



ANNEX 4.5 TO THE JRC TECHNICAL REPORT

High Growth Enterprises:

demographics,
finance &
policy measures

FACTSHEET - GERMANY (DE)

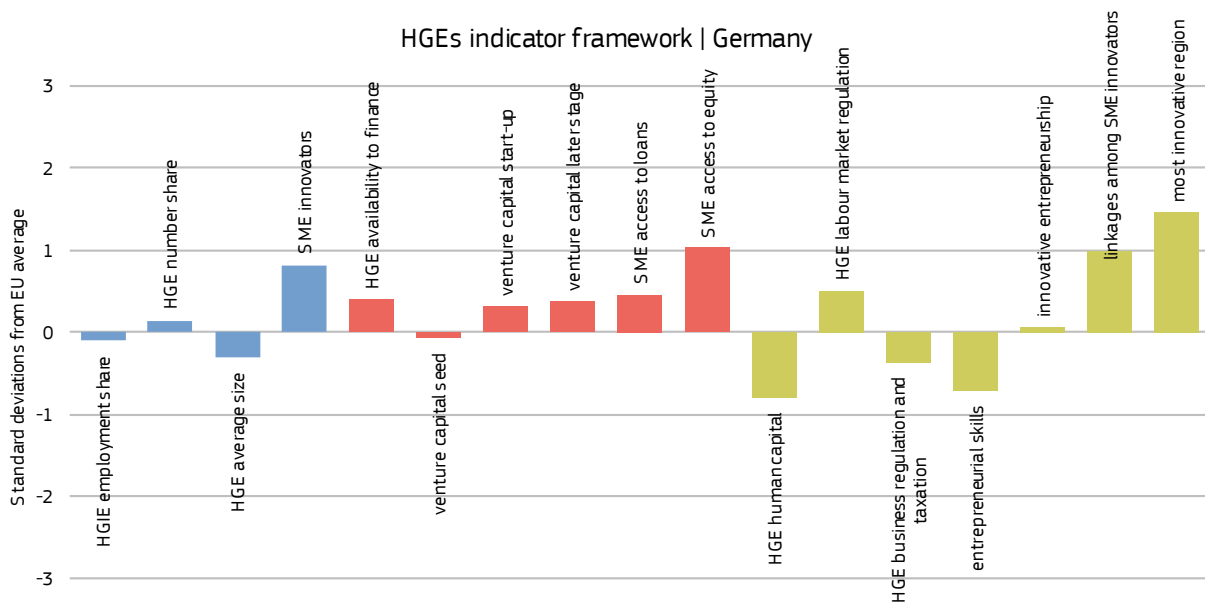
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1. Executive summary

DE overall performs well in factors determining the development of high growth enterprises* (HGEs). The employment and number share of HGEs in DE roughly corresponds to the EU average. The generally strong performance of the innovation ecosystem in DE supports the development of HGEs. The emergence of HGEs is also favoured by the improved accessibility to finance, as suggested by evaluation studies of existing public financing programmes. This is also reflected in the overall increase in venture capital available in DE in recent years, thereby partly addressing previous shortcomings in equity finance. The sectoral distribution of venture capital investments is diversified, but certain sectors stand out, such as ICT and manufacturing. There is a strong concentration of venture capital in two major hubs (Berlin and the Munich area) across all stages of financing, which may also be related to the relatively strong innovation performance by both regions vis-à-vis the EU average. Despite progress, the venture capital markets in DE remain relatively underdeveloped, especially in comparison to the US and UK.

The conditions for HGEs could further improve by supporting the development of relevant entrepreneurial skills. The availability of staff with the right skills is considered an obstacle for investments by HGEs. DE performs below the EU average for this indicator. The lack of adequate skills is also reflected by the low proportion of the working-age population who believe they have the required skills and knowledge to start a business. These issues are partly rooted in demographic changes, as the cohort of people with the most entrepreneurial activity (aged 30 to 50) has been shrinking over the last decades. Furthermore, DE faces a general shortage of qualified labour for particular professions. In response, the federal government's Skilled Labour Strategy (*Fachkräftestrategie*) aims to retrain the labour force to meet the demand for new skills and to attract skilled labour from abroad through administrative simplification and inclusive education programmes. Business regulation and taxation may also be a limiting factor for investment decisions by HGEs.

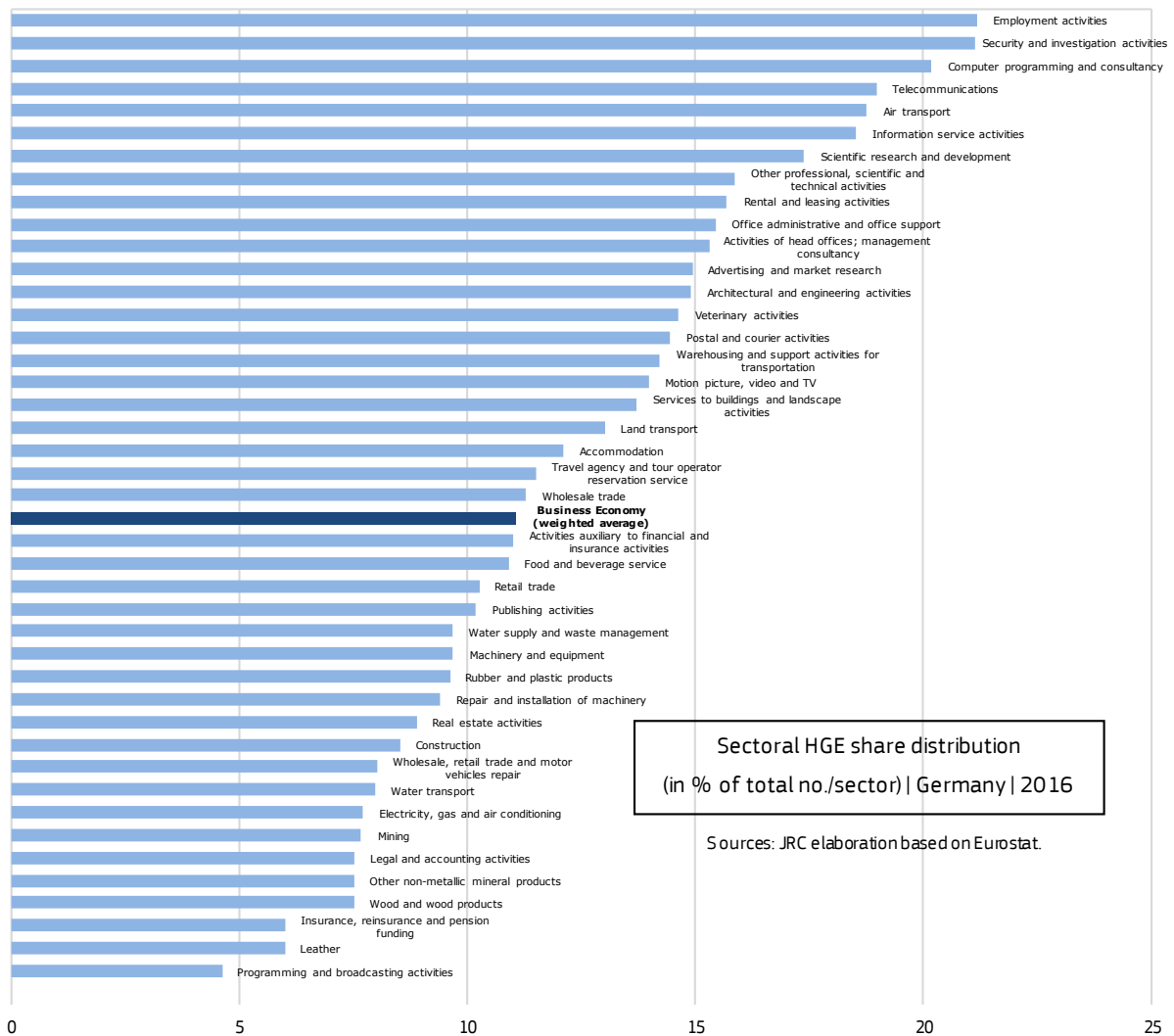
2. HGEs indicator framework



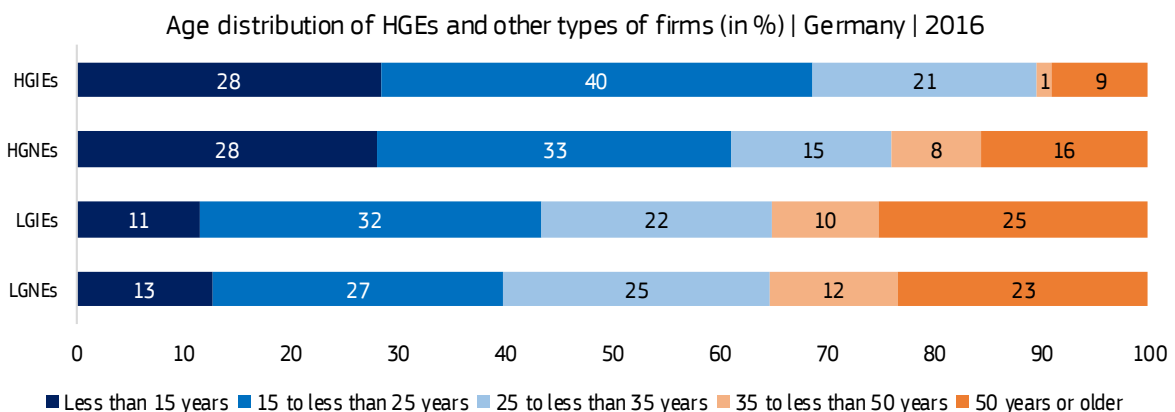
- DE performs above the EU average in several indicators, especially in terms of its most innovative region, SME access to equity, linkages among SME innovators and SME innovators.
- The emergence of HGEs is favoured particularly by the availability of finance and the overall strong performing innovation ecosystem in DE.
- DE could further improve the conditions for HGEs by supporting the development of the right skills related to HGEs and enhance the overall entrepreneurial skills available across the working-age population.

* In line with Eurostat, HGEs are defined in this factsheet (unless otherwise stated) as enterprises having (i) experienced an annualised average employment growth rate of 10% per year over a three-year period and (ii) at least 10 employees at the beginning of the growth period. The importance of HGEs is directly linked to their substantial contribution to employment growth, productivity improvements, economic renewal and innovativeness.

3. Firm demographics and sectoral decomposition



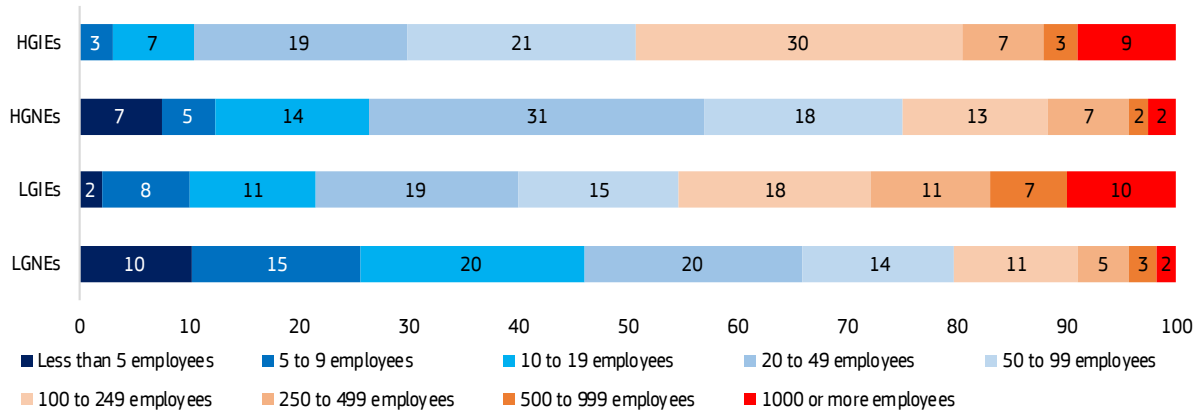
- The average share of HGEs in DE is around 11% across the business economy, ranging from 4.6% in programming and broadcasting activities to 21.2% in employment activities.
- The highest shares of HGEs are found in knowledge-intensive industries, particularly in employment activities as well as ICT and research-related sectors.



Note: HGIEs (high growth innovative enterprises; 2% of all firms); HGNEs (high growth not innovative enterprises; 4% of all firms); LGIEs (low growth innovative enterprises; 23% of all firms); LGNEs (low growth not innovative enterprises; 71% of all firms). High growth is defined as an average annual employment growth rate of at least 10% during 2000-2008 and 2010-2016. Innovative is defined as continuously doing in-house R&D or introducing a new-to-the-market innovation. Firms with fewer than 10 employees are also considered.

Sources: JRC elaboration based on Mannheim Innovation Panel and Pellens et al., 2020.

Size distribution of HGEs and other types of firms (in %) | Germany | 2016



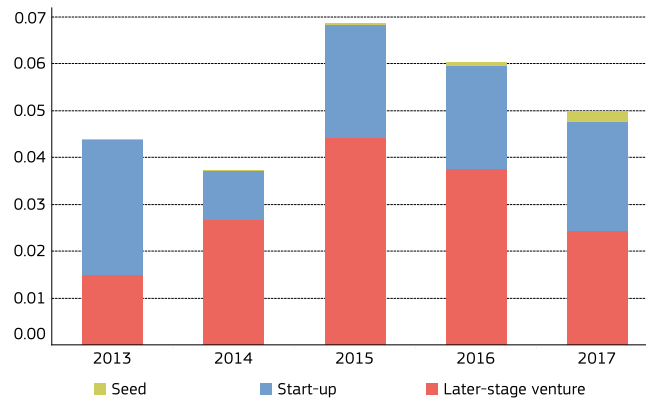
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Sources: JRC elaboration based on Mannheim Innovation Panel and Pellens et al., 2020.

- (Innovative) HGEs tend to be substantially younger compared to their low growth counterparts. Innovative HGEs consist of a lower share of firms above 35 years old compared to HGEs that are not innovative.
- Among innovative HGEs, 80% of firms are SMEs, compared to 88% of not innovative HGEs, 73% of innovative low growth companies and 90% of not innovative low growth enterprises.

4. Financing HGEs and start-ups: the role of venture capital

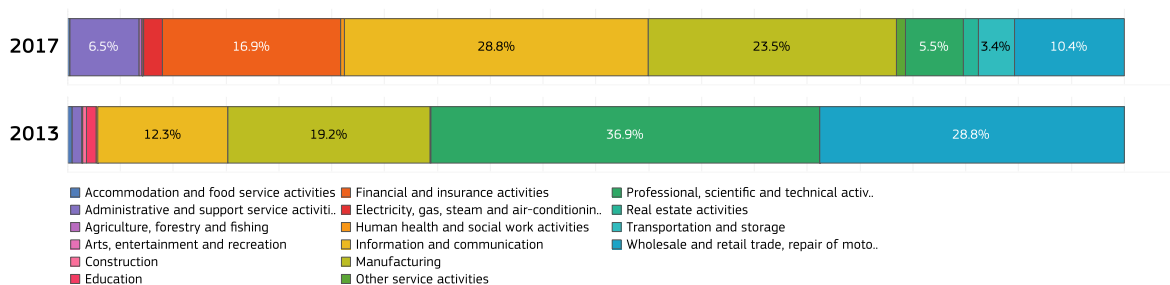
Venture capital by stage of financing (in % of GDP) | Germany | 2013-2017



Sources: JRC elaboration based on Venture Source.

- DE has overall increased venture capital investments as a share of GDP since 2013, but has seen a reduction since 2015.
- The share of later-stage ventures has substantially increased in DE despite a recent drop in 2017. The size of investments in seed companies is increasing in line with the EU average but remains relatively modest.

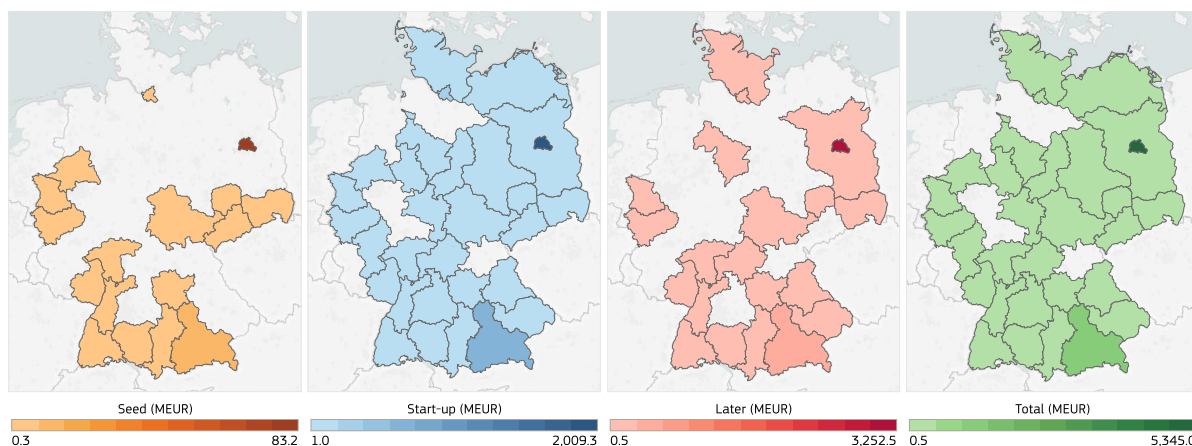
Sectoral distribution of VC investment (in %) | Germany | 2013 & 2017



Sources: JRC elaboration based on Venture Source.

- The sectoral distribution of venture capital investments is diversified, but certain sectors receive most investments, such as ICT, manufacturing, financial and insurance activities, and wholesale and retail trade.
- The sectoral distribution of venture capital investments can change substantially across time.

Regional distribution of VC investment by stage of financing (in MEUR) | Germany | 2013-2017

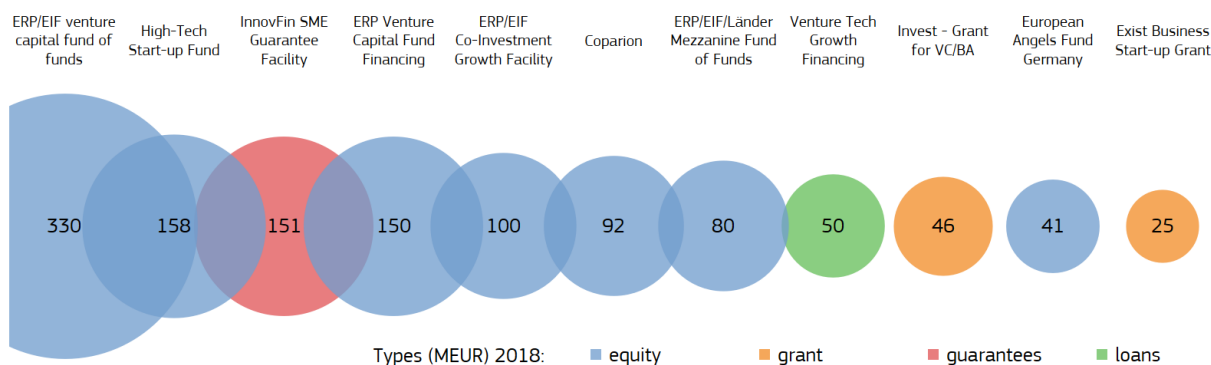


Sources: JRC elaboration based on Venture Source.

- Over the period 2013-2017, there is a strong concentration of venture capital in two major hubs (Berlin accounting for two-thirds of total VC investments and the Munich area for around 12%) across all stages of financing.
- The start-up stage funding is most distributed across regions in DE, whereas seed stage venture capital is most concentrated within a few regions.

5. Finance-related policy measures

Financial instruments Germany



Programme/Effect	High-Tech Start-up Fund [†]	INVEST [‡]
Employment	Moderate effect	Funded companies have more employees
Turnover	Moderate effect	Funded companies have lower turnover
Innovation	N/A	Funded companies are more innovative

[†] Geyer, A. Heimer, T., Treperman, J. (2016). Evaluation des High-Tech Gründerfonds. Technopolis, Wien. Available at: https://www.bmwi.de/Redaktion/DE/Downloads/E/evaluation-des-high-tech-gruenderfonds.pdf?__blob=publicationFile&v=6 (last accessed on 05/09/2019).

[‡] Gottschalk, S., Egel, J., Herrmann, F., Hupperts, S., Reuss, K., Köhler, M., Bersch, J., Wagner, S. (2016). Evaluation des Förderprogramms „Invest – Zuschuss für Wagniskapital“. Projektbericht an das Bundesministerium für Wirtschaft und Energie (BMWi). Zentrum für Europäische Wirtschaftsforschung, Mannheim. Available at: http://ftp.zew.de/pub/zew-docs/quarterly/Evaluation_INVEST_20160616.pdf (last accessed on 05/09/2019).

- The public financing programmes share a focus on young innovative SMEs with strong growth potential across all sectors of the economy.
- The ERP Fund of Funds and the High-Tech Start-up Fund (HTGF) may be viewed as the main publicly supported financial instrument for HGEs. An evaluation study finds that HTGF-funded firms report higher turnover and employment growth than other firms. However, the study is not using a control group of firms, which could distort the findings. HTGF appears to have cemented a dominant position as the most active seed stage investor in DE. According to evaluation evidence, the programme led to substantial crowding in of private investment, mainly through the signalling effect of the fund's investments.
- Unlike other public programmes aimed at promoting venture capital investments, the INVEST programme allows private investors to choose which businesses to invest in. This can be linked to the clear focus on business angels rather than on institutional venture capital investors. An evaluation study suggests that funded companies have more employees, lower turnover and are more innovative.
- Over the last decade, public financing programmes have improved access to early stage finance. Tighter links between entrepreneurs and investors through investment in incubators, accelerators and business angel networks have built a stronger entrepreneurial culture and made DE more attractive to local and international investors.

Annex: HGEs indicator framework details

Indicators	Details	Motivation
HGEs indicators		
HGE employment share	Percentage share of employees among HGEs in 50% 'most innovative' industries relative to total employment (EIS; 2018)	Measures contribution of HGEs to employment creation
HGE number share	Percentage share of HGEs of total enterprises with at least 10 employees (Eurostat; 2016)	Measures how many firms are HGEs
HGE average size	Average size of HGEs (employment definition); employees divided by number of HGEs (Eurostat; 2016)	Measures average size of HGEs, an indication for future job growth potential
SME innovators	Share of SMEs with product, process, marketing or organisational innovations or innovating in-house among all SMEs (EIS; 2018)	Existing SME innovativeness as predictor for future innovations
Financing HGEs indicators		
HGE availability of finance	Percentage of HGEs considering the availability of finance is not an investment barrier (EIBIS; 2016-2018)	HGEs access to finance is considered a precondition for the development of HGEs
Venture capital seed	Share of seed venture capital to GDP (Venture Source; 2017)	Venture capital is a relevant source of finance for potential HGEs
Venture capital start-up	Share of start-up venture capital to GDP (Venture Source; 2017)	Venture capital is a relevant source of finance for potential HGEs
Venture capital later stage	Share of later stage venture capital to GDP (Venture Source; 2017)	Venture capital is a relevant source of finance for potential HGEs
SME access to loans	EIF SME Access to Finance Sub-index for loans, comprising the use and cost of loans (EIF; 2018).	SME access to loans is an important framework condition indicating the access to loans for HGEs
SME access to equity	EIF SME Access to Finance Sub-index for equity, comprising use of equity and the sophistication of the equity market (EIF; 2018)	SME access to equity is an important framework condition indicating the access to equity for HGEs
HGEs framework conditions indicators		
HGE human capital	Percentage of HGEs considering the availability of staff with the right skills is not an investment barrier (EIBIS; 2016-2018)	HGEs access to human capital is essential for the development of HGEs
HGE labour market regulation	Percentage of HGEs considering the labour market regulation is not an investment barrier (EIBIS; 2016-2018)	HGEs may be constrained by existing labour market regulation
HGE business regulation and taxation	Percentage of HGEs considering the business regulation (e.g., licences, permits, bankruptcy) and taxation is not an investment barrier (EIBIS; 2016-2018)	HGEs may be constrained by existing business regulation
Entrepreneurial skills	Percentage of 18-64 population who believe to have the required skills and knowledge to start a business (GEM; 2018)	HGEs may require entrepreneurial spirit, skills and knowledge
Innovative entrepreneurship	Ratio between improvement-driven and necessity-driven entrepreneurship (EIS; 2018)	Countries with high relative prevalence of improvement-driven opportunity, and entrepreneurship tend to be primarily innovation-driven, thus conducive for HGEs
Linkages among SME innovators	Innovative SMEs collaborating with others, public-private co-publications and private co-funding of public R&D expenditures (EIS; 2018).	Quality of innovations increases with collaboration and provides information on sophistication of SME innovation ecosystem, thus related to HGEs.
Most innovative region	Relative performance of most advanced region in the Regional Innovation Scoreboard within each Member State vis-à-vis the best performing regions across all other Member States (RIS; 2017).	HGEs innovation ecosystems tend to be concentrated in most innovative regions/centres.

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