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Scaling CESEE innovation:

Ecosystem dynamics and strategic relocation opportunities

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Abstract

Europe's innovation bottleneck increasingly manifests in the difficulty of scaling promising startups into globally competitive firms. Central, East and Southeast Europe (CESEE) is particularly exposed to this due to limited finance and local acquirers, which lead to serious risks of relocation particularly beyond the EU's borders. This policy note documents the sectoral structure and dynamics of CESEE small enterprises (10-49 employees) across six broadly defined macro-sectors: Digital Economy, Life Sciences, Media, Creative Economy, Production, and Neighbourhood Economy. It uses Eurostat's Structural Business Statistics and patent data from the OECD Patent Database. An analysis of the most influential rankings of innovative clusters and related outcome indicators complements the descriptive analysis. The note finds that Production and the Neighbourhood Economy represent the lion's share of the region's small enterprises, while Digital Economy is the clear growth champion. Creative Economy activities show solid, if uneven, expansion. And while the Media macro-sector stagnates, Life Sciences exhibits highly concentrated but distinctive niche specialisations, especially in smaller economies. Ecosystem rankings and unicorn outcomes reveal an intensely urban, highly heterogeneous innovation landscape. Some small CESEE states, such as Estonia, Lithuania, and Croatia, achieve exceptional unicorn densities, yet many of these firms relocate their headquarters to the US or the UK to access deeper capital markets. The paper posits that strategic intra-EU relocation and dual-hub models – particularly leveraging, for instance, Vienna's role as a proximate, research-intensive hub – can help to keep CESEE firms and value creation within the European innovation system while Capital Markets Union reforms remain incomplete.

Keywords: CESEE, Startups, Scaleups, Unicorns, Innovation, Sectoral specialisation, Patents, Urban hubs, Capital markets

JEL classification: L26, O30, O52, R11, R58, G24

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Scaling CESEE innovation: Ecosystem dynamics and strategic relocation opportunities

1. INTRODUCTION

The challenge of scaling innovative companies within the European Union (EU) has become increasingly urgent. As Mario Draghi highlighted in his September 2024 report to the European Commission, Europe faces a critical innovation paradox: while the continent excels at research and early-stage entrepreneurship, it struggles to translate this potential into commercially successful, globally competitive companies. The numbers are stark: between 2008 and 2021, nearly 30% of European unicorns relocated their headquarters abroad, predominantly to the United States, in search of deeper capital markets, unified regulatory frameworks, and the scale needed to achieve profitability (Draghi, 2024).

This challenge is particularly acute in Central, East and Southeast Europe (CESEE), where promising startups and early scaleups face compounded obstacles. Beyond the fragmented markets and regulatory inconsistencies that affect all European firms, companies in this region often confront additional barriers, such as smaller domestic markets, less developed venture capital (VC) ecosystems and financial markets, and overall weaker innovation systems, which offer limited access to the specialised talent and infrastructure that mature innovation systems provide. As these firms reach critical inflection points in their growth trajectories, many face a stark choice: stagnate within their home markets or relocate entirely outside Europe.

However, while some of Draghi's ambitious policy recommendations – from completing the Capital Markets Union to creating new pan-European legal structures – remain largely unimplemented, some pragmatic, short-term strategies could help to retain innovative CESEE firms within the European ecosystem. Rather than accepting the binary of staying local or departing for Silicon Valley or London, there is a middle path: strategic relocation within the EU to cities that offer the infrastructure, capital access, and market connectivity that these startups and scaleups need.

Vienna represents precisely such an opportunity, at least for some of the firms in the region. As Central Europe's financial and logistical hub, the city combines regulatory stability; quality of life, which aids talent retention; and, crucially, geographic and cultural proximity to both CESEE and Western European markets. For scaleups in macro-sectors in which Vienna has established strengths and defined interests (e.g. Neighbourhood Economy, Production, Creative Economy, Media, Life Sciences, and Digital Economy), relocation or dual-hub strategies could provide access to deeper capital pools and Western European markets while maintaining operational ties to their home countries and the broader CESEE region.

Among other things, this policy note examines the ecosystem of small firms across CESEE economies (data for Vienna and Austria is included in selected statistics), analysing both country-level dynamics and sector-specific patterns. We assume that a significant share of these small firms are mature startups and early scaleups with substantial growth potential. By mapping where promising firms are emerging, we can identify which type of companies may benefit most from Vienna's offerings and how targeted

policies could facilitate growth-oriented relocations that keep innovation capital, jobs, and value creation within the EU – even if distributed across borders. In doing so, we explore how regional innovation hubs can play an immediate role in addressing Europe’s scaling challenge while broader structural reforms remain in development.

2. SECTORAL ANALYSIS OF CESEE SMALL-SIZED ENTERPRISES

This section presents a comparative overview of sectoral developments across CESEE economies based on Eurostat’s Structural Business Statistics (SBS) for small-sized enterprises (10-49 employees), which should, by and large, encompass typical mature startups and early scaleups. It examines six key macro-sectors – Digital Economy, Life Sciences, Media, Creative Economy, Production, and Neighbourhood Economy – in order to assess both their absolute scale and their relative importance within national enterprise structures. For each macro-sector, we analyse enterprise counts, sectoral shares, and short- and medium-term growth dynamics, highlighting cross-country regularities, structural divergences, and emerging patterns of specialisation. It has to be noted that, due to the definition of these macro-sectors, data across macro-sectors may be duplicated, limiting the validity of comparisons across them. Appendix Table A1 provides a detailed description of the constituent subsectors. While most sector names are self-explanatory, it is worth mentioning that, apart from a large number of manufacturing subsectors, the Production macro-sector also includes selected activities in the mining sector; the energy, water, and waste sector; and the construction, transport, and technical services sector. By contrast, the Neighbourhood Economy macro-sector is focussed on servicing domestic demand, mostly at the household level, including construction activities, repair, retail, hotel, restaurant, cleaning, and other personal services.

Digital Economy

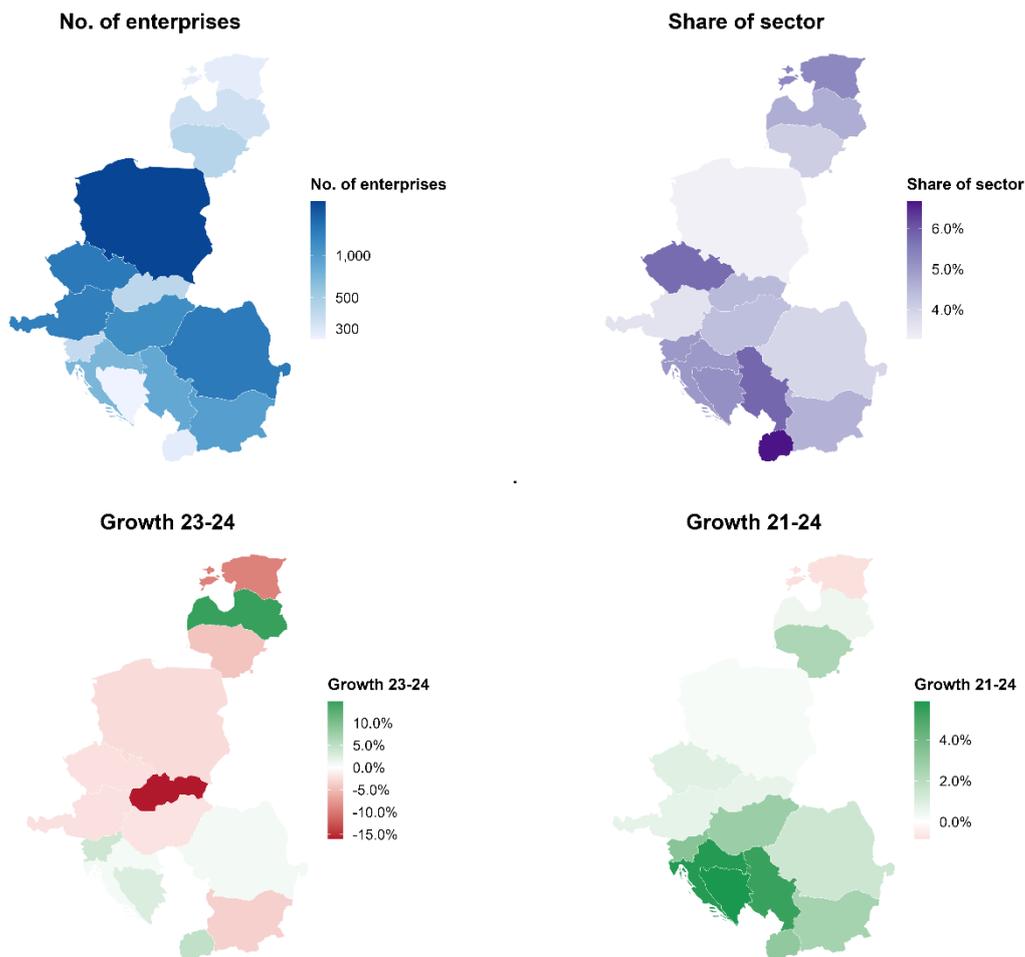
The Digital Economy macro-sector displays a number of clear cross-country regularities, alongside notable deviations from expected development patterns. In terms of absolute enterprise counts, the number of digital firms broadly aligns with population size and overall economic development across countries, as shown in Figure 1. Larger and more advanced economies tend to host more digital enterprises. The leader is Poland, followed by Czechia, Romania, and Austria.

However, a markedly different picture emerges when considering the macro-sector’s share within national enterprise structures. Here, Figure 1 shows that Digital Economy is relatively more important in the Western Balkans, particularly in North Macedonia, where digital enterprises account for more than 6% of firms in the 10-49 employee size class. An example of a successful startup in North Macedonia is Pixyle.ai, which uses artificial intelligence (AI) to help customers find clothes that meet their search criteria (World Bank Group, 2023). By contrast, the macro-sector’s share is comparatively low in the Visegrád countries, Austria, and Romania, with Czechia standing out as a notable exception with successful companies such as cybersecurity software firm Avast (CzechInvest, n.d.).

Short-term growth dynamics between 2023 and 2024 are uneven and, in many cases, negative. While substantial expansion is observed in Latvia, most other countries experience stagnation or contraction. However, short-term growth figures should be interpreted with caution, as they are more prone to statistical distortions. Figure 1 indicates a substantially more positive overall trend over the 2021-2024

period, with digital enterprises expanding in nearly all countries and especially strong growth in the Western Balkans and Croatia. Moreover, Croatia is home to the cloud-communication platform developer and unicorn Infobip.

Figure 1 / CESEE Digital Economy, small-sized enterprises



Note: Enterprises with 10-49 employees.

Source: Eurostat, Structural Business Statistics.

Life Sciences

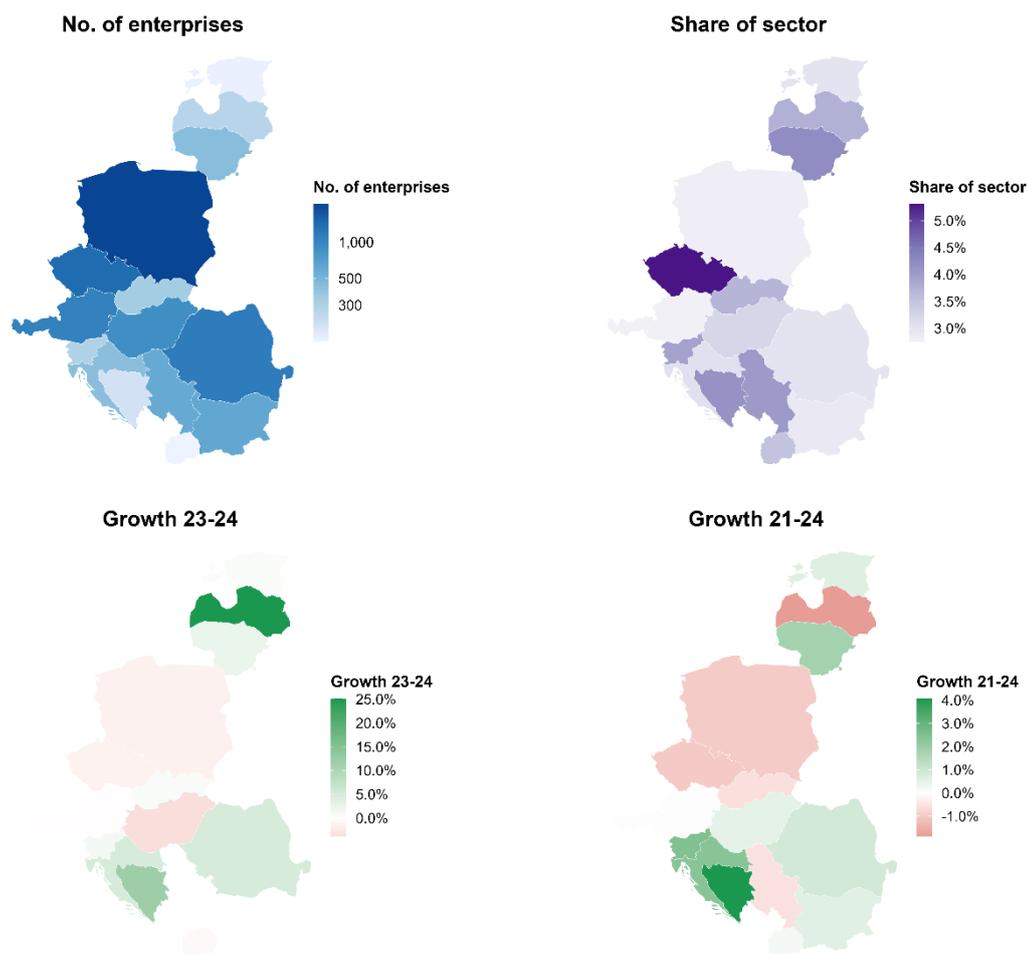
In the Life Sciences macro-sector, absolute enterprise numbers again broadly follow population size and levels of economic development, as illustrated in Figure 2. Most countries exhibit firm counts consistent with their overall economic scale, underscoring the capital- and knowledge-intensive nature of the macro-sector.

Sectoral concentration, however, varies significantly. Figure 2 shows that Czechia stands out with by far the highest share of Life Sciences enterprises, reflecting its comparatively strong research and industrial base. Elevated concentrations are also visible in parts of the Baltics and in several Western Balkan

economies, suggesting that even relatively small economies can host a non-negligible Life Sciences presence.

Growth patterns are highly heterogeneous. Figure 2 highlights particularly strong short-term expansion in Latvia and Bosnia and Herzegovina between 2023 and 2024, while most other countries record modest or negative changes. Over the 2021-2024 period, Bosnia and Herzegovina, Slovenia, and Croatia emerge as the strongest performers. For Bosnia and Herzegovina, this confirms what is today considered a success story, with a vibrant ecosystem emerging. As a result of these efforts, Cloud Health EuroVentures, the country's first-ever VC fund, has been launched to support startups in digital health, artificial intelligence, and life sciences (Custovic, 2025). The Life Sciences macro-sector has also been a major strength for Slovenia, experiencing strong dynamism in terms of small and medium-sized enterprises (SMEs) and startups (Slovenia Business, 2021). Mesi, a startup offering a predictive medical assessment platform for ambulatory health care, and GenePlanet, active in genetic testing and research, are two examples of the most successful startups in the Slovenian Life Sciences landscape (StartupBlink, 2026).

Figure 2 / CESEE Life Sciences, small-sized enterprises



Note: Enterprises with 10-49 employees.

Source: Eurostat, Structural Business Statistics.

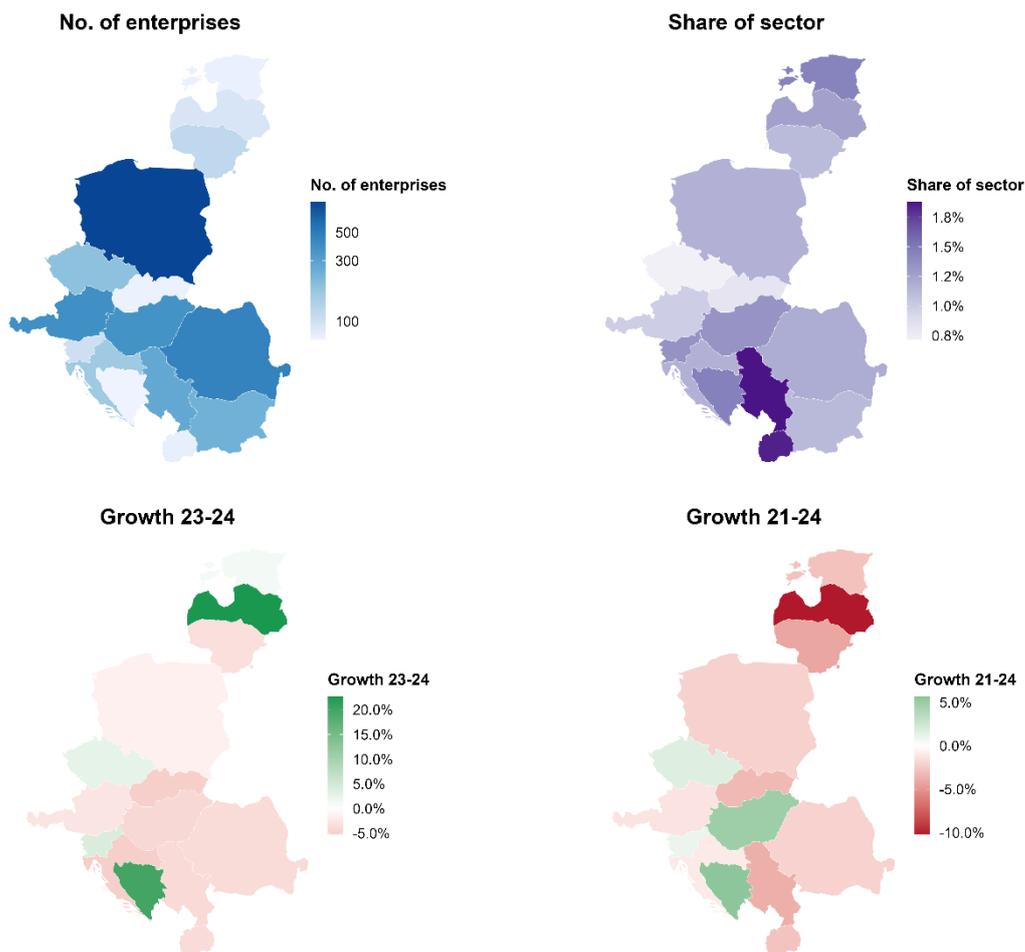
Media

The Media macro-sector is small across all countries, with enterprise numbers largely in line with population and development levels, as shown in Figure 3. Nevertheless, there are notable deviations. Enterprise counts are lower than expected in Czechia and particularly in Slovakia, while Romania records comparatively high numbers.

In relative terms, Figure 3 shows that the macro-sector is most prominent in the Western Balkans, especially in Serbia and North Macedonia, where media enterprises account for a comparatively large share of small-sized firms. Serbia is also home to top regional media corporations, such as the Pink Media Group. Conversely, the macro-sector plays a more limited role in Czechia, Slovakia, and Austria.

Growth dynamics are volatile. As indicated in Figure 3, short-term expansion between 2023 and 2024 is concentrated in Latvia and Bosnia and Herzegovina, while contraction dominates elsewhere. Medium-term developments over the 2021-2024 period are generally weak, with only a few countries recording sustained growth and several experiencing marked decline.

Figure 3 / CESEE Media, small-sized enterprises



Note: Enterprises with 10-49 employees.

Source: Eurostat, Structural Business Statistics.

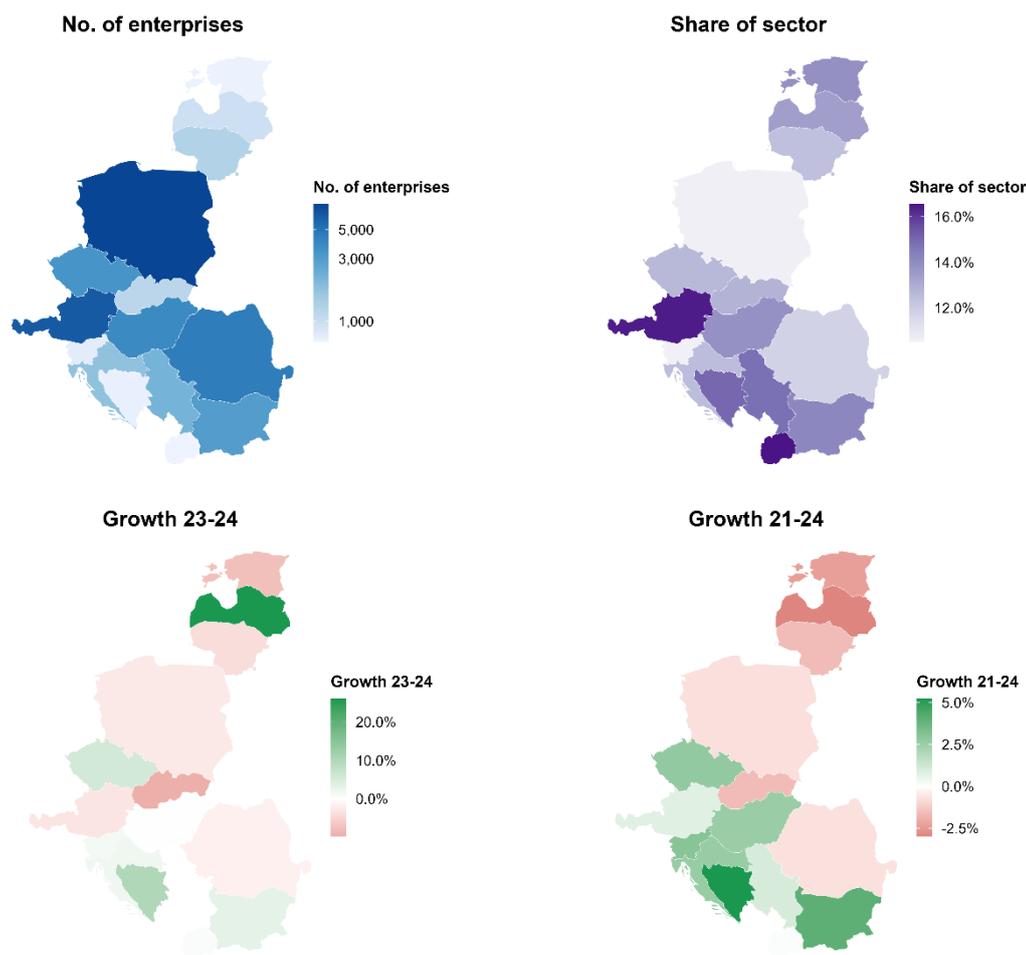
Creative Economy

Enterprise numbers in the Creative Economy macro-sector largely correspond to population and development levels, though Figure 4 highlights some clear outliers, notably Slovakia, Estonia, and Slovenia, where firm numbers are comparatively low.

The macro-sector's relative importance differs sharply across countries. Figure 4 shows that Austria and North Macedonia exhibit the highest shares, whereas Poland and Slovenia show the lowest, reflecting distinct national patterns of creative clustering and institutional support of that industry.

Short-term developments between 2023 and 2024 are again volatile. Latvia, Bosnia and Herzegovina, and Czechia record strong expansion, while most other countries experience contraction. Over the medium term, Figure 4 points to a clearer regional pattern, with strong growth in much of the Western Balkans and in Bulgaria, where three quarters of the Creative Economy macro-sector is located in Sofia (Invest Sofia, n.d.).

Figure 4 / CESEE Creative Economy, small-sized enterprises



Note: Enterprises with 10-49 employees.

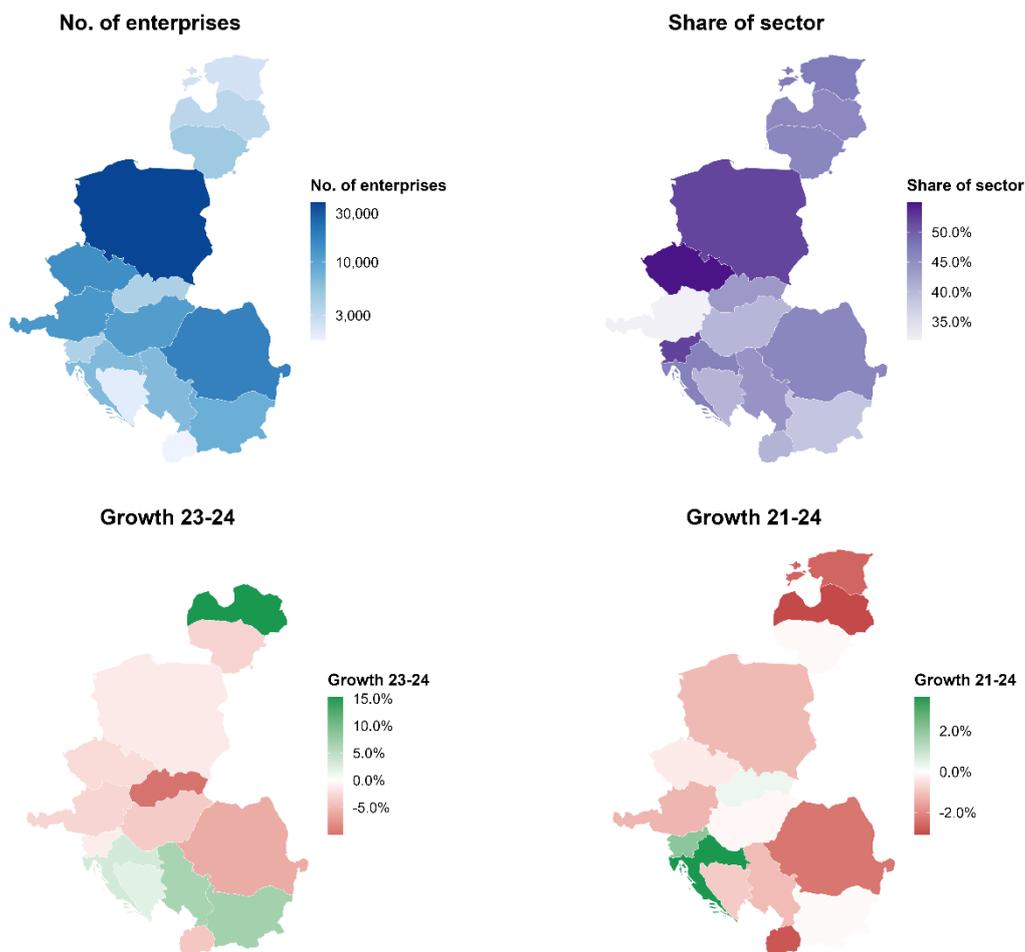
Source: Eurostat, Structural Business Statistics.

Production

The Production macro-sector exhibits enterprise counts that closely mirror population size and overall economic development, as shown in Figure 5. Larger and more industrialised economies host a greater number of small-sized production firms. While the number of firms in the respective size class is counted in the hundreds in other macro-sectors, it reaches into the thousands in the Production macro-sector.

In terms of sectoral shares, Figure 5 shows that production remains central in Czechia, Slovenia, and Poland, where it accounts for more than half of enterprises. One example of a successful startup in these countries is Czechia's Rezolv Energy, which produces wind energy, solar energy, and battery storage solutions (Codina, 2025). Production plays a comparatively smaller role in Austria, which highlights persistent structural differences in manufacturing intensity across countries.

Figure 5 / CESEE Production, small-sized enterprises



Note: Enterprises with 10-49 employees.

Source: Eurostat, Structural Business Statistics.

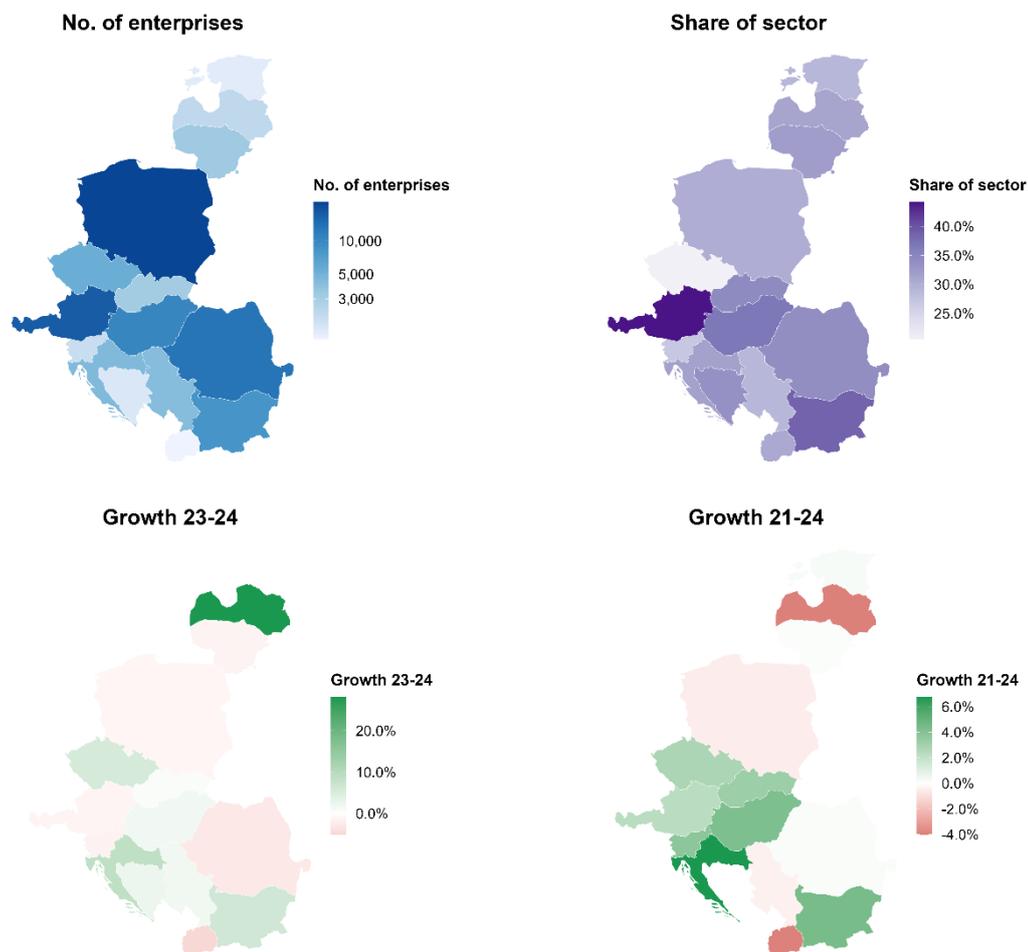
Short-term growth between 2023 and 2024 is strongest in Latvia, with additional expansion in Serbia and Bulgaria. However, Figure 5 shows that medium-term developments over the 2021-2024 period are considerably weaker, with contraction dominating in many countries and only limited sustained growth in

Croatia and Slovenia. Promising startups from these two countries include, for example, Croatia's Genesis Space Flight Laboratories, which develops reusable re-entry capsules (Escárzaga, 2026), and Slovenia's Sunrise Robotics, which develops autonomous robotic cells for industrial manufacturing operations (Kostanic, 2025).

Neighbourhood Economy

The Neighbourhood Economy macro-sector is one of the largest macro-sectors in most countries, with enterprise numbers broadly aligned with population size and economic scale, as shown in Figure 6. The figure also shows a particularly high concentration in Austria and comparatively low shares in Czechia, reflecting different degrees of sectoral diversification.

Figure 6 / CESEE Neighbourhood Economy, small-sized enterprises



Note: Enterprises with 10-49 employees.

Source: Eurostat, Structural Business Statistics.

Short-term growth between 2023 and 2024 is strongest in Latvia, while Czechia, Croatia, and Bulgaria also record notable expansion. At the same time, several countries experience contraction. Figure 6

shows that Austria and neighbouring countries, as well as Croatia and Bulgaria, emerge as leaders over the 2021-2024 period.

Across countries and sectors

In the Appendix, the data underlying the above indicators can be found by country (Table A2) and sector (Table A3). Table 1, below, shows the results of aggregating sectoral figures across the CESEE region. Production and the Neighbourhood Economy are the heavyweights among the selected macro-sectors in the region, with each hosting more than 100,000 firms in the 10-49 employees size class. Accordingly, they account for dominant shares ranging from roughly one third to almost one half of all firms in this category. However, their recent dynamics have diverged markedly.

Against the backdrop of the US trade war, export-oriented Production has contracted, both in the short and medium terms. By contrast, amid pronounced demographic ageing in CESEE and the associated strong wage pressures, the Neighbourhood Economy macro-sector has benefited from more robust consumption dynamics in recent years.

Table 1 / Selected CESEE sectors, small-sized enterprises (10-49 employees)

Macro-sector	Number of enterprises in size group 10-49 employees, 2024	Relative share of sector in region	Annual growth rate of the number of enterprises in size group 10-49 employees, in %, 2024 vs 2023	Average annual growth rate of the number of enterprises in size group 10-49 employees, in %, 2024 vs 2021
Neighbourhood Economy	100,692	33.0%	0.9%	5.0%
Production	138,146	45.3%	-1.5%	-2.5%
Creative Economy	39,384	12.9%	1.5%	2.2%
Media	3,570	1.2%	0.5%	-0.8%
Life Sciences	10,116	3.3%	2.6%	0.2%
Digital Economy	13,012	4.3%	3.8%	5.6%

Note: Data across macro-sectors may overlap; aggregates include data for Austria.

Source: Eurostat, Structural Business Statistics.

The region's champion is the Digital Economy macro-sector. Although still smaller in absolute size, it outperforms all other macro-sectors in both the short and medium terms. This finding corroborates widespread anecdotal evidence.

At the other end of the spectrum, Media, the smallest of the analysed macro-sectors, has largely stagnated, reflecting both global trends and sector-specific local challenges. By contrast, the Creative Economy macro-sector has attained an above-average size and recorded solid growth rates in both the short and medium terms, underscoring its potential in the region.

Finally, the Life Sciences macro-sector presents a more mixed picture. Despite their small size and medium-term stagnation, firms in this macro-sector have exhibited renewed momentum in the short term.

The next section integrates technological output indicators to complement the firm-level structural evidence presented above. The analysis concentrates on the most technology-intensive sectors in the sample, specifically the Digital Economy and Life Sciences macro-sectors.

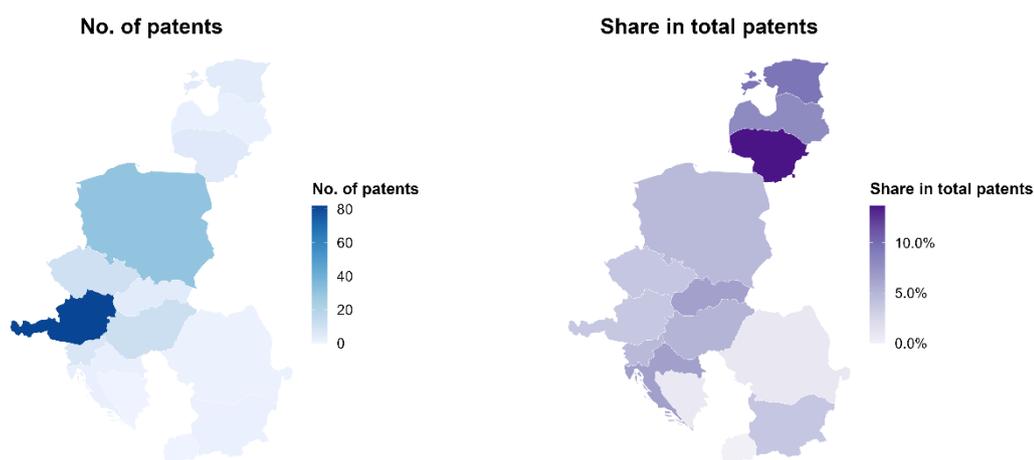
3. SECTORAL ANALYSIS OF SELECTED TYPES OF PATENTS IN CESEE

To complement the enterprise-based evidence derived from Structural Business Statistics, we examine technological specialisation using patent data from the OECD Patent Database. Patent activity provides an output-based measure of innovation, capturing the technological orientation of national innovation systems beyond firm counts and employment structures. The analysis focuses on the 2016-2020 period (reflecting the latest available data) and considers both the average number of patents and the share of total patents in selected technological domains corresponding to the Life Sciences and Digital Economy macro-sectors.

Life Sciences

In biotechnology, Austria clearly records the highest average number of patents during the 2016-2020 period, as shown in Figure 7, reflecting its comparatively strong research infrastructure and established scientific base. More generally, the absolute number of biotech patents broadly follows levels of economic development, with larger and more advanced economies generating higher volumes. Poland and Czechia also exhibit substantial patent activity in absolute terms, while Hungary performs somewhat above what might be expected.

Figure 7 / CESEE biotechnology patents, average 2016-2020

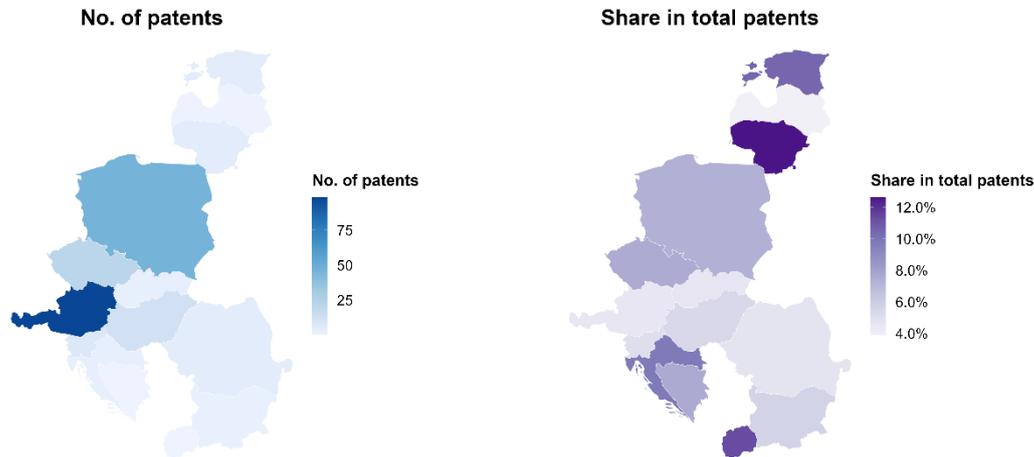


Source: OECD Patent Database.

When biotechnology patents are measured as a share of total national patenting activity, a different pattern emerges. Figure 7 shows particularly strong relative specialisation in the Baltic states. Lithuania stands out most clearly, with biotech accounting for more than 10% of its total patents. Estonia and Latvia also exhibit elevated shares. These findings indicate that while smaller economies may not

generate large patent volumes in absolute terms, biotech represents a strategically significant niche within their overall innovation profile.

Figure 8 / CESEE medical technologies patents, average 2016-2020

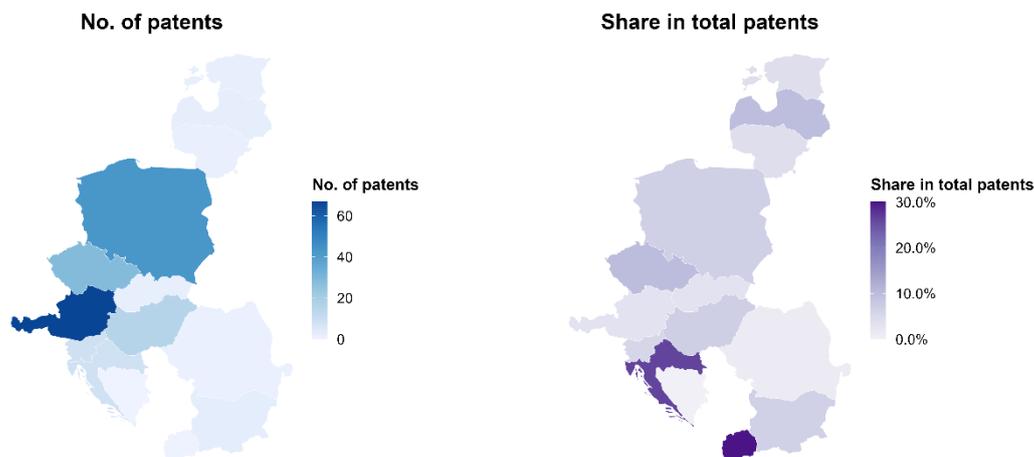


Source: OECD Patent Database.

A similar structure is observed in medical technologies. As illustrated in Figure 8, Austria again leads in terms of average patent numbers, and Poland emerges as a particularly strong second, more clearly distinguished from the rest of the region than in biotechnology. Czechia and Hungary follow at a lower but still notable level of activity.

In relative terms, Figure 8 shows that Lithuania and Estonia once again exhibit high shares of medical-technology patents. In addition, Croatia, Bosnia and Herzegovina, and North Macedonia record comparatively high shares, indicating focused specialisation in this technological field despite smaller overall patent portfolios.

Figure 9 / CESEE pharmaceutical patents, average 2016-2020



Source: OECD Patent Database.

Pharmaceutical patents show a comparable hierarchy in absolute numbers, with Austria in the leading position and Poland among the strongest performers, as shown in Figure 9. In pharmaceuticals, however, Czechia appears closer to the top two than in the other Life Sciences domains, suggesting a somewhat stronger relative positioning in this field.

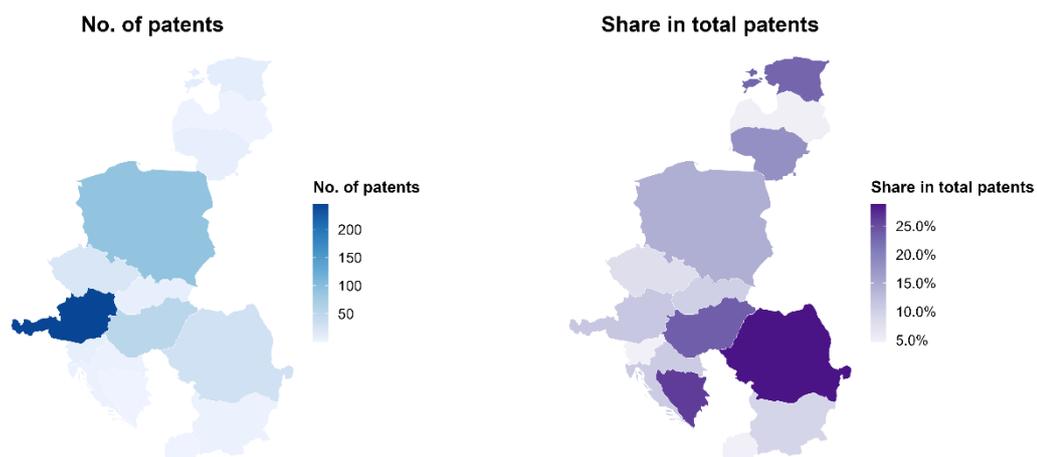
When measured as a share of total patents, Figure 9 highlights Croatia and North Macedonia in particular, with pharmaceutical patents accounting for a very large proportion of total national patenting activity, in some cases approaching 30%. This indicates a high degree of technological concentration in pharmaceuticals and respective historical legacies within these economies.

Digital Economy

Patent patterns in information and communication technologies (ICTs) similarly reveal both scale effects and distinct specialisation profiles. As shown in Figure 10, Austria records by far the highest average number of ICT patents during the 2016-2020 period. Poland and Hungary follow at some distance but stand out relative to other countries in the region, consistent with their larger economic size and broader industrial base.

In relative terms, however, Figure 10 shows that Romania displays the highest degree of specialisation in ICT, with more than one quarter of its total patents falling within this domain. Hungary, Bosnia and Herzegovina, and Estonia also exhibit comparatively high shares, around or above 20%. These figures suggest that digital technologies represent a core component of technological activity in these countries, even where total patent volumes remain modest.

Figure 10 / CESEE ICT patents, average 2016-2020

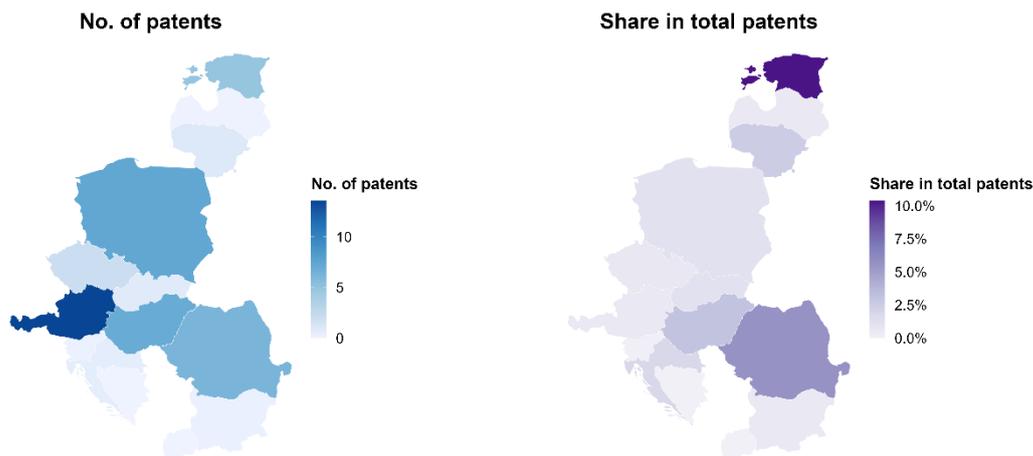


Source: OECD Patent Database.

A similar picture emerges in technologies related to AI. Figure 11 shows Austria leading in absolute patent numbers, reflecting its overall research capacity. Poland, Romania, and Hungary also record notable patent activity in AI-related technologies.

In terms of relative specialisation, Figure 11 highlights Estonia most clearly, with AI-related patents accounting for more than 10% of its total patent portfolio. Romania follows at around 7%, while Lithuania and Hungary also record shares above 5%. This indicates a pronounced digital orientation in these countries' technological output.

Figure 11 / CESEE AI patents, average 2016-2020



Source: OECD Patent Database.

Having examined technological output indicators, the following section situates CESEE performance in terms of startup ecosystems within international ecosystem rankings and comparative assessments.

4. CESEE ECOSYSTEMS AND UNICORNS

The descriptive patterns observed in firm-level data are broadly consistent with the picture emerging from international rankings of global startup ecosystems and innovation hubs, which portray CESEE as a region characterised by strong urban concentration of innovation, rapidly maturing startup ecosystems, and pronounced cross-country heterogeneity. Indeed, CESEE consists of a small number of internationally visible hubs embedded within national innovation systems, which otherwise remain relatively thin in terms of startup density.

Position of CESEE ecosystems in international rankings

Global and European rankings consistently identify a limited set of CESEE metropolitan areas as internationally competitive startup ecosystems. According to the Global Startup Ecosystem Ranking by Startup Genome (2025), Tallinn, Warsaw, and Vienna are positioned among the highest-ranked startup ecosystems in the region and are included among the top emerging ecosystems globally.

More granular city-level positioning is provided by the Global Startup Ecosystem Index – Top Cities 2025 by StartupBlink (2025). Table 2 reports the 2025 global ranking, year-on-year rank change, ecosystem growth, and total score for selected CESEE cities.

Table 2 / Global Startup Ecosystem Index 2025 – Selected CESEE cities

Global Ranking 2025	Rank Change (from 2024)	City	Country	Ecosystem Growth	Total Score
49	+6	Tallinn	Estonia	+35.7%	18.478
69	+2	Vilnius	Lithuania	+22.1%	11.938
74	+9	Vienna	Austria	+27.1%	11.710
85	+4	Prague	Czechia	+19.7%	10.318
91	+4	Warsaw	Poland	+14.3%	9.675

Sources: StartupBlink, Global Startup Ecosystem Index 2025.

Several patterns emerge in Table 2. First, all listed CESEE cities improved their ranking relative to 2024, indicating upward trends rather than stagnation. Vienna records the largest positional jump (+9), while Tallinn (+6) combines strong rank improvement with the highest reported ecosystem growth rate (+35.7%). Vilnius also performs strongly relative to its size, ranking 69th globally and recording growth above 22%, which aligns with Lithuania's rapid ecosystem expansion documented in Dealroom's country analysis (Dealroom, 2025b). Prague and Warsaw rank somewhat lower globally but still display steady positive growth, reflecting consolidation rather than breakthrough expansion.

Tallinn's position at 49th globally reinforces Estonia's long-standing role as a highly internationalised digital ecosystem, while Vienna's ranking reflects Austria's structurally mature innovation system anchored in research-intensive institutions. Warsaw's comparatively lower city-level ranking contrasts with Poland's large aggregate scale, suggesting that Poland's strength lies more in national ecosystem breadth and multiple hubs than in a single dominant city outperforming at global scale.

This selectivity is also evident in the Europe's Leading Start-Up Hubs rankings published by the Financial Times (Financial Times, 2025). While the number of CESEE hubs included increased from 13 in 2024 to 16 in 2025, repeat appearances are concentrated in a small group of countries. Poland, Czechia, Austria, and Romania consistently feature returning hubs, suggesting relatively stable performance over time. Poland hosts the largest number of listed hubs in 2025, reflecting its scale and multi-city ecosystem structure, while Romania stands out for hosting the highest-rated hub in both 2024 and 2025 despite its smaller aggregate size.

Innovation rankings based on science, technology, and patenting activities present an even more concentrated picture. Warsaw and Vienna are listed in the World Intellectual Property Organization's World's Top 100 Innovation Clusters in 2025 (WIPO, 2025a; WIPO, 2025b). Warsaw's inclusion reflects its role in patenting activities as well as scientific publications and VC activity, while Vienna performs a similar function within Austria, supported by strong universities and high research-collaboration intensity.

Urban concentration and ecosystem structure

Across rankings and ecosystem reports, a defining feature of CESEE startup development is the extreme concentration of activity in a small number of cities. It correlates, among other things, with the strong concentration of universities and financial institutions in capital cities of smaller nations. This also mirrors the SBS-based evidence, where national sectoral patterns often reflect the dominance of a single metropolitan area rather than broad-based firm dynamics. In Czechia, for example, Prague accounts for more than 80% of total startup enterprise value, functioning as a near-monopoly hub for VC-backed firms, scaleups, and unicorns (Dealroom, 2025c). Outside the capital, startup activity exists but remains limited in scale and international reach, reinforcing Prague's role as the country's primary interface with global markets.

Poland exhibits a slightly more diversified but still strongly urban-centred structure. Warsaw acts as the country's dominant hub, concentrating a large share of VC, research activity, and high-growth startups, while secondary cities (e.g. Kraków, Wrocław, and Poznań) contribute to ecosystem depth without challenging Warsaw's primacy (Dealroom, 2025a). This pattern is consistent with Poland's SBS profile, which combines large absolute firm counts with more moderate relative sectoralisation, reflecting scale- rather than intensity-driven innovation.

In smaller economies, urban concentration is even more pronounced. In Lithuania, Vilnius overwhelmingly dominates the national ecosystem, hosting the majority of VC-backed startups, unicorns, and early-stage firms. Dealroom-based evidence highlights Lithuania's rapid growth in enterprise value and its strong early-stage pipeline, but it also underscores the narrow geographic base of this expansion, which remains almost entirely city-centred (Dealroom, 2025b). Estonia displays a similar but more mature pattern, with Tallinn functioning as a dense digital hub integrated into Nordic and global startup networks (Startup Genome, 2025).

Startup ecosystem maturity, growth, and heterogeneity

Startup reports consistently describe CESEE as a region combining strong growth dynamics with uneven maturity. Aggregate indicators point to rapid expansion in startup enterprise value and the increasing presence of unicorns, but country-level trajectories differ markedly (Dealroom, 2025a). Poland, Czechia, Estonia, and Austria represent the most mature ecosystems, combining scale, established investor networks, and repeated international success stories. These countries also tend to show more stable, if sometimes slower, short-term growth dynamics in firm-level data.

By contrast, faster relative growth is observed in several smaller and Southeast European economies. Lithuania, Croatia, and parts of the Western Balkans record strong medium-term expansion from a low base, reflecting ecosystem-building phases rather than consolidation (Dealroom, 2025a). This aligns with SBS evidence showing particularly strong medium-term growth in several Western Balkan countries, even where short-term volatility remains high.

Romania occupies an intermediate position, combining relatively large scale with rapid development of the startup ecosystem. Bucharest and Cluj-Napoca function as startup hubs, and Romania's consistent presence in European startup rankings suggests that its startup ecosystem has moved beyond an early-

stage profile, even if access to late-stage capital remains constrained (Financial Times, 2025; Dealroom, 2025a).

Policy support, internationalisation, and country-specific development paths

Country-specific reports highlight the importance of institutional support and international orientation in shaping startup development across CESEE. Public funding and policy support play a particularly important role in smaller and less mature economies. Serbia provides a clear example of this model. Startup Genome's in-depth ecosystem analysis of Belgrade and Novi Sad emphasises the role of several factors – including systematic public investment, education policies focused on AI as well as STEM (science, technology, engineering, and mathematics) subjects, and dense networks of incubators, accelerators, and science parks – in driving rapid ecosystem growth (Startup Genome, 2025). While Serbia's overall startup base remains smaller than that of EU member states, these cities have achieved growing international visibility, particularly in AI and life sciences, positioning Serbia as an emerging regional hub despite its later start.

In contrast, more mature startup ecosystems, such as Austria and Czechia, rely primarily on existing research institutions, universities, and private capital. Vienna's innovation profile is closely tied to its medical and technical universities, while Prague's ecosystem benefits from long-established engineering and software capabilities (WIPO, 2025a; WIPO, 2025b; Dealroom, 2025c).

Taken together, the desk research reinforces and contextualises the patterns observed in the SBS-based descriptive analysis. The prominence of certain sectors and growth dynamics at the national level often reflects the performance of a limited number of dominant urban hubs rather than broad-based innovation across territories. This structural feature has direct implications for scaling strategies. For example, firms emerging from concentrated ecosystems may require cross-border expansion pathways earlier in their development trajectory in order to overcome domestic market constraints.

The final analytical component examines outcome-based ecosystem performance through the lens of unicorn creation and sectoral specialisation.

CESEE unicorns

CESEE has evolved into a resilient innovation hub for the establishment of 'unicorn' startup companies, meaning those valued at more than a USD 1 billion. While the region as a whole is maturing, a distinct hierarchy of efficiency has emerged. The landscape is defined by the extraordinary performance of its smaller nations. Vestbee data from Q1 2025 (which includes regionally founded unicorns that have relocated their headquarters) reveal that the region's highest unicorn densities are found not in its largest economies, but in the Baltic and Adriatic states. Estonia, Lithuania, and Croatia have established themselves as the region's 'high-density' champions, proving that small domestic markets can serve as highly effective launchpads for global billion-dollar companies (Table 3). At the same time, it should be noted that unicorn density is an outcome-based indicator rather than a full measure of ecosystem depth.

Table 3 / CESEE unicorns in Q1 2025

Country	No. of unicorns	Population m	Unicorns per 1 m population
Estonia	10	1.4	7.3
Lithuania	3	2.9	1.0
Croatia	3	3.9	0.8
Czechia	6	10.9	0.5
Latvia	1	1.9	0.5
Slovenia	1	2.1	0.5
Belarus	4	9.1	0.4
Poland	14	36.5	0.4
Ukraine	9	37.0	0.2
Romania	3	19.0	0.2
Bulgaria	1	6.4	0.2
Hungary	1	9.5	0.1

Note: Sorted by density.

Sources: Vestbee, wiiw Annual Database.

Estonia stands out as the undisputed global leader in this metric. With a population of just 1.4 million, it hosts 10 unicorns, resulting in a staggering 7.3 unicorns per million inhabitants. This success is attributed to a 'flywheel effect', whereby early wins pull in more talent, capital, and follow-on companies, which in turn makes it easier for even more startups to become unicorns, creating a self-reinforcing cycle of growth in the ecosystem. The case in point is Skype, which created a cycle of talent and capital reinvestment that gave rise to subsequent giants, such as the ridesharing company Bolt and the fintech Wise (Groszkowska and Palchynska, 2025). However, the data highlight that this phenomenon is not unique to Estonia. Lithuania has emerged as the second most unicorn-dense economy in the region, recording three unicorns against a population of 2.9 million, a density of one unicorn per million inhabitants. It has been the fastest-growing ecosystem in the region since 2020, expanding its value nearly sixfold and producing successes in cybersecurity and digital marketplaces. Similarly, Croatia demonstrates impressive efficiency with three unicorns and a population of 3.9 million, achieving a density of 0.8 per million inhabitants. This places it far ahead of the region's largest economy, Poland, which records a density of just 0.4 per million due to its large population of 36.5 million despite having the highest absolute number of unicorns (14).

This dynamic of high-efficiency small states versus volume-driven large states sets the stage for a diverse sectoral landscape. The Digital Economy macro-sector serves as the region's primary engine, accounting for the vast majority of its unicorn valuation. This macro-sector is dominated by enterprise software, fintech, and AI, leveraging the region's deep digital talent. Estonia's leadership is visible here through Wise (USD 13 billion) and customer relationship management (CRM) software company Pipedrive. Despite geopolitical headwinds, Ukraine remains a heavyweight in this sector with writing assistant software producer Grammarly (USD 13 billion) and the recent addition of Fintech-IT Group, which reached a USD 1 billion valuation in 2025. The macro-sector's reach extends to Romania, where automation giant UiPath (USD 2.0 billion raised) was founded, and Lithuania, where Nord Security has become a key player in the cybersecurity space.

The Production (or 'physical tech') macro-sector, which is based on substantial scientific or engineering discoveries in fields such as hardware, energy, and deep tech, is expanding as well. Croatia is a standout leader here, with Rimac Automobili as a global icon in electric vehicle (EV) technology.

The Creative Economy macro-sector remains a powerful, distinct stronghold, particularly for Poland. The country has successfully monetised its creative talent through a robust gaming sector, hosting several unicorns and major studios, such as CD Projekt, Techland, and Huuuge Games. These companies have proven that the Central and Eastern Europe (CEE) region can produce globally consuming cultural products. This success is not limited to Poland, as Slovenia, with a population of just 2.1 million, produced video game developer Outfit7, further cementing the region's reputation for high-quality interactive entertainment.

Closely allied with the Creative macro-sector is the Media landscape, which is evolving through the adoption of generative AI. The standout story is ElevenLabs, a Polish-founded, UK-headquartered company that reached a USD 6.6 billion valuation. By pioneering AI voice synthesis and cloning, it has become a global leader in synthetic media.

Finally, the Life Sciences macro-sector is emerging as a critical pillar, particularly in digital health and diagnostics. Poland's Diagnostyka provides medical diagnostics, and its DocPlanner manages patient visits globally.

Despite these sectoral successes, the ecosystem faces scaling problems. To access the deep capital required for these global ambitions, many CESEE scaleups have relocated their headquarters abroad, primarily to the US and UK. Although the high-density hubs of Estonia, Lithuania, and Croatia prove that innovation can spark anywhere, the path to becoming a global giant often still leads westward, even as the R&D roots remain firmly planted in the region.

5. CONCLUSION

The combined evidence from firm-level structural data, patent data, ecosystem rankings, and unicorn outcomes reveals a consistent pattern across the CESEE economies. The region is slowly moving beyond a peripheral innovation role and now demonstrates concentrated pockets of competitiveness. Nevertheless, the scaling bottleneck remains structurally embedded, and, despite recent progress, an overarching problem is the lack of coordination and financial support for innovation and R&D activities (Bykova et al., 2024).

The region is characterised by several stylised facts: First, innovation capacity in CESEE is intensely urban and unevenly distributed. A small number of metropolitan hubs generate a disproportionate share of enterprise value, patents, and high-growth firms. This concentration increases the efficiency of the local innovation ecosystem but limits domestic scaling capacity in smaller markets.

Second, innovative activity across the region is growing and showing distinct technological patterns. Smaller economies often exhibit sharper niche positioning, particularly in digital technologies and selected life sciences domains. These patterns suggest that even though CESEE is building innovative

capability, the capital depth and market integration required to scale these emerging capabilities need to be strengthened.

Third, unicorn density confirms that the efficiency of startup ecosystems can be exceptionally high in small states. However, the frequent relocation of headquarters abroad underscores the persistent pull of deeper capital markets outside the EU.

Against this backdrop, strategic intra-European relocation emerges as a pragmatic policy lever. Rather than framing relocation as loss, a dual-hub model within the EU – maintaining R&D and operational roots in CESEE while accessing financial, regulatory, and market infrastructure in strongly rising startup-ecosystem cities, such as Vienna – could keep innovation within the European ecosystem.

Vienna's position as a research-intensive and geographically proximate hub places it in a unique bridging role. By facilitating targeted scaling pathways for CESEE firms in the Digital Economy, Life Sciences, Creative Economy, Media, Production, and Neighbourhood Economy macro-sectors, it can contribute to retaining value creation within Europe.

In the absence of fully realised Capital Markets Union reforms, regional innovation corridors may represent the most immediately actionable mechanism to address Europe's scaling challenge. Designing these corridors intentionally could transform CESEE's concentrated innovation strength into sustained, EU-wide competitiveness.

In the following, a brief characterisation of CESEE startup and scaleup economies is provided:

Estonia is the global leader in unicorn density (about 7.3 unicorns per million inhabitants), driven by a virtuous 'Skype-Bolt' flywheel in a highly internationalised digital ecosystem centred on Tallinn. It also shows strong innovation activity in AI and life sciences (notably biotechnology and medical technologies), even though medium-term small-sized firm growth across various sectors has recently been weaker than in many peer countries.

Latvia stands out for very strong short-term growth (2023-2024) across almost all macro-sectors analysed (Digital Economy, Life Sciences, Media, Creative Economy, Production and Neighbourhood Economy), but it has volatile and often weak medium-term dynamics, especially in Media and Production. Its Digital Economy bases are growing from a relatively small scale.

Lithuania is one of the region's high-efficiency innovation leaders, combining very intense innovation activity in biotech and medical technologies, and it has one of the highest unicorn densities (around one per million inhabitants). Its Vilnius-centred startup ecosystem has been the fastest-growing in CESEE since 2020, nearly sextupling in value and producing notable digital and cybersecurity scaleups (e.g. Nord Security).

Poland has the largest absolute number of unicorns in the region (14) but a modest unicorn density (about 0.4 per million inhabitants), reflecting a volume-driven large market rather than extreme efficiency. In absolute numbers, it is a regional heavyweight in ICT and AI patenting and in life-sciences technologies, with a multi-hub startup structure led by Warsaw and strong creative-economy outcomes in gaming (e.g. CD Projekt, Techland, Huuuge Games) and digital health (e.g. Diagnostyka,

DocPlanner) while at the same time showing contractions in small-sized Life Sciences firms and weak relative Digital and Creative firm shares.

Czechia combines a very strong Life Sciences and Production base; it has by far the highest share of small-sized Life Sciences enterprises and Production accounts for more than half of small-sized firms. At the same time, it has relatively small Media and Neighbourhood Economy macro-sectors. Prague emerges as an important startup hub (with over 80% of startup enterprise value), and although Czechia appears repeatedly among Europe's innovative hubs, recent years have seen contraction in small-sized Life Sciences and Production firm numbers from a high starting point.

Slovakia underperforms expectations in several innovation-related firm metrics. For example, Digital and Media enterprise counts are lower than would be predicted by its size and income level. It has seen pronounced short-term decline in Digital small-sized firms and medium-term contraction in Media, Creative Economy and Life Sciences while not being singled out as a patent or unicorn leader in any particular field.

Hungary punches above its weight in technology patents, ranking close behind Austria and Poland in ICT and medical-technology patenting and showing high relative specialisation in ICT and AI patents. At the small-sized firm level, it records strong medium-term growth in Media and Neighbourhood Economy even though the relative weight of its Digital Economy macro-sector is lower than in Western Balkan or Baltic frontrunners.

Slovenia combines a Production-heavy enterprise structure (Production firms make up more than half of small-sized companies), with relatively low Creative and Neighbourhood Economy firm counts and shares. It is nevertheless one of the best medium-term performers in Life Sciences and Production, having produced a globally visible Creative Economy success story (e.g. Outfit7), which underscores its ability to translate niche strengths into large exits despite a small domestic market.

Croatia is one of the region's unicorn-density champions (around 0.8 unicorns per million inhabitants), anchored by Rimac Automobili in physical tech and EVs. It combines comparatively high specialisation in medical and especially pharmaceutical patents with sustained medium-term growth in production firms and rapid ecosystem expansion from a low base, marking it as a rising high-tech and deep-tech hub on the Adriatic.

Bosnia and Herzegovina shows some of the strongest growth dynamics in the region's Life Sciences, Media and Creative Economy macro-sectors. Small-sized Life Sciences and Media firms have expanded rapidly in both the short and medium terms. Its patent profile reveals high relative specialisation in medical technologies and ICT, signalling focused technological niches despite a very small overall patent and startup base.

Serbia's Western Balkan profile is characterised by a relatively large and prominent Media macro-sector and strongly growing activity among small-sized firms in the Digital Economy, Creative Economy, and Life Sciences macro-sectors. Belgrade and Novi Sad form a state-supported, fast-growing startup ecosystem, even though overall scale still lags EU peers.

North Macedonia stands out for the exceptionally high relative importance of its Digital Economy and Media macro-sectors among small-sized firms, making it one of the most digitally and media-intensive economies in CESEE. It also exhibits very high specialisation in medical technology and pharmaceutical patents, though its overall market remains very small.

Bulgaria's main outcomes are strong medium-term expansion in the Media and Creative Economy and solid recent growth in both Production and Neighbourhood Economy firms, placing it among the better performers in services linked to local demand, even though it is not singled out as a top patent or unicorn hub.

Romania combines relatively low Digital Economy macro-sector small-sized firm shares with the region's highest specialisation in ICT patents (over a quarter of all its patents) and one of the highest AI-patent shares, making digital technologies the core of its technological output. Its startup ecosystem is centred on Bucharest and Cluj-Napoca. In recent years, it has produced major Digital Economy unicorns, and it is described as an intermediate-maturity but rapidly developing startup ecosystem with constrained late-stage capital.

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APPENDIX

Table A1 / NACE Rev. 2 3-digit code composition by selected sector

Macro-sector name	NACE Rev.2	
	code	NACE Rev.2 description
Neighbourhood Economy	F432	Electrical, plumbing and other construction installation activities
Neighbourhood Economy	F433	Building completion and finishing
Neighbourhood Economy	F439	Other specialised construction activities
Neighbourhood Economy	G452	Maintenance and repair of motor vehicles
Neighbourhood Economy	G471	Retail sale in non-specialised stores
Neighbourhood Economy	G472	Retail sale of food, beverages and tobacco in specialised stores
Neighbourhood Economy	G473	Retail sale of automotive fuel in specialised stores
Neighbourhood Economy	G474	Retail sale of information and communication equipment in specialised stores
Neighbourhood Economy	G475	Retail sale of other household equipment in specialised stores
Neighbourhood Economy	G476	Retail sale of cultural and recreation goods in specialised stores
Neighbourhood Economy	G477	Retail sale of other goods in specialised stores
Neighbourhood Economy	G478	Retail sale via stalls and markets
Neighbourhood Economy	G479	Retail trade not in stores, stalls or markets
Neighbourhood Economy	I551	Hotels and similar accommodation
Neighbourhood Economy	I552	Holiday and other short-stay accommodation
Neighbourhood Economy	I553	Camping grounds, recreational vehicle parks and trailer parks
Neighbourhood Economy	I559	Other accommodation
Neighbourhood Economy	I561	Restaurants and mobile food service activities
Neighbourhood Economy	I562	Event catering and other food service activities
Neighbourhood Economy	I563	Beverage serving activities
Neighbourhood Economy	N812	Cleaning activities
Neighbourhood Economy	N813	Landscape service activities
Neighbourhood Economy	S952	Repair of personal and household goods
Neighbourhood Economy	S960	Other personal service activities
Production	B091	Support activities for petroleum and natural gas extraction
Production	B099	Support activities for other mining and quarrying
Production	C101	Processing and preserving of meat and production of meat products
Production	C102	Processing and preserving of fish, crustaceans and molluscs
Production	C103	Processing and preserving of fruit and vegetables
Production	C104	Manufacture of vegetable and animal oils and fats
Production	C105	Manufacture of dairy products
Production	C106	Manufacture of grain mill products, starches and starch products
Production	C107	Manufacture of bakery and farinaceous products
Production	C108	Manufacture of other food products
Production	C109	Manufacture of prepared animal feeds
Production	C110	Manufacture of beverages
Production	C120	Manufacture of tobacco products
Production	C131	Preparation and spinning of textile fibres
Production	C132	Weaving of textiles
Production	C133	Finishing of textiles
Production	C139	Manufacture of other textiles
Production	C141	Manufacture of wearing apparel, except fur apparel
Production	C142	Manufacture of articles of fur
Production	C143	Manufacture of knitted and crocheted apparel

Contd.

Table A1 / continued

Macro-sector name	NACE Rev.2 code	NACE Rev.2 description
Production	C151	Tanning and dressing of leather; manufacture of luggage, handbags, saddlery and harness; dressing and dyeing of fur
Production	C152	Manufacture of footwear
Production	C161	Sawmilling and planing of wood
Production	C162	Manufacture of products of wood, cork, straw and plaiting materials
Production	C171	Manufacture of pulp, paper and paperboard
Production	C172	Manufacture of articles of paper and paperboard
Production	C181	Printing and service activities related to printing
Production	C182	Reproduction of recorded media
Production	C191	Manufacture of coke oven products
Production	C192	Manufacture of refined petroleum products
Production	C201	Manufacture of basic chemicals, fertilisers and nitrogen compounds, plastics and synthetic rubber in primary forms
Production	C202	Manufacture of pesticides and other agrochemical products
Production	C203	Manufacture of paints, varnishes and similar coatings, printing ink and mastics
Production	C204	Manufacture of soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations
Production	C205	Manufacture of other chemical products
Production	C206	Manufacture of man-made fibres
Production	C211	Manufacture of basic pharmaceutical products
Production	C212	Manufacture of pharmaceutical preparations
Production	C221	Manufacture of rubber products
Production	C222	Manufacture of plastics products
Production	C231	Manufacture of glass and glass products
Production	C232	Manufacture of refractory products
Production	C233	Manufacture of clay building materials
Production	C234	Manufacture of other porcelain and ceramic products
Production	C235	Manufacture of cement, lime and plaster
Production	C236	Manufacture of articles of concrete, cement and plaster
Production	C237	Cutting, shaping and finishing of stone
Production	C239	Manufacture of abrasive products and non-metallic mineral products n.e.c.
Production	C241	Manufacture of basic iron and steel and of ferro-alloys
Production	C242	Manufacture of tubes, pipes, hollow profiles and related fittings, of steel
Production	C243	Manufacture of other products of first processing of steel
Production	C244	Manufacture of basic precious and other non-ferrous metals
Production	C245	Casting of metals
Production	C251	Manufacture of structural metal products
Production	C252	Manufacture of tanks, reservoirs and containers of metal
Production	C253	Manufacture of steam generators, except central heating hot water boilers
Production	C254	Manufacture of weapons and ammunition
Production	C255	Forging, pressing, stamping and roll-forming of metal; powder metallurgy
Production	C256	Treatment and coating of metals; machining
Production	C257	Manufacture of cutlery, tools and general hardware
Production	C259	Manufacture of other fabricated metal products
Production	C261	Manufacture of electronic components and boards
Production	C262	Manufacture of computers and peripheral equipment

Contd.

Table A1 / continued

Macro-sector name	NACE Rev.2	
	code	NACE Rev.2 description
Production	C263	Manufacture of communication equipment
Production	C264	Manufacture of consumer electronics
Production	C265	Manufacture of instruments and appliances for measuring, testing and navigation; watches and clocks
Production	C266	Manufacture of irradiation, electromedical and electrotherapeutic equipment
Production	C267	Manufacture of optical instruments and photographic equipment
Production	C268	Manufacture of magnetic and optical media
Production	C271	Manufacture of electric motors, generators, transformers and electricity distribution and control apparatus
Production	C272	Manufacture of batteries and accumulators
Production	C273	Manufacture of wiring and wiring devices
Production	C274	Manufacture of electric lighting equipment
Production	C275	Manufacture of domestic appliances
Production	C279	Manufacture of other electrical equipment
Production	C281	Manufacture of general-purpose machinery
Production	C282	Manufacture of other general-purpose machinery
Production	C283	Manufacture of agricultural and forestry machinery
Production	C284	Manufacture of metal forming machinery and machine tools
Production	C289	Manufacture of other special-purpose machinery
Production	C291	Manufacture of motor vehicles
Production	C292	Manufacture of bodies (coachwork) for motor vehicles; manufacture of trailers and semi-trailers
Production	C293	Manufacture of parts and accessories for motor vehicles
Production	C301	Building of ships and boats
Production	C302	Manufacture of railway locomotives and rolling stock
Production	C303	Manufacture of air and spacecraft and related machinery
Production	C304	Manufacture of military fighting vehicles
Production	C309	Manufacture of transport equipment n.e.c.
Production	C310	Manufacture of furniture
Production	C321	Manufacture of jewellery, bijouterie and related articles
Production	C323	Manufacture of sports goods
Production	C324	Manufacture of games and toys
Production	C325	Manufacture of medical and dental instruments and supplies
Production	C329	Manufacturing n.e.c.
Production	C331	Repair of fabricated metal products, machinery and equipment
Production	C332	Installation of industrial machinery and equipment
Production	D351	Electric power generation, transmission and distribution
Production	D352	Manufacture of gas; distribution of gaseous fuels through mains
Production	D353	Steam and air conditioning supply
Production	E360	Water collection, treatment and supply
Production	E370	Sewerage
Production	E381	Waste collection
Production	E382	Waste treatment and disposal
Production	E383	Materials recovery
Production	E390	Remediation activities and other waste management services
Production	F411	Development of building projects
Production	F412	Construction of residential and non-residential buildings

Contd.

Table A1 / continued

Macro-sector name	NACE Rev.2 code	NACE Rev.2 description
Production	F421	Construction of roads and railways
Production	F422	Construction of utility projects
Production	F429	Construction of other civil engineering projects
Production	F431	Demolition and site preparation
Production	F432	Electrical, plumbing and other construction installation activities
Production	F433	Building completion and finishing
Production	F439	Other specialised construction activities
Production	H521	Warehousing and storage
Production	H522	Support activities for transportation
Production	M711	Architectural and engineering activities and related technical consultancy
Production	M712	Technical testing and analysis
Production	M721	Research and experimental development on natural sciences and engineering
Production	N773	Renting and leasing of other machinery, equipment and tangible goods
Creative Economy	C322	Manufacture of musical instruments
Creative Economy	C323	Manufacture of sports goods
Creative Economy	G475	Retail sale of other household equipment in specialised stores
Creative Economy	G476	Retail sale of cultural and recreation goods in specialised stores
Creative Economy	G477	Retail sale of other goods in specialised stores
Creative Economy	J581	Publishing of books, periodicals and other publishing activities
Creative Economy	J582	Software publishing
Creative Economy	J591	Motion picture, video and television programme activities
Creative Economy	J592	Sound recording and music publishing activities
Creative Economy	J601	Radio broadcasting
Creative Economy	J602	Television programming and broadcasting activities
Creative Economy	J620	Computer programming, consultancy and related activities
Creative Economy	J631	Data processing, hosting and related activities; web portals
Creative Economy	J639	Other information service activities
Creative Economy	M711	Architectural and engineering activities and related technical consultancy
Creative Economy	M731	Advertising
Creative Economy	M741	Specialised design activities
Creative Economy	M742	Photographic activities
Creative Economy	M743	Translation and interpretation activities
Creative Economy	N772	Renting and leasing of personal and household goods
Creative Economy	P855	Other education
Creative Economy	R900	Creative, arts and entertainment activities
Creative Economy	R910	Libraries, archives, museums and other cultural activities
Media	C181	Printing and service activities related to printing
Media	C182	Reproduction of recorded media
Media	J581	Publishing of books, periodicals and other publishing activities
Media	J582	Software publishing
Media	J591	Motion picture, video and television programme activities
Media	J592	Sound recording and music publishing activities
Media	J601	Radio broadcasting
Media	J602	Television programming and broadcasting activities
Life Sciences	C211	Manufacture of basic pharmaceutical products
Life Sciences	C212	Manufacture of pharmaceutical preparations
Life Sciences	C266	Manufacture of irradiation, electromedical and electrotherapeutic equipment

Contd.

Table A1 / continued

Macro-sector name	NACE Rev.2	
	code	NACE Rev.2 description
Life Sciences	C325	Manufacture of medical and dental instruments and supplies
Life Sciences	G464	Wholesale of household goods
Life Sciences	M712	Technical testing and analysis
Life Sciences	M721	Research and experimental development on natural sciences and engineering
Digital Economy	C261	Manufacture of electronic components and boards
Digital Economy	C262	Manufacture of computers and peripheral equipment
Digital Economy	C263	Manufacture of communication equipment
Digital Economy	C264	Manufacture of consumer electronics
Digital Economy	C268	Manufacture of magnetic and optical media
Digital Economy	G465	Wholesale of information and communication equipment
Digital Economy	J611	Wired telecommunications activities
Digital Economy	J612	Wireless telecommunications activities
Digital Economy	J613	Satellite telecommunications activities
Digital Economy	J619	Other telecommunications activities
Digital Economy	J620	Computer programming, consultancy and related activities
Digital Economy	J631	Data processing, hosting and related activities; web portals
Digital Economy	S951	Repair of computers and communication equipment

Note: NACE Rev.2 codes across sectors may overlap.

Source: Own definition.

Table A2 / Selected CESEE sectors, small companies (10-49 employees), by country

Country code	Macro-sector name	Number of enterprises in size group 10-49 employees in 2024	Relative share of sector in country in 2024	Annual growth rate of the number of enterprises in size group 10-49 employees, in %, 2024 vs 2023	Average annual growth rate of the number of enterprises in size group 10-49 employees, in %, 2024 vs 2021
AT	Neighbourhood Economy	17,350	44.2%	-1.4%	2.4%
AT	Production	12,533	31.9%	-3.0%	-1.2%
AT	Creative Economy	6,454	16.5%	-3.2%	0.9%
AT	Media	389	1.0%	-2.8%	-1.3%
AT	Life Sciences	1,080	2.8%	-0.2%	0.1%
AT	Digital Economy	1,427	3.6%	-2.3%	0.7%
BG	Neighbourhood Economy	8,246	38.7%	6.6%	4.4%
BG	Production	8,211	38.5%	6.9%	0.0%
BG	Creative Economy	3,015	14.2%	3.4%	4.1%
BG	Media	239	1.1%	39.8%	28.5%
BG	Life Sciences	616	2.9%	0.0%	0.7%
BG	Digital Economy	978	4.6%	-3.5%	2.7%
CZ	Neighbourhood Economy	5,430	20.5%	5.8%	2.8%
CZ	Production	14,535	55.0%	-2.6%	-0.3%
CZ	Creative Economy	3,350	12.7%	5.6%	2.8%
CZ	Media	189	0.7%	2.7%	1.6%
CZ	Life Sciences	1,404	5.3%	-1.5%	-1.0%
CZ	Digital Economy	1,521	5.8%	-2.2%	0.9%

Contd.

Table A2 / continued

Country code	Macro-sector name	Number of enterprises in size group 10-49 employees in 2024	Relative share of sector in country in 2024	Annual growth rate of the number of enterprises in size group 10-49 employees, in %, 2024 vs 2023	Average annual growth rate of the number of enterprises in size group 10-49 employees, in %, 2024 vs 2021
EE	Neighbourhood Economy	1,528	29.1%	-2.2%	0.3%
EE	Production	2,488	47.3%	-4.9%	-2.6%
EE	Creative Economy	729	13.9%	-7.6%	-2.3%
EE	Media	76	1.4%	1.3%	-2.8%
EE	Life Sciences	158	3.0%	0.6%	0.7%
EE	Digital Economy	279	5.3%	-9.4%	-0.6%
HR	Neighbourhood Economy	4,431	31.6%	8.7%	6.8%
HR	Production	6,551	46.7%	3.2%	3.7%
HR	Creative Economy	1,759	12.5%	2.1%	2.6%
HR	Media	164	1.2%	-5.2%	-0.9%
HR	Life Sciences	431	3.1%	4.9%	2.4%
HR	Digital Economy	705	5.0%	0.9%	5.8%
HU	Neighbourhood Economy	10,249	36.8%	1.9%	4.2%
HU	Production	11,246	40.4%	-3.7%	-0.1%
HU	Creative Economy	3,855	13.8%	-0.1%	2.6%
HU	Media	374	1.3%	-4.1%	11.5%
HU	Life Sciences	902	3.2%	-3.8%	0.6%
HU	Digital Economy	1,217	4.4%	-2.1%	3.0%
LT	Neighbourhood Economy	3,328	32.0%	-1.5%	0.1%
LT	Production	4,789	46.1%	-3.1%	-0.1%
LT	Creative Economy	1,290	12.4%	-4.1%	-1.6%
LT	Media	116	1.1%	-3.3%	-4.0%
LT	Life Sciences	439	4.2%	2.6%	1.8%
LT	Digital Economy	426	4.1%	-4.5%	2.6%
LV	Neighbourhood Economy	2,275	31.2%	28.2%	-1.9%
LV	Production	3,327	45.7%	15.3%	-2.3%
LV	Creative Economy	977	13.4%	26.1%	-1.2%
LV	Media	92	1.3%	22.7%	-7.8%
LV	Life Sciences	274	3.8%	25.1%	-0.3%
LV	Digital Economy	340	4.7%	14.9%	1.1%
PL	Neighbourhood Economy	22,425	30.2%	-1.3%	-0.5%
PL	Production	38,648	52.0%	-1.5%	-1.2%
PL	Creative Economy	7,851	10.6%	-2.7%	-0.8%
PL	Media	869	1.2%	-1.6%	-2.2%
PL	Life Sciences	2,079	2.8%	-1.6%	-1.0%
PL	Digital Economy	2,440	3.3%	-2.6%	0.2%
RO	Neighbourhood Economy	13,059	34.0%	-2.9%	0.2%
RO	Production	17,716	46.1%	-5.9%	-2.3%
RO	Creative Economy	4,538	11.8%	-1.8%	-0.7%
RO	Media	461	1.2%	-3.8%	-2.1%
RO	Life Sciences	1,157	3.0%	4.9%	0.9%
RO	Digital Economy	1,507	3.9%	0.9%	1.4%

Contd.

Table A2 / continued

Country code	Macro-sector name	Number of enterprises in size group 10-49 employees in 2024	Relative share of sector in country in 2024	Annual growth rate of the number of enterprises in size group 10-49 employees, in %, 2024 vs 2023	Average annual growth rate of the number of enterprises in size group 10-49 employees, in %, 2024 vs 2021
SI	Neighbourhood Economy	2,023	27.0%	-1.7%	3.9%
SI	Production	3,900	52.1%	-1.3%	2.1%
SI	Creative Economy	787	10.5%	1.5%	3.1%
SI	Media	101	1.4%	4.1%	1.0%
SI	Life Sciences	294	3.9%	1.4%	2.5%
SI	Digital Economy	375	5.0%	3.9%	3.4%
SK	Neighbourhood Economy	3,149	34.5%	0.7%	3.5%
SK	Production	3,992	43.7%	-10.0%	0.6%
SK	Creative Economy	1,172	12.8%	-9.8%	-1.4%
SK	Media	75	0.8%	-5.1%	-3.3%
SK	Life Sciences	338	3.7%	0.9%	-0.6%
SK	Digital Economy	409	4.5%	-16.0%	1.9%
BA	Neighbourhood Economy	1,655	33.6%	2.6%	14.4%
BA	Production	1,996	40.6%	2.1%	-0.7%
BA	Creative Economy	740	15.0%	10.1%	5.5%
BA	Media	72	1.5%	20.0%	7.6%
BA	Life Sciences	204	4.1%	12.1%	5.1%
BA	Digital Economy	254	5.2%	2.8%	6.0%
MK	Neighbourhood Economy	1,297	30.7%	-5.1%	-4.0%
MK	Production	1,722	40.7%	-4.0%	-2.8%
MK	Creative Economy	700	16.6%	0.7%	0.1%
MK	Media	78	1.8%	-3.7%	-2.8%
MK	Life Sciences	149	3.5%	-0.7%	0.2%
MK	Digital Economy	282	6.7%	4.8%	3.2%
RS	Neighbourhood Economy	4,247	29.0%	2.0%	-0.4%
RS	Production	6,492	44.4%	6.5%	-0.9%
RS	Creative Economy	2,167	14.8%	50.6%	6.6%
RS	Media	275	1.9%	-3.8%	-3.6%
RS	Life Sciences	591	4.0%	45.2%	4.3%
RS	Digital Economy	852	5.8%	475.7%	131.8%

Note: Data across sectors may overlap.

Source: Eurostat, Structural Business Statistics.

Table A3 / Selected CESEE sectors, small enterprises (10-49 employees), by sector

Country code	Macro-sector name	Number of enterprises in size group 10-49 employees in 2024	Relative share of sector in country in 2024	Annual growth rate of the number of enterprises in size group 10-49 employees, in %, 2024 vs 2023	Average annual growth rate of the number of enterprises in size group 10-49 employees, in %, 2024 vs 2021
AT	Neighbourhood Economy	17,350	44.2%	-1.4%	2.4%
BG	Neighbourhood Economy	8,246	38.7%	6.6%	4.4%
CZ	Neighbourhood Economy	5,430	20.5%	5.8%	2.8%
EE	Neighbourhood Economy	1,528	29.1%	-2.2%	0.3%
HR	Neighbourhood Economy	4,431	31.6%	8.7%	6.8%
HU	Neighbourhood Economy	10,249	36.8%	1.9%	4.2%
LT	Neighbourhood Economy	3,328	32.0%	-1.5%	0.1%
LV	Neighbourhood Economy	2,275	31.2%	28.2%	-1.9%
PL	Neighbourhood Economy	22,425	30.2%	-1.3%	-0.5%
RO	Neighbourhood Economy	13,059	34.0%	-2.9%	0.2%
SI	Neighbourhood Economy	2,023	27.0%	-1.7%	3.9%
SK	Neighbourhood Economy	3,149	34.5%	0.7%	3.5%
BA	Neighbourhood Economy	1,655	33.6%	2.6%	14.4%
MK	Neighbourhood Economy	1,297	30.7%	-5.1%	-4.0%
RS	Neighbourhood Economy	4,247	29.0%	2.0%	-0.4%
AT	Production	12,533	31.9%	-3.0%	-1.2%
BG	Production	8,211	38.5%	6.9%	0.0%
CZ	Production	14,535	55.0%	-2.6%	-0.3%
EE	Production	2,488	47.3%	-4.9%	-2.6%
HR	Production	6,551	46.7%	3.2%	3.7%
HU	Production	11,246	40.4%	-3.7%	-0.1%
LT	Production	4,789	46.1%	-3.1%	-0.1%
LV	Production	3,327	45.7%	15.3%	-2.3%
PL	Production	38,648	52.0%	-1.5%	-1.2%
RO	Production	17,716	46.1%	-5.9%	-2.3%
SI	Production	3,900	52.1%	-1.3%	2.1%
SK	Production	3,992	43.7%	-10.0%	0.6%
BA	Production	1,996	40.6%	2.1%	-0.7%
MK	Production	1,722	40.7%	-4.0%	-2.8%
RS	Production	6,492	44.4%	6.5%	-0.9%
AT	Creative Economy	6,454	16.5%	-3.2%	0.9%
BG	Creative Economy	3,015	14.2%	3.4%	4.1%
CZ	Creative Economy	3,350	12.7%	5.6%	2.8%
EE	Creative Economy	729	13.9%	-7.6%	-2.3%
HR	Creative Economy	1,759	12.5%	2.1%	2.6%
HU	Creative Economy	3,855	13.8%	-0.1%	2.6%
LT	Creative Economy	1,290	12.4%	-4.1%	-1.6%
LV	Creative Economy	977	13.4%	26.1%	-1.2%
PL	Creative Economy	7,851	10.6%	-2.7%	-0.8%
RO	Creative Economy	4,538	11.8%	-1.8%	-0.7%
SI	Creative Economy	787	10.5%	1.5%	3.1%
SK	Creative Economy	1,172	12.8%	-9.8%	-1.4%
BA	Creative Economy	740	15.0%	10.1%	5.5%
MK	Creative Economy	700	16.6%	0.7%	0.1%
RS	Creative Economy	2,167	14.8%	50.6%	6.6%

Contd.

Table A3 / continued

Country code	Macro-sector name	Number of enterprises in size group 10-49 employees in 2024	Relative share of sector in country in 2024	Annual growth rate of the number of enterprises in size group 10-49 employees, in %, 2024 vs 2023	Average annual growth rate of the number of enterprises in size group 10-49 employees, in %, 2024 vs 2021
AT	Media	389	1.0%	-2.8%	-1.3%
BG	Media	239	1.1%	39.8%	28.5%
CZ	Media	189	0.7%	2.7%	1.6%
EE	Media	76	1.4%	1.3%	-2.8%
HR	Media	164	1.2%	-5.2%	-0.9%
HU	Media	374	1.3%	-4.1%	11.5%
LT	Media	116	1.1%	-3.3%	-4.0%
LV	Media	92	1.3%	22.7%	-7.8%
PL	Media	869	1.2%	-1.6%	-2.2%
RO	Media	461	1.2%	-3.8%	-2.1%
SI	Media	101	1.4%	4.1%	1.0%
SK	Media	75	0.8%	-5.1%	-3.3%
BA	Media	72	1.5%	20.0%	7.6%
MK	Media	78	1.8%	-3.7%	-2.8%
RS	Media	275	1.9%	-3.8%	-3.6%
AT	Life Sciences	1,080	2.8%	-0.2%	0.1%
BG	Life Sciences	616	2.9%	0.0%	0.7%
CZ	Life Sciences	1,404	5.3%	-1.5%	-1.0%
EE	Life Sciences	158	3.0%	0.6%	0.7%
HR	Life Sciences	431	3.1%	4.9%	2.4%
HU	Life Sciences	902	3.2%	-3.8%	0.6%
LT	Life Sciences	439	4.2%	2.6%	1.8%
LV	Life Sciences	274	3.8%	25.1%	-0.3%
PL	Life Sciences	2,079	2.8%	-1.6%	-1.0%
RO	Life Sciences	1,157	3.0%	4.9%	0.9%
SI	Life Sciences	294	3.9%	1.4%	2.5%
SK	Life Sciences	338	3.7%	0.9%	-0.6%
BA	Life Sciences	204	4.1%	12.1%	5.1%
MK	Life Sciences	149	3.5%	-0.7%	0.2%
RS	Life Sciences	591	4.0%	45.2%	4.3%
AT	Digital Economy	1,427	3.6%	-2.3%	0.7%
BG	Digital Economy	978	4.6%	-3.5%	2.7%
CZ	Digital Economy	1,521	5.8%	-2.2%	0.9%
EE	Digital Economy	279	5.3%	-9.4%	-0.6%
HR	Digital Economy	705	5.0%	0.9%	5.8%
HU	Digital Economy	1,217	4.4%	-2.1%	3.0%
LT	Digital Economy	426	4.1%	-4.5%	2.6%
LV	Digital Economy	340	4.7%	14.9%	1.1%
PL	Digital Economy	2,440	3.3%	-2.6%	0.2%
RO	Digital Economy	1,507	3.9%	0.9%	1.4%
SI	Digital Economy	375	5.0%	3.9%	3.4%
SK	Digital Economy	409	4.5%	-16.0%	1.9%
BA	Digital Economy	254	5.2%	2.8%	6.0%
MK	Digital Economy	282	6.7%	4.8%	3.2%
RS	Digital Economy	852	5.8%	475.7%	131.8%

Note: Data across sectors may overlap.

Source: Eurostat, Structural Business Statistics.

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