors. Governments could also provide tax incentives or subsidies to firms that invest in training and retaining their workers, which could encourage firms to retain a higher share of their workforce in low-skilled occupations when undergoing foreign acquisitions (OECD/ILO, 2017^[38]).

Figure 4.9. Workers who leave in the event of foreign acquisition tend to stay in the home region

Share of separations by destination location in all separations; scale-ups, 2012-19



Note: The sample is limited to workers who leave scale-ups. See Box 1.1 for further details on the definition of scale-ups. The foreign-acquisition period includes the year when the scale-up has changed ownership from domestic to foreign one and the year immediately before and after. No foreign acquisition includes (i) years outside the three-year acquisition window and (ii) scale-ups that never get acquired by foreign investors during the observation period. "New region" destination includes workers who are observed for the first time in the following year in a different firm located in a region different from the worker's origin region. See Table A B.4 for the definition of a worker's origin region. "Origin region" destination includes workers who are employed in the following year for the first time in a different firm located in the same region as the worker's origin region. The "no information" category includes scale-ups' workers who are observed for the last time in the given year.

Source: Calculations based on microdata sources from Denmark and Sweden. See Annex B for more information.

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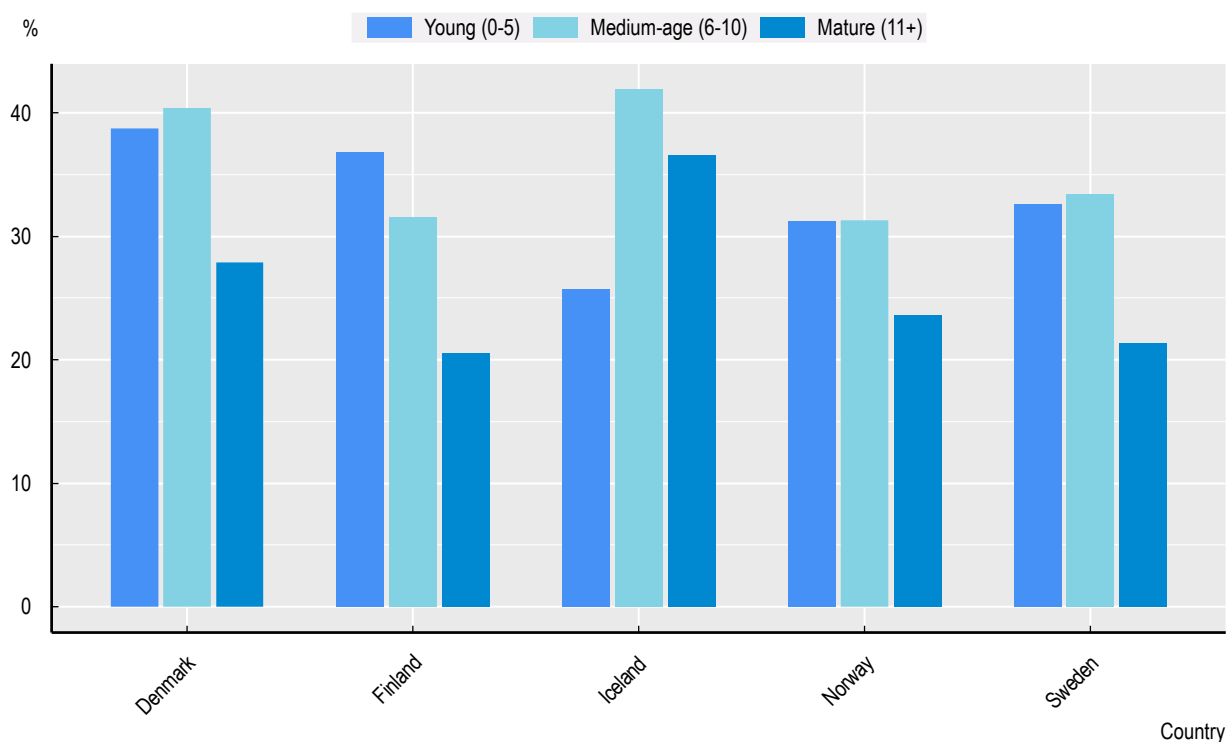
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Annex A. Additional figures and tables

Figure A A.1. Young and medium-age firms are more likely to scale up

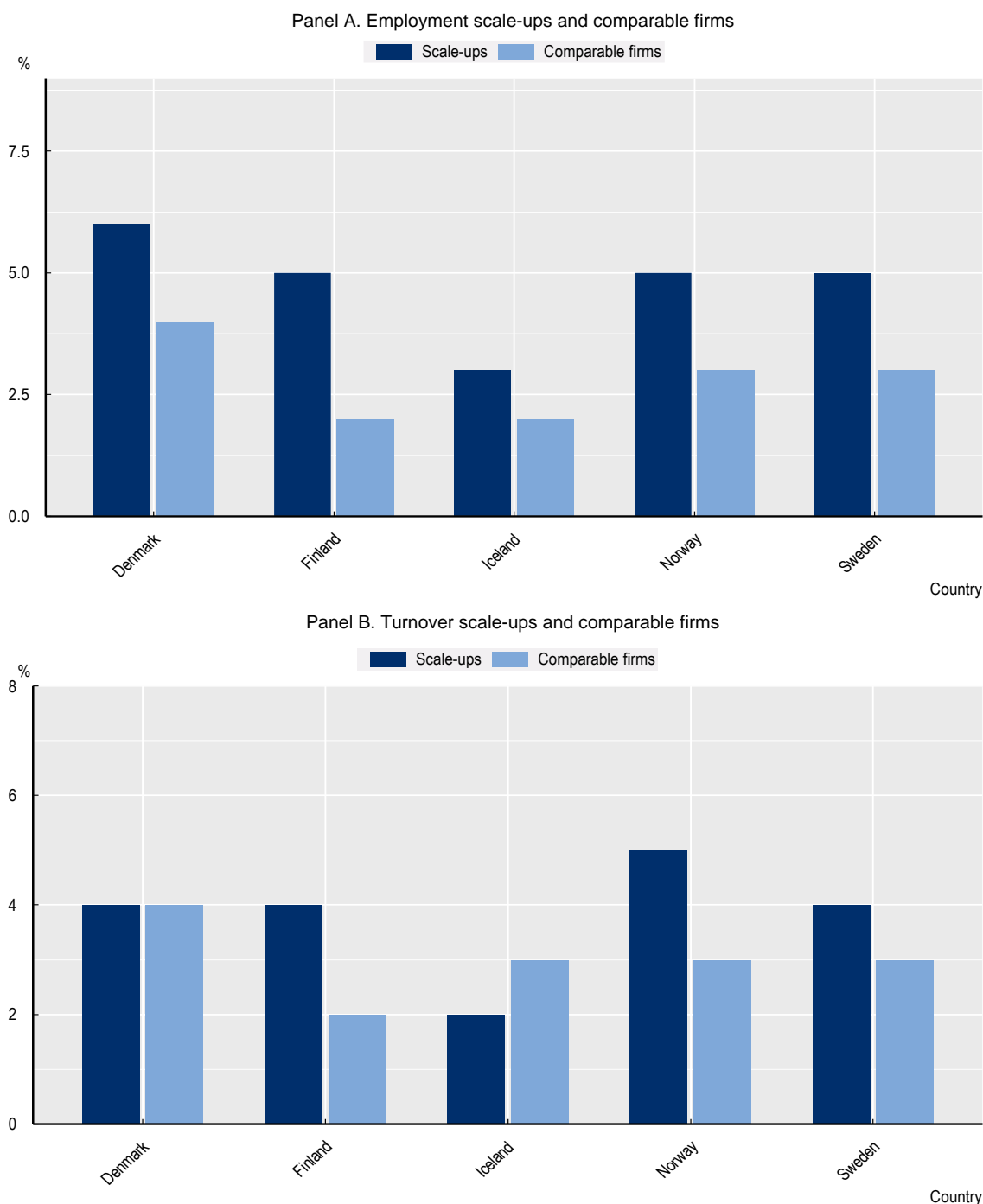


Note: The chart shows the shares of scale-ups in the total population of firms, i.e. scale-ups and comparable firms, in each age category and country. Scale-ups are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. Box 1.1 provides further details for the definition of scale-ups. Comparable firms are firms (i) that did not scale up and (ii) that had 10 or more employees and annual turnover of min. 2 million EUR at least once over the period of analysis (2011-20). Firms are assigned to their most common age category over the period in all countries but Iceland. In Iceland, median age categories are used (2011-2020).

Source: Calculations based on microdata sources from five countries. See Annex B for more information.

Figure A A.2. Scale-ups are more likely to relocate than comparable firms

Share of firms that relocated least once, 2014-20; employment scale-ups vs. comparable firms (top panel), turnover scale-ups vs. comparable firms (bottom panel)

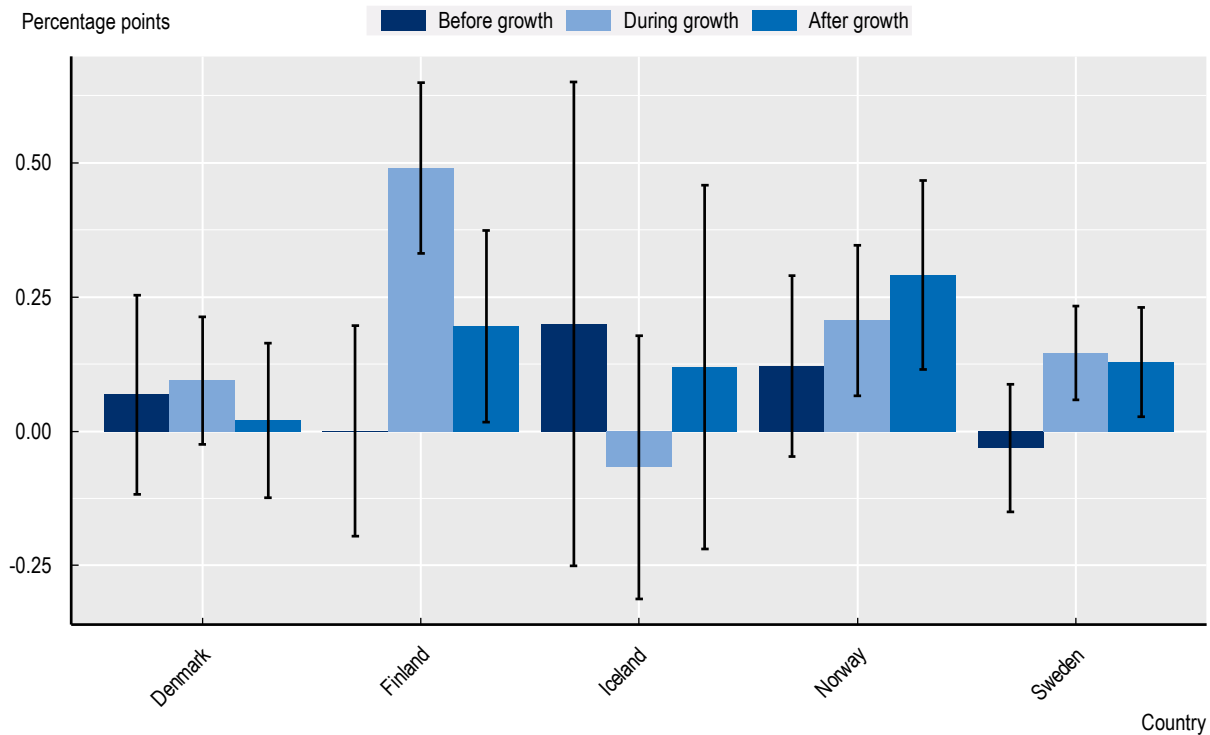


Note: Employment scale-ups (Panel A) are firms that grew in employment at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. Turnover scale-ups (Panel B) are firms that grew in turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. Box 1.1 provides further details for the definition of scale-ups. Comparable firms are firms (i) that did not scale up and (ii) that had 10 or more employees and annual turnover of min. 2 million EUR at least once over the period of analysis (2011-20). See Box 1.3 for the definition of relocations.

Source: Calculations based on microdata sources from five countries. See Annex B for more information.

Figure A A.3. The timing of scale-ups' relocation differs across countries

Estimated difference in the yearly probability to relocate before, during or after scaling-up, 2014-20

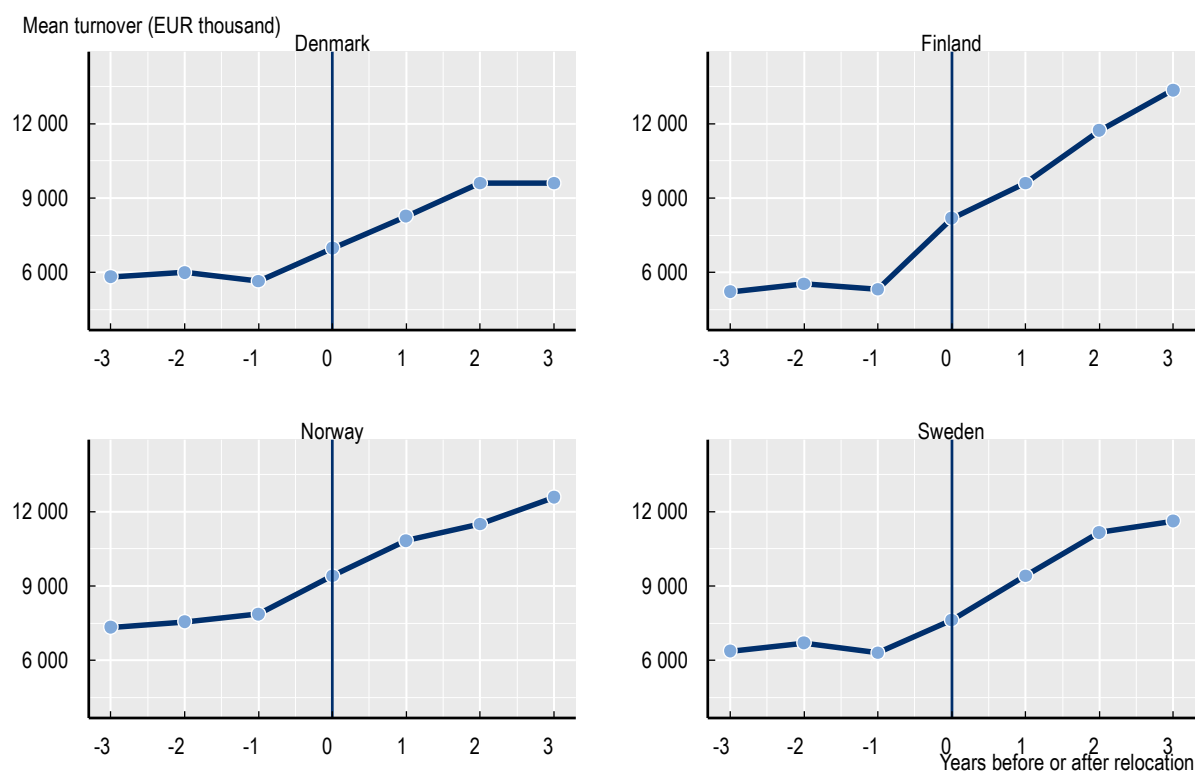


Note: The bars indicate the differences between scale-ups and comparable firms in the probability to relocate before, during, and after the high-growth phase, calculated with a linear probability model. Scale-ups are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. See Box for further details on the definition of scale-ups. Comparable firms are firms (i) that did not scale up and (ii) that had 10 or more employees and annual turnover of min. 2 million EUR at least once over the period of analysis (2011-20). The regressions control for employment, turnover, age group, year, sector and region fixed effects. See Annex B for a detailed description of the methodology and sample and Table A B.4 for the definition of three phases. The vertical lines represent 90% confidence intervals. The difference between scale-ups and comparable firms is statistically significant when the confidence interval does not intersect the horizontal line at zero.

Source: Estimations based on microdata sources from five countries. See Annex B for more information.

Figure A A.4. Scale-ups' turnover continues to grow after relocation

Trends in mean turnover before and after relocation, 2014-20

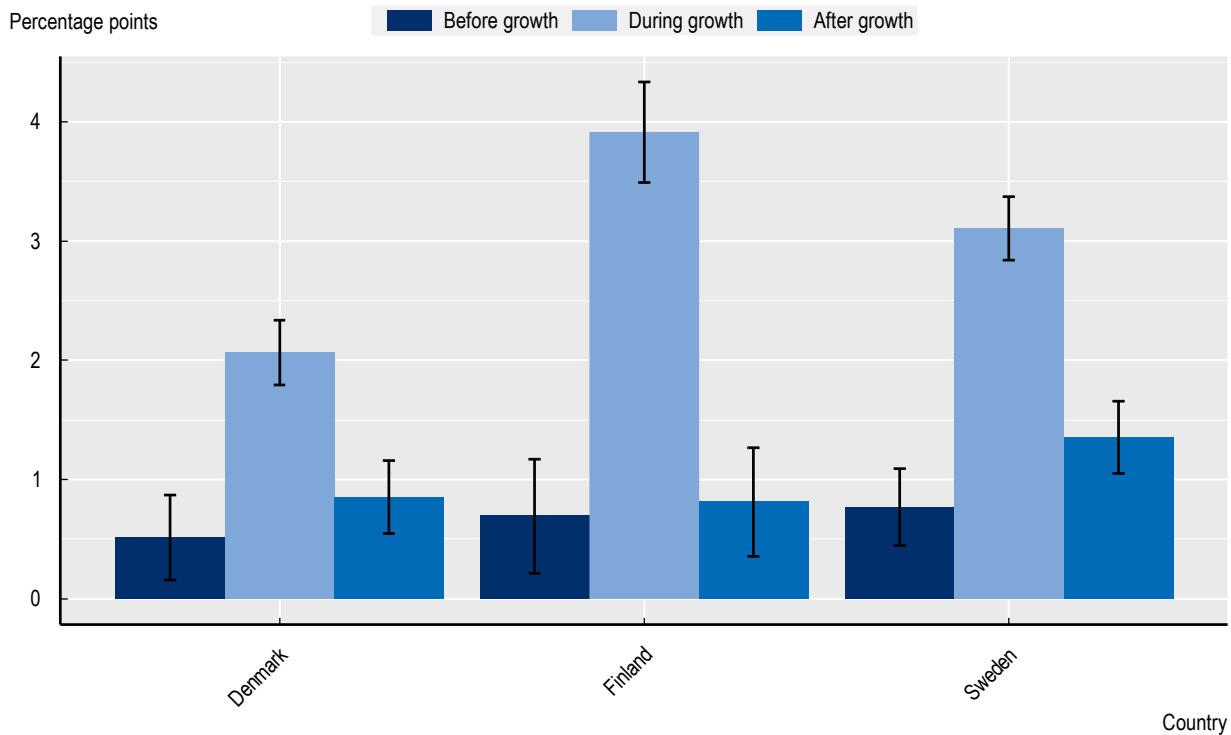


Note: The graphs show annual changes in mean turnover over the 7-year interval, which covers three years before and after the first relocation and the relocation year. Vertical lines indicate the relocation year. See Box 1.3 for further details on the definition of relocations. Table A B.4 explains how turnover was measured. The sample is limited to scale-ups, which are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. Box 1.1 provides further details for the definition of scale-ups. Iceland is excluded from the analysis due to a very small number of scale-ups that relocate.

Source: Calculations based on microdata sources from four countries. See Annex B for more information.

Figure A A.5. Scale-ups are more likely to expand to a new region during their high-growth phase

Estimated difference in the probability to expand to a new region before, during or after scaling-up, 2014-20

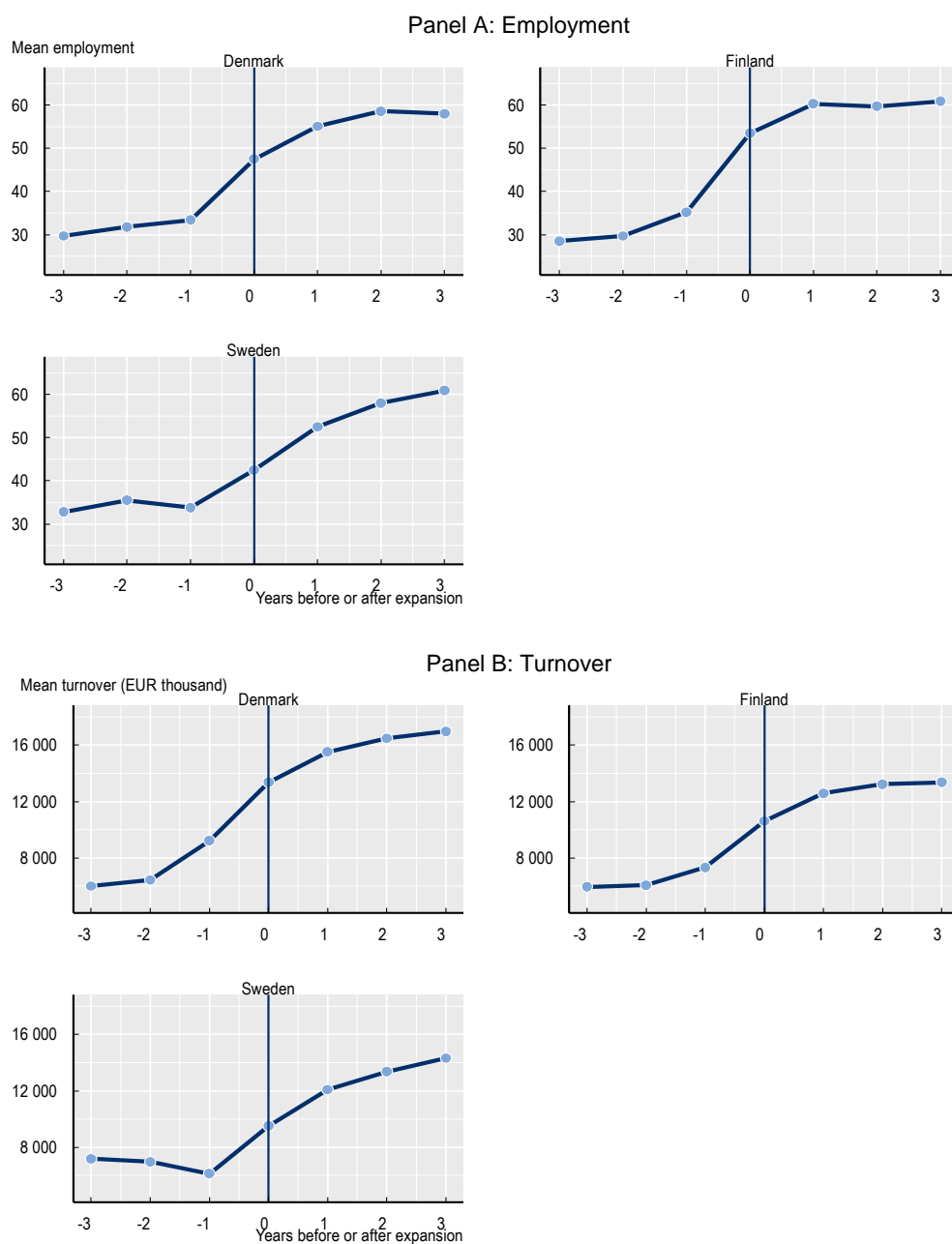


Note: Establishment-level data are not available for Iceland and Norway. The bars indicate the differences between scale-ups and comparable firms in the probability to expand before, during, and after the high-growth phase, calculated with a linear probability model. Scale-ups are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. See Box 1.1 for further details on the definition of scale-ups. Comparable firms are firms (i) that did not scale up and (ii) that had 10 or more employees and annual turnover of min. 2 million EUR at least once over the period of analysis (2011-20). The regressions control for employment, turnover, age group, year, sector and region fixed effects. See Annex B for a detailed description of the methodology and sample and Table A B.4 for the definition of three phases. The vertical lines represent 90% confidence intervals. The difference between scale-ups and comparable firms is statistically significant when the confidence interval does not intersect the horizontal line at zero.

Source: Estimations based on microdata sources from three countries. See Annex B for more information.

Figure A A.6. Expansions take place at the beginning of an extended growth period

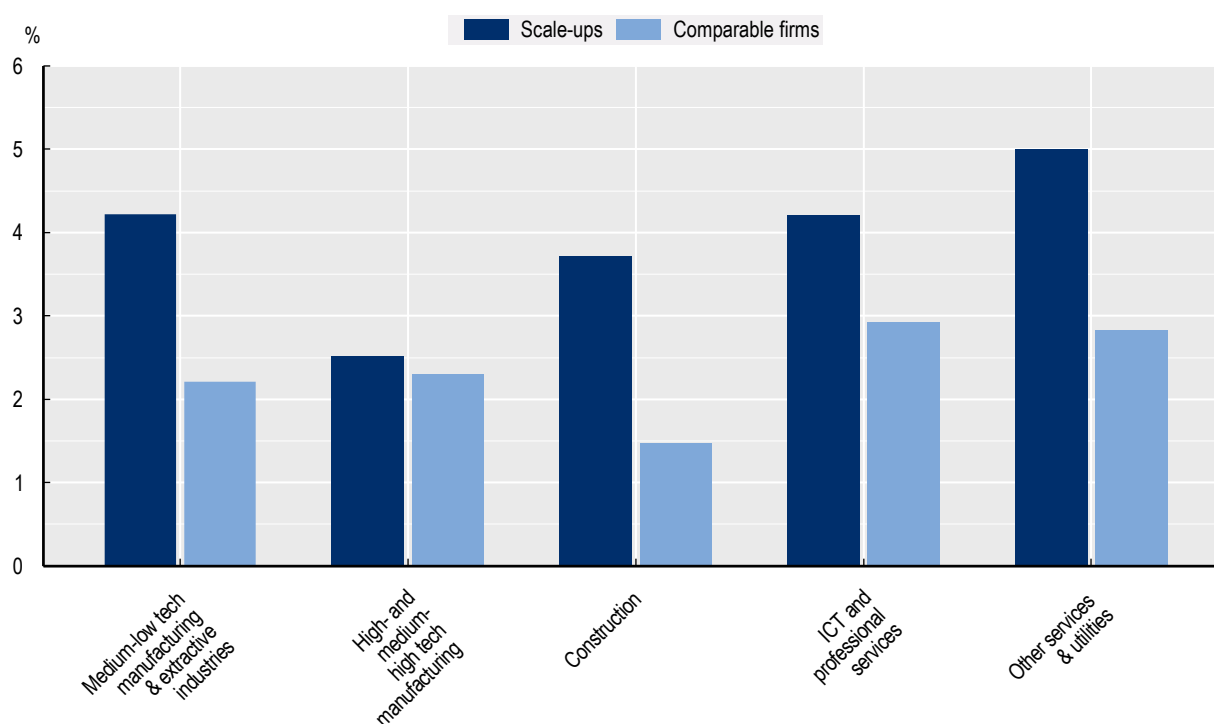
Trends in mean employment (top panel) and turnover (bottom panel) before and after expanding, 2014-20



Note: Establishment-level data are not available for Iceland and Norway. The graphs show annual changes in mean employment (Panel A) and turnover (Panel B) over the 7-year interval, which covers three years before and after the first expansion and the expansion year. Vertical lines indicate the expansion year. See Box 1.3 for further details on the definition of expansions. Table A B.4 explains how employment and turnover were measured. The sample is limited to scale-ups, which are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. See Box 1.1 for further details on the definition of scale-ups.

Figure A A.7. Scale-ups operating in the service sectors are more likely to relocate

Share of firms by sector that relocated at least once, 2014-20

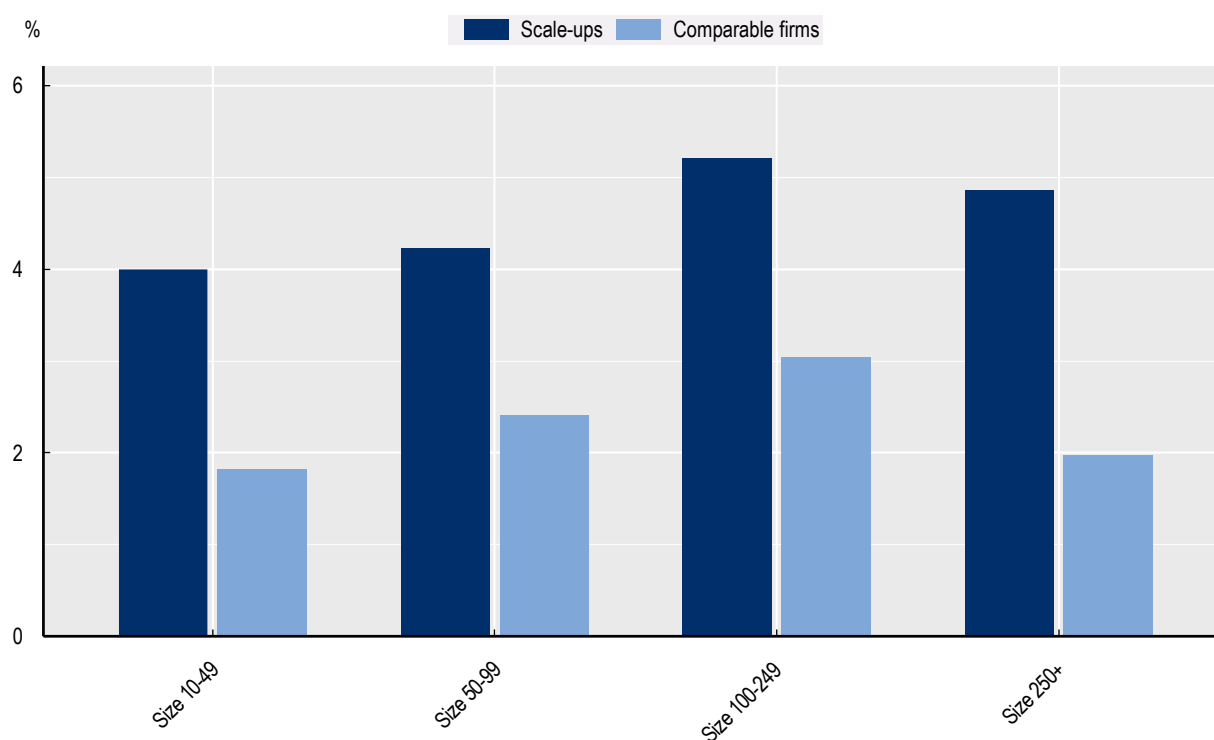


Note: The Nordic countries included are Denmark, Finland, Norway, and Sweden. Weighted averages. Scale-ups are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. See Box 1.1 for further details on the definition of scale-ups. Comparable firms are firms (i) that did not scale up and (ii) that had 10 or more employees and annual turnover of min. 2 million EUR at least once over the period of analysis (2011-20). See Box 1.3 for further details on the definition of relocations. Table A B.1 provides details on five sector groups. Firms are allocated to the most frequent sector group in the period before the first relocation happens. In the absence of relocation, the most frequent sector group is calculated over the whole period 2014-20.

Source: Calculations based on microdata sources from four countries. See Annex B for more information.

Figure A A.8. Small scale-ups are more likely to relocate than small comparable firms

Share of firms by size that relocated at least once, 2014-20

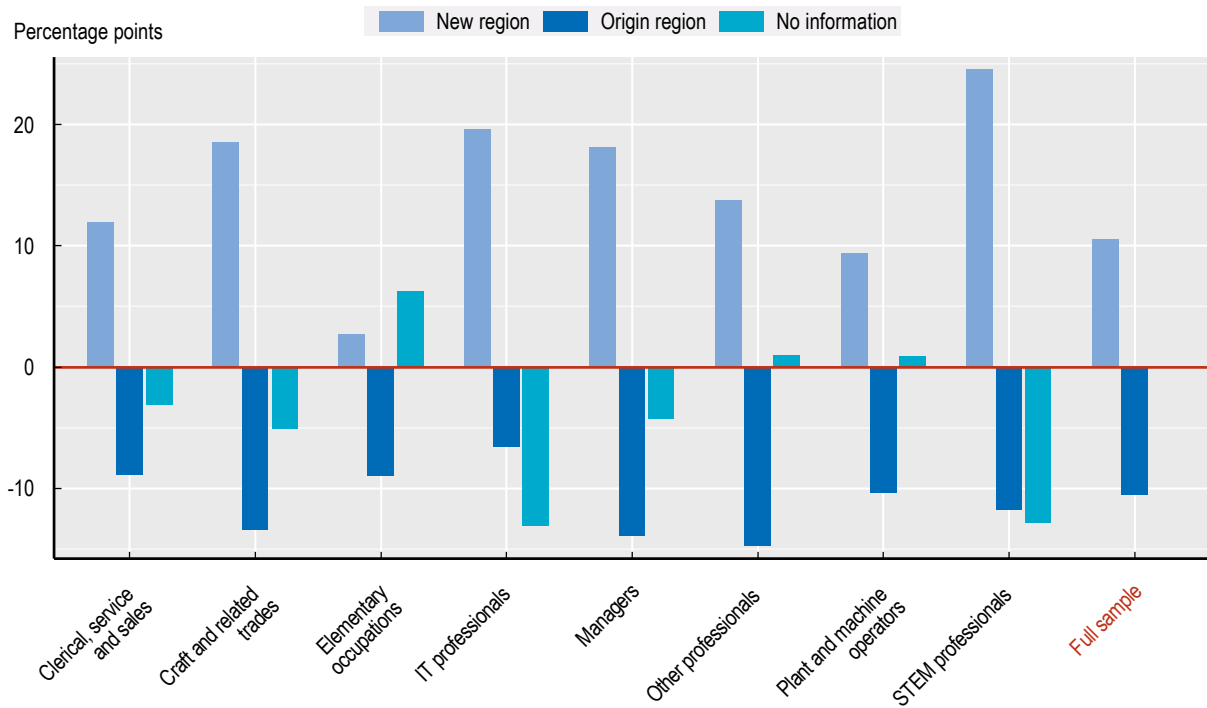


Note: The Nordic countries included are Denmark, Finland, Norway, and Sweden. Weighted averages. Micro firms, i.e. firms with fewer than 10 employees, are excluded from the analysis. Scale-ups are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. See Box 1.1 for further details on the definition of scale-ups. Comparable firms are firms (i) that did not scale up and (ii) that had 10 or more employees and annual turnover of min. 2 million EUR at least once over the period of analysis (2011-20). See Box 1.3 for further details on the definition of relocations. Firms are allocated to the most frequent size group in the period before the first relocation happens. In the absence of relocation, the most frequent size group is calculated over the whole period 2014-20.

Source: Calculations based on microdata sources from three countries. See Annex B for more information.

Figure A A.9. In Denmark, high skilled workers who leave during a relocation are more likely to move to a new region

Differences in shares of separations by destination in all separations for workers from different occupation groups; relocation vs. no relocation; Denmark, 2012-19

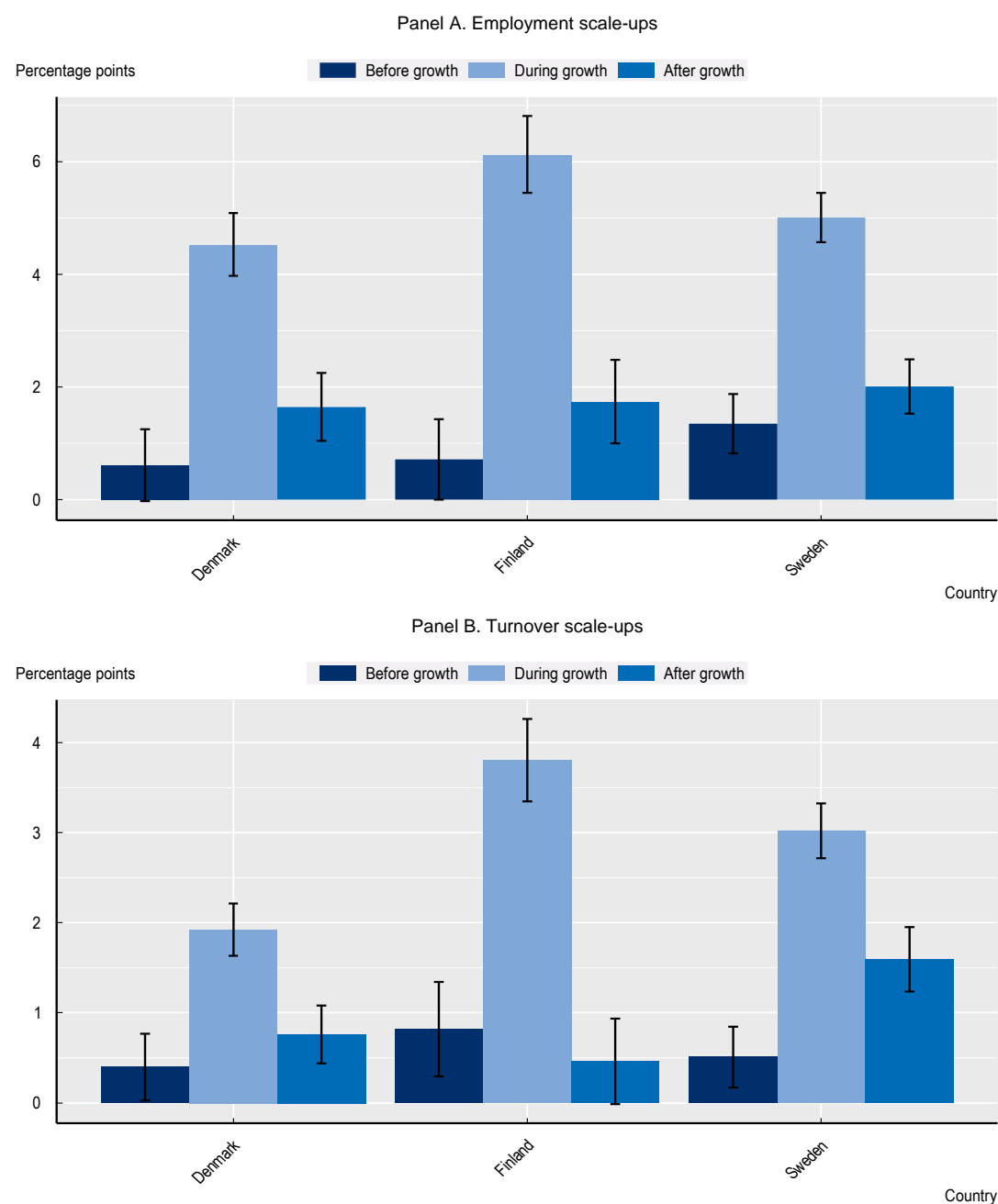


Note: The sample covers workers who leave a scale-up and for whom information on their occupation is available. See Box 1.1 for further details on the definition of scale-ups and Table A B.2 for composition of individual occupation groups. For each occupation group, the bars indicate the difference between the relocation period and no relocation in the shares of workers (in all separations) who leave to a firm in a new region, a firm in the origin region, or whose future employment status is not known. Table A B.4 provides further details on three types of separations. The relocation period includes the year when the scale-up is observed for the first time in a new region and the year immediately before and after. No relocation includes (i) years outside the three-year relocation window and (ii) scale-ups that never change location during the observation period.

Source: Calculations based on microdata sources from Denmark. See Annex B for more information.

Figure A A.10. Both employment and turnover scale-ups are more likely to expand during the high-growth period

Estimated difference in the probability to expand to a new region before, during or after scaling-up, 2014-20

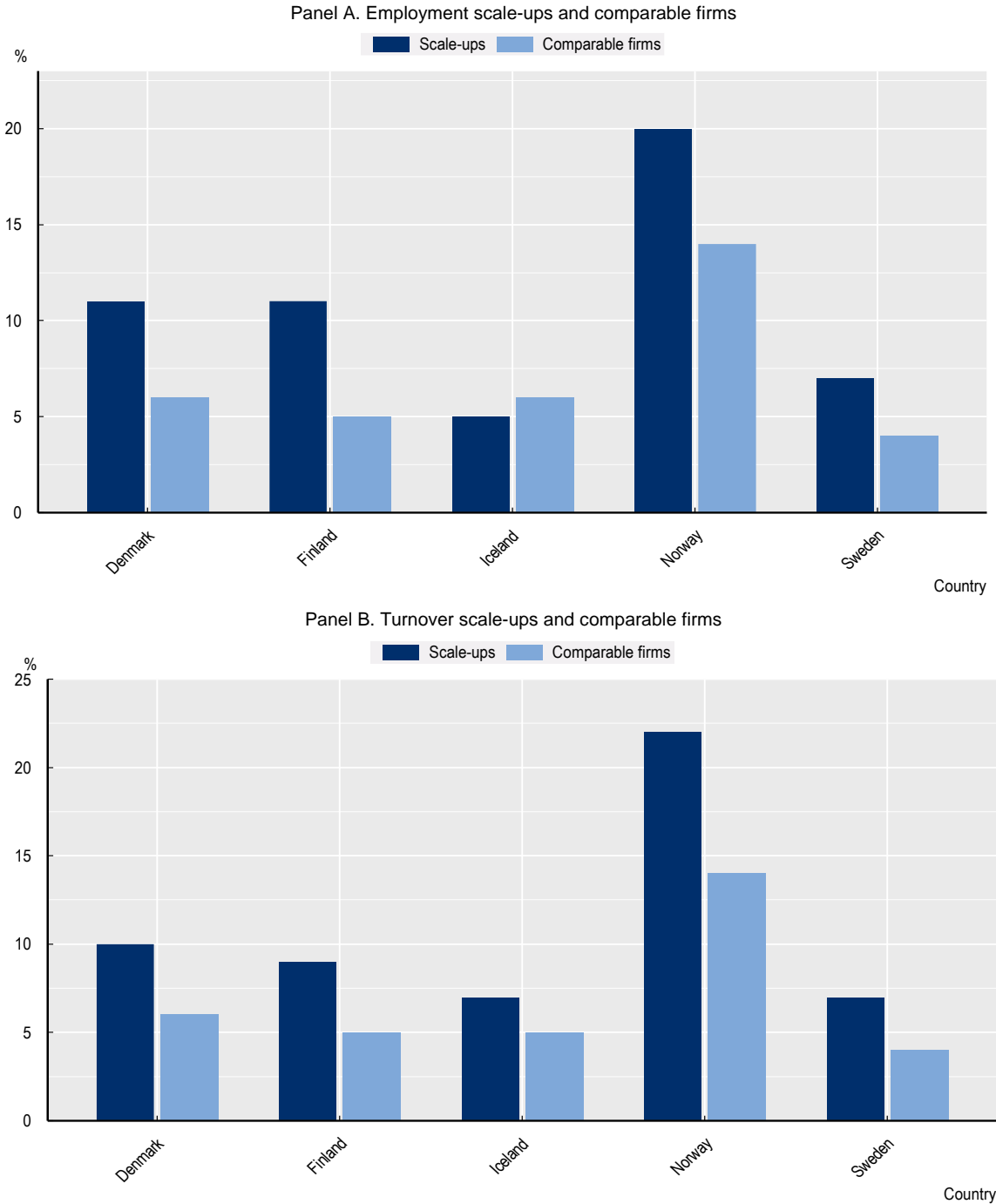


Note: Establishment-level data are not available for Iceland and Norway. The bars indicate the differences between scale-ups and comparable firms in the probability to expand before, during, and after the high-growth phase, calculated with a linear probability model. Employment or turnover scale-ups are firms that scaled at least once over the period of analysis (2014-20) in employment or turnover, respectively. See Box 1.1 for further details on the definition of scale-ups. Comparable firms are firms (i) that did not scale up and (ii) that had 10 or more employees and annual turnover of min. 2 million EUR at least once over the period of analysis (2011-20). The regressions control for employment, turnover, age group, year, sector and region fixed effects. See Annex B for a detailed description of the methodology and sample and Table A B.4 for the definition of three phases. The vertical lines represent 90% confidence intervals. The difference between scale-ups and comparable firms is statistically significant when the confidence interval does not intersect the horizontal line at zero.

Source: Estimations based on microdata sources from three countries. See Annex B for more information.

Figure A A.11. Foreign acquisition rates are similar for employment and turnover scale-ups

Share of firms that got acquired by foreign investors least once, 2014-20; employment scale-ups vs. comparable firms (top panel), turnover scale-ups vs. comparable firms (bottom panel)

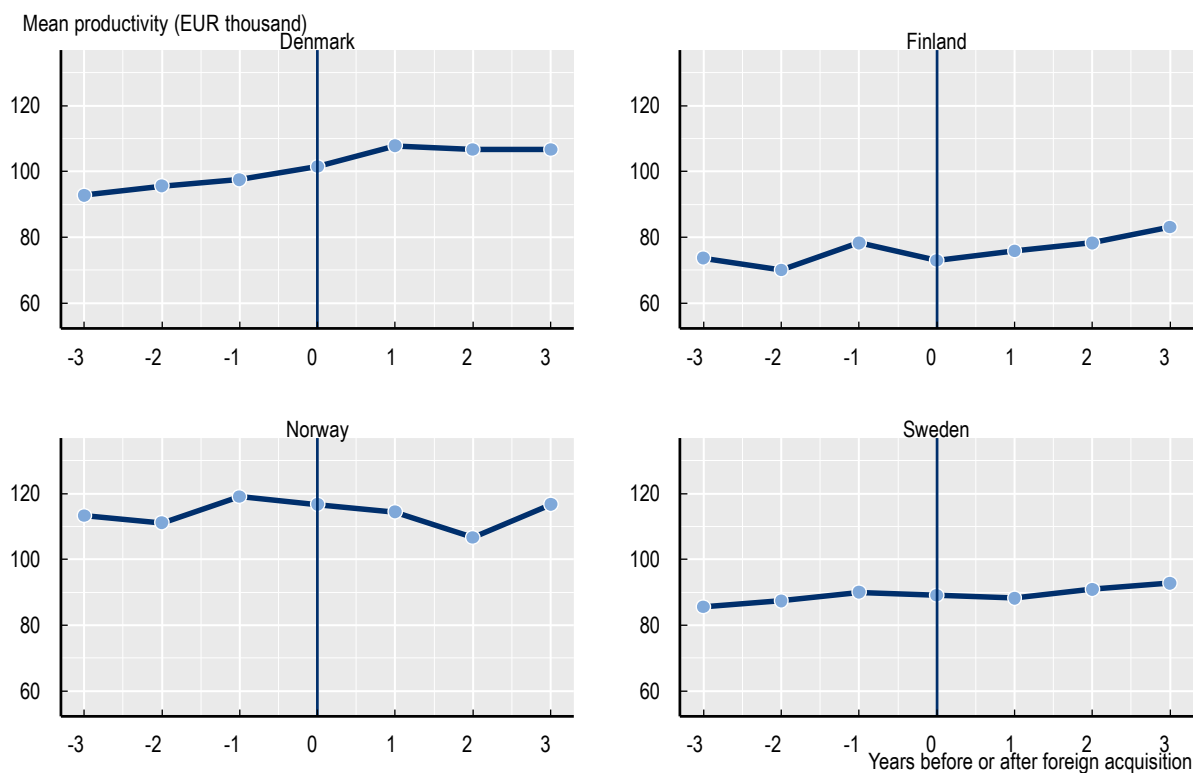


Note: Employment scale-ups (Panel A) are firms that grew in employment at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. Turnover scale-ups (Panel B) are firms that grew in turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. Box 1.1 provides further details for the definition of scale-ups. Comparable firms are firms (i) that did not scale up and (ii) that had 10 or more employees and annual turnover of min. 2 million EUR at least once over the period of analysis (2011-20). See Box 1.3 for the definition of foreign acquisitions.

Source: Calculations based on microdata sources from five countries. See Annex B for more information.

Figure A A.12. Foreign acquisitions are not associated with upward or downward productivity patterns

Trends in mean productivity before and after foreign acquisition, 2014-20

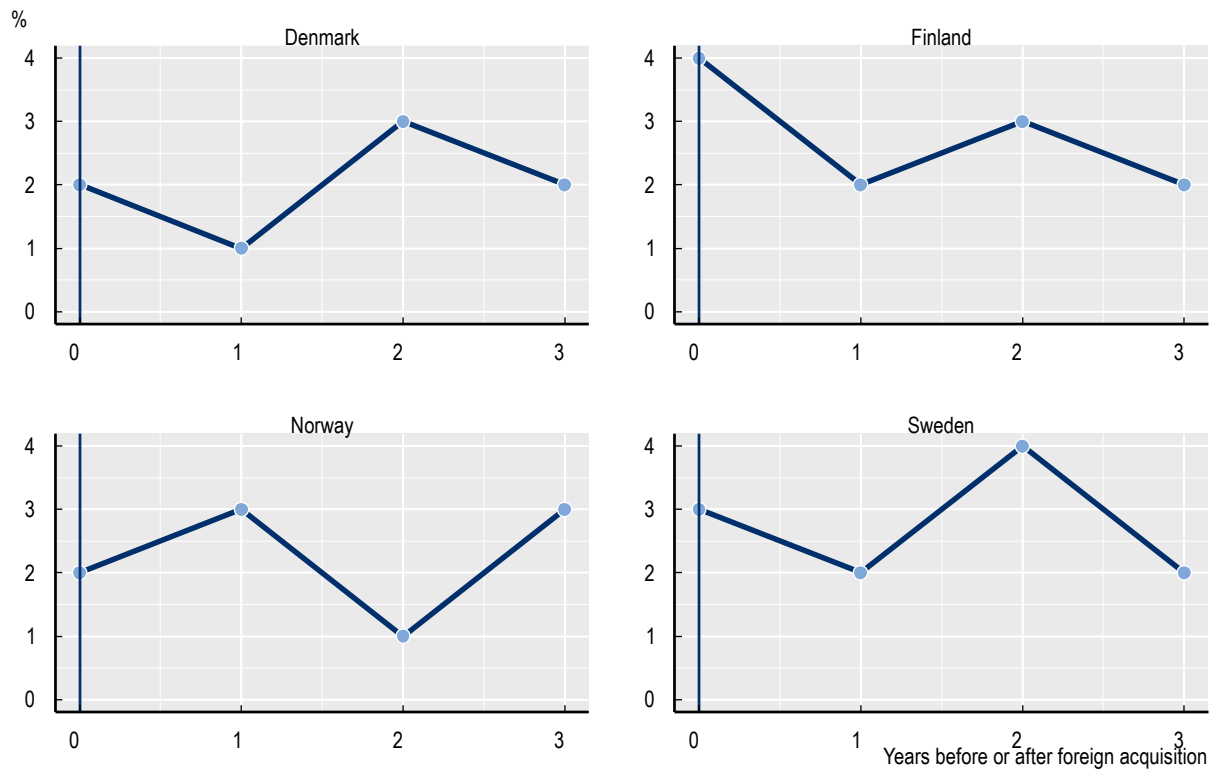


Note: The graphs show annual changes in mean productivity over the 7-year interval, which covers three years before and after the first foreign acquisition and the foreign-acquisition year. Vertical lines indicate the foreign-acquisition year. See Box 1.3 for further details on the definition of foreign acquisitions. Table A B.4 explains how productivity was measured. The sample is limited to scale-ups, which are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. See Box 1.1 for further details on the definition of scale-ups. Iceland is excluded due to the small sample of scale-ups.

Source: Calculations based on microdata sources from four countries. See Annex B for more information.

Figure A A.13. The yearly probability to exit after a foreign acquisition is lower than 5%

Yearly probability to close operations after a foreign acquisition, 2014-20

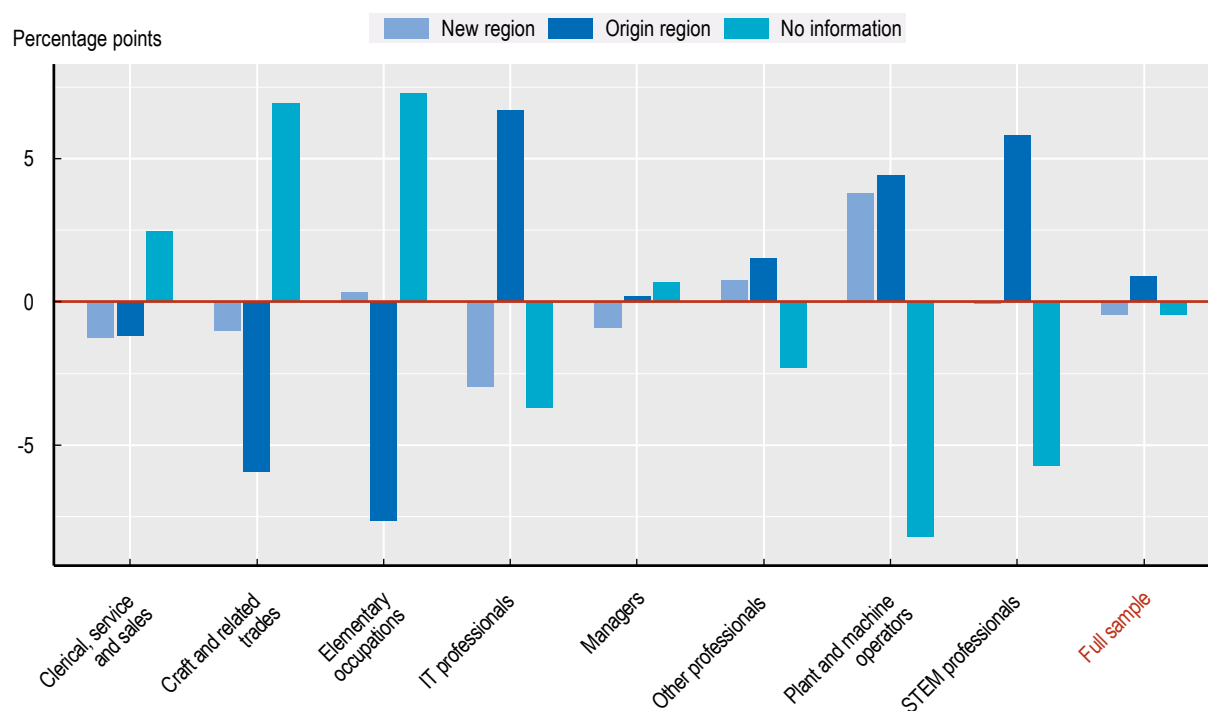


Note: The graphs show annual changes in exit rates over a 4-year interval that begins in the year in which the foreign acquisition takes place. Vertical lines indicate the foreign-acquisition year. See Box 1.3 for further details on the definition of foreign acquisitions and Table A B.4 for the definition of exit. The sample is limited to scale-ups, which are firms that grew in employment or turnover at an average yearly rate of more than 20% for at least a triennium over the period 2011-20. See Box 1.1 for further details on the definition of scale-ups. Iceland is excluded due to the small sample of scale-ups.

Source: Calculations based on microdata sources from four countries. See Annex B for more information.

Figure A A.14. In Norway, workers in elementary occupations with no information on new jobs increases by 7 percentage points during a foreign acquisition

Differences in shares of separations by destination in all separations for workers from different occupation groups; foreign acquisition vs. no foreign acquisition; Norway, 2015-19



Note: The sample covers workers who leave a scale-up and for whom information on their occupation is available. See Box 1.1 for further details on the definition of scale-ups and Table A B.2 for composition of individual occupation groups. For each occupation group, the bars indicate the difference between the foreign-acquisition period and no foreign acquisition in the shares of workers (in all separations) who leave to a firm in a new region, a firm in the origin region, or whose future employment status is not known. Table A B.4 provides further details on three types of separations. The foreign-acquisition period includes the year when the scale-up has changed ownership from domestic to foreign one and the year immediately before and after. No foreign acquisition includes (i) years outside the three-year acquisition window and (ii) scale-ups that never get acquired by foreign investors during the observation period.

Source: Calculations based on microdata sources from Norway. See Annex B for more information.

Annex B. Data and methodology

Source data

Denmark

The results for Denmark were obtained thanks to the co-operation with Statistics Denmark.

The data is available for the years 2011 to 2020.

Firm- and establishment-level data covers variables from business register, business demography, structural business statistics, international trade in goods statistics (ITGS), and inward foreign affiliates statistics (Inward FATS).

Employee-level data was extracted from Register for Social Statistics, Register for Education, and labour market statistics.

Finland

The outcomes from Finland were generated thanks to the co-operation with Statistics Finland.

The data is available for the years 2011 to 2020.

Firm-level data used in the analysis has been predominantly sourced from the local *Microdata Linking (MDL)* database maintained at Statistics Finland, under which data from a variety of different origins (e.g., Business Register and Customs data) is congregated according to a taxonomy common among other Nordic NSIs. As the sole exception, information regarding the regional placement of firms has been based upon the administrative *home municipality (kotikunta)* of each firm. This information was retrieved separately from the so-called *Business Information System (BIS; Yritystilastojärjestelmä, YTY)*, which houses a majority of both firm- and enterprise-level data utilized at Statistics Finland.

The entirety of establishment level data was sourced from the BIS directly. For establishments, regional placement has been determined based upon the *location municipality (sijaintikunta)* of each establishment, which corresponds to the physical location of the establishment as indicated by the *establishment register*.

Statistics Finland derives employee-level data from a variety of register-based datasets. These variables can also be found in FOLK-longitudinal data modules on personal data that are available to researchers. Information on full-time/part-time status was collected from the Structure of Earnings statistics.

Iceland

The results for Iceland were generated thanks to the co-operation with Statistics Iceland.

The data is available for the years 2011 to 2020.

Several sources served as a basis for firm-level data. Turnover and value added were extracted from Structural Business Statistics. Year of creation and/or exit, firm age, and employment were extracted from Business Demography Statistics. Country of ownership was taken from the Enterprise ownership records. The Business Register (BR) was used for information on firm location and sector.

Employee-level data is based on the administrative records for Pay-As-You-Earn (PAYE).

Norway

The output for Norway is an outcome of co-operation with Statistics Norway.

The firm-level data is available for the years 2011 to 2020. The employee-level data is available for years 2015 to 2020.

The firm-level dataset was compiled using information from a wide set of business statistics. The Business Register together with the Structural Business Survey forms the core of the dataset. In addition, the Enterprise Group Register and Inward Foreign Affiliates Statistics (IFATS) were used.

The employee-level dataset is mainly based on the *a-melding*, which is a monthly report from the employer to Norwegian authorities on the employee's income, employment and tax. This file also contains education information from the register on education.

Sweden

The output for Sweden is an outcome of co-operation with Statistics Sweden.

The data is available for the years 2011 to 2020.

The final datasets used for the analysis are compiled of the following sources:

- *Structural Business Statistics* (SBS) contains financial information on active firms.
- *Business Registers and the Group registers* BR contain information on groups of companies and population of firms.
- *Inward foreign affiliate trade statistics* (IFATS) contains information on the inward ownership structure
- *Labour statistics* based on administrative sources provides statistics on individuals
- *Wage and salary structure*, private sector statistics (SLP) reports statistics on wages and participation in the labour market, which covers only the private sectors.

Workers' occupation groups were constructed based on the Swedish Standard Classification of Occupations *SSYK 2012*, which is broadly consistent with the ISCO-08, for the period 2014-2020.

Methodological notes

Data harmonisation

Comparability of results across different countries is achieved by reproducing the same cleaning procedures and estimation techniques as used on the raw data. The statistical package includes the following data cleaning instructions, applied to all country source data:

Firm-level data

- Firms in sectors (1-digit NACE 2) A, K, O, P, Q, R, S (excluding 2-digit sector 95), T, U are dropped.
- All negative values of variables that cannot plausibly be negative (employment, turnover) are considered missing.
- Regional variables are coded using 2016 TL2 classification.
- Employment is measured as full time equivalent (FTE) number of employees.

Employee-level data

- Wage is calculated as the sum of monthly wages earned divided by the number of months worked at the same firm in a given year.
- If an employee worked in several firms in a given year, only the work spell with the highest wage or the longest work spell is kept in the dataset.
- Full-time employees are defined as those employees who work more than 80% of contractual full-time hours.

The sector groups

Firms are classified within the industry-standard classification system (NACE 2 rev.2 sector classification). Sectoral analysis aggregates the NACE sections into five groups (Table A B.1).

Table A B.1. Sectoral groups with corresponding NACE sector divisions

Aggregated sector groups	NACE Rev. 2 Divisions	Sector names
Low-tech and medium-low-technology manufacturing and extractive industries	5	Mining of coal and lignite
	6	Extraction of crude petroleum and natural gas
	7	Mining of metal ores
	8	Other mining and quarrying
	9	Mining support service activities
	10-12	Manufacture of food products, beverages and tobacco products
	13-15	Manufacture of textiles, apparel, leather and related products
	16-18	Manufacture of wood and paper products, and printing
	19	Manufacture of coke and refined petroleum products
	22, 23	Manufacture of rubber and plastics products, and other non-metallic mineral products
	24, 25	Manufacture of basic metals and fabricated metal products, except machinery and equipment
31-33	Manufacture of furniture, other manufacturing, and repair and installation of machinery and equipment	
Medium-high and high-technology manufacturing	20	Manufacture of chemicals and chemical products
	21	Manufacture of basic pharmaceutical products and pharmaceutical preparations
	26	Manufacture of computer, electronic and optical products
	27	Manufacture of electrical equipment
	28	Manufacture of machinery and equipment
	29, 30	Manufacture of transport equipment
Construction	41-43	Construction
ICT and professional services	58.2	Software publishing
	61,62	Telecommunications, computer programming, consultancy and related activities
	69-74	Professional, scientific and technical activities, except for veterinary activities
Other services and utilities	35-39	Electricity, gas, steam and air conditioning supply
	45-47	Wholesale and retail trade and repair of motor vehicles and motorcycles
	49-53	Transporting and storage
	55-56	Accommodation and food service activities
	68	Real estate activities

Aggregated sector groups	NACE Rev. 2 Divisions	Sector names
	75	Veterinary activities
	78	Employment activities
	79	Travel agency, tour operator, reservation service and related activities
	80	Security and investigation activities
	81, 82	Services to buildings and landscape activities; office administrative, office support and other business support activities
	95	Repair of computers and personal and household goods

Note: The manufacturing sectors are aggregated using Eurostat's high-technology classification of manufacturing industries (https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:High-tech_classification_of_manufacturing_industries).

Classification of workers by education and occupation level

Education

The educational attainment of employees is categorised according to the International Standard Classification of Education (ISCED) 2011 classification. Employees are grouped in categories according to their highest-achieved education level as follows: i) at most primary education (levels 0-2); ii) secondary/high school (levels 3-5), and iii) university degree (levels 6-8).

Occupations

Occupations are classified in accordance with the International Standard Classification of Occupations (ISCO) 2008. Occupational analysis aggregates the ISCO professional categories into eight groups.

Table A B.2. Occupation groups with corresponding ISCO-08 codes

Occupation groups	ISCO-08 codes	Descriptions
Managers	1	Managers
Other professionals	2	Professionals
	3	Technicians and Associate Professionals
Clerical, service, and sales	4	Clerical Support Workers
	5	Services and Sales Workers
Craft and related trades	6	Skilled Agricultural, Forestry and Fishery Workers
	7	Craft and Related Trades Workers
Plant and machine operators	8	Plant and Machine Operators and Assemblers
Elementary occupations	9	Elementary Occupations
ICT professionals	25	Information and Communications Technology Professionals
	35	Information and Communications Technicians
Science, technology, engineering and mathematics	211	Physical and Earth Science Professionals
	212	Mathematicians, Actuaries and Statisticians
	213	Life Science Professionals
	214	Engineering Professionals (excluding Electrotechnology)

Occupation groups	ISCO-08 codes	Descriptions
(STEM) professionals	215	Electrotechnology Engineers
	31	Science and Engineering Associate Professionals

Source: ISCO-08 codes are extracted from https://www.ilo.org/global/publications/ilo-bookstore/order-online/books/WCMS_172572/lang-en/index.htm.

Skills

Employees are classified by the skill content of their occupations. Following the International Standard Classification of Occupations (ISCO-08), occupations are classified as high-skilled, medium-skilled and low-skilled (ILO, 2012^[39]). Occupation refers to the kind of work performed in a job. The concept of occupation is defined as a “set of jobs whose main tasks and duties are characterised by a high degree of similarity”. Skill is defined as the ability to carry out the tasks and duties of a given job and is a function of the complexity and range of tasks and duties to be performed in an occupation. Skill level is measured operationally by considering one or more of:

- The nature of the work performed in an occupation in relation to the characteristic tasks and duties defined for each ISCO-08 skill level.
- The level of formal education defined in terms of the International Standard Classification of Education (ISCED) (The UNESCO Institute for Statistics, 2012^[40]) required for competent performance of the tasks and duties involved.
- The amount of informal on-the-job training and/or previous experience in a related occupation required for competent performance of these tasks and duties.

Table A B.3. Classification of occupations based on skill requirements

Broad skill level	Occupation groups
Skill levels 3 and 4 (high)	Managers
	Other professionals
	ICT professionals
	STEM professionals
Skill level 2 (medium)	Clerical, service, and sales
	Craft and related trades
	Plant and machine operators
Skill level 1 (low)	Elementary occupations

Definitions

Table A B.4. Definitions of derived variables

Firm definitions	
Scale-ups	See Box 1.1.
Comparable firms	Comparable firms are firms (i) that did not scale up and (ii) that had 10 or more employees and annual turnover of min. 2 million EUR at least once over the period of analysis (2011-20).
Before-growth phase	two years before the high-growth period
During-growth phase	three years of the high-growth period
After-growth phase	two years after the high-growth period
Events	
Relocation	A relocation happens in a year when a firm is observed in a new TL2 ¹⁷ region for the first time. This variable uses information about the location of an entire firm and is missing for the first year of the dataset.
Expansion	An expansion happens in a year when a firm opens or acquires establishment(s) in a new TL2 region. This variable uses location information at the establishment level and is missing for the first year of the dataset. The establishment-level data are available for Denmark, Finland, and Sweden.
Foreign acquisition	A foreign acquisition happens when a firm changes its ultimate country of ownership from domestic to foreign one in a given year. This variable is missing for the first year of the dataset.
Regional characteristics	
Distance in minutes from the region to the capital city by car	This variable was created based on road travel time between centroids of TL3 regions. The data, which is available for years 2011 and 2014, was extracted from ESPON Database. Values in years 2012-13 were set to be the same as in year 2011 and values in years 2015-2020 were set to be the same as in year 2014. Distance from a TL2 region to a capital city is the weighted average of distances across all TL3 regions that are a part of the TL2 region (in a given year). Population sizes per km ² (extracted from OECD (2022 ⁽⁴¹⁾)) serve as weights. Subsequently, the distance is averaged out across time (2011-2020) within each TL2 region.
Firm-level variables	
Entry	Entry occurs in a year when the firm is observed for the first time, except for the first year of the dataset. The entry value is considered missing in the first year covered by the dataset. A new entrant firm should belong to the "young" age category.
Exit	Exit occurs in a year when the firm is observed for the last time, except for the last year of the dataset. The exit value is considered missing if it is the last year covered by the dataset.
Full Time Equivalent number of employees (FTE)	The number of employees converted into full time equivalents (FTE). Figures for the number of persons working less than the standard working time of a full year full time worker, should be converted into full time equivalents, with regard to the working time of a full time full-year employee in the unit. It is the total hours worked divided by the average annual number of hours worked in full time employees in the reporting country.
Turnover	Turnover comprises the totals invoiced by the observation unit during the reference period, and this corresponds to market sales of goods or services supplied to third parties. Turnover includes all duties and taxes on the goods or services invoiced by the unit with the exception of the value added type taxes (VAT). Turnover is measured in current prices and values are converted from national currencies to EUR using the average yearly exchange rate set for each country.
Productivity	Productivity is measured by the number of units of output per full time equivalent employee. The output is measured with value-added, i.e. is gross income from operating activities after adjusting for operating subsidies and indirect taxes.
Employee-level variables	
Seniority	Seniority is measured as a difference in years between the current period and period when an employee appeared for the first time at a given firm. Seniority is set to be missing for the first three years of the dataset.
Separation from a firm	Separation from a firm happens in the year when an employee is observed for the last time at a given firm. This variable has missing values in the last year of the dataset. Separations differ depending on their destination location. Workers stay in the home region if the new firm is located in the same TL2 region as their origin region. Workers move to a new region if the new firm is located in a different TL2 region than their origin region. The new location is unknown ("no-information" group) if workers are observed for the last time in a given year. Potential reasons for no information include unemployment or inactivity, retirement, switch to part-time status, employment in the public sector or in sectors not covered by the analysis.
(Worker's) origin region	TL2 region of a firm in a year when an employee joined the firm
First occupation	occupation in the first year an employee appears in the dataset

17 An exception is Figure 2.10 that defines relocation at the TL3 regional level.

Regressions

The following regression is used to estimate whether scale-ups at a specific growth stage are more likely to experience relocation, expansion, or foreign acquisition than comparable firms:

$$event_{it} = \beta_0 + \beta_1 ScalerBefore_{it} + \beta_2 ScalerDuring_{it} + \beta_3 ScalerAfter_{it} + \beta_4 \log(employment)_{it-1} + \beta_5 \log(turnover)_{it-1} + FE\gamma + \epsilon_{it}$$

where i indexes a firm and t indexes a year, respectively. The regression is estimated for each $event_{it}$, i.e. relocation, expansion, or foreign acquisition. $ScalerBefore_{it}$, $ScalerDuring_{it}$, and $ScalerAfter_{it}$ are binary variables that indicate whether a scale-up is in a period before the high growth, in the high-growth phase, or in a period following it. $\log(employment)_{it-1}$ and $\log(turnover)_{it-1}$ are values of employment and turnover one period back in time (measured in natural logarithms). FE is a vector of year, sector, and region dummies in year t and age-category dummies three periods back in time ($t-3$).

The sample is limited to scale-ups that are before, during, or after their high-growth period and comparable firms. Years after the first event are dropped for firms that experienced the event. Standard errors are clustered at the firm level.



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