



West Sweden and STRING Regional Economic Benchmark 2022

Commissioned by Region Västra Götaland www.vgregion.se

Contact: Tomas Ekberg, tomas.ekberg@vgregion.se

22 March, 2022

VGR Analys
2022:11

Content

- **General Information**
 - Benchmark perspectives, regions, definitions, sources (3)
 - Main findings WestSweden, Oslo, Oslo/West Sweden, Öresund, Hamburg (4-8)
 - Definition of Benchmarking Regions (Slide 9)
 - Population (Slide 10)
 - Population Growth (Slide 11)
- **Economic Potential**
 - BAK Economic Potential Index (Slide 12, 13)
- **Economic Performance**
 - BAK Performance Index (Slide 14,15)
 - GDP per Capita (Slide 16)
 - Growth of real GDP per Capita (Slide 17)
 - Growth of real GDP (Slide 18)
 - Employment Growth (Slide 19)
 - Hourly Productivity (Slide 20)
 - Decomposition of real Gross Value Added Growth (Slide 21)
- **Economic Structure and Industries**
 - Economic Structure (Slide 22)
 - Definition of Driver sectors (Slide 23)
 - Driver Sectors Västsverige (Slide 24)
 - Driver Sectors Oslo Region (Slide 25)
 - Driver Sectors Oresund (Slide 26)
 - Driver Sectors Hamburg (Slide 27)
 - Contribution of Industries Västsverige (Slide 28)
 - Growth Contribution: Motorvehicles and Parts (Slide 29)
- **Regional Attractiveness**
 - BAK Attractiveness Index (Slide 30, 31)
 - Global and Continental Accessibility (Slide 32)
 - Taxation of Companies and Highly Qualified Manpower (Slide 33)
 - Regulation of Product and Labor Markets (Slide 34)
 - Population Composition (Slide 35)
 - Unemployment Rate (Slide 36)
 - Patent Intensity (Slide 37)
 - Quality of Universities (Slide 38)
 - Regional and International Quality of Universities (Slide 39)
 - Expenditures on Research and Development (Slide 40)
 - Expenditures on Research and Development in Sweden (Slide 41)
 - Labour Force with Tertiary Education (Slide 42)
- **Competitiveness**
 - BAK Competitiveness Index (Slide 43, 44)
- **Focus: Impact Pandemic**
 - Growth of real GDP (Slide 45)
 - Employment Growth (Slide 46)
 - Global and Continental Accessibility (Slide 47)
- **Regional Portrait**
 - Västsverige (Slide 48)
 - Oslo Region (Slide 49)
- **Further Information**
 - Definition of Benchmarking Regions (Slide 50)

Benchmark perspectives, selection of regions, definitions, sources

- The benchmark perspectives are economic performance, attractiveness and competitiveness. They sum up to an evaluation of the economic potential.
- The latest available figures are in most cases from 2020. Neither the economic recovery during 2021 or the so far uncertain impact of the Russian war against Ukraine are counted for. The perspective is though structural and long term. This means that the result still gives valuable and useful information about the regions involved.
- The metropolitan regions of West Sweden, Oslo, Öresund and Hamburg are compared with a number of other metropolitan regions in Europe and the World. The selection of regions focuses on attractiveness, innovation, industrial structure. Comparisons are also made with the sum of these regions from Oslo to Hamburg (STRING) and the area of Oslo/West Sweden and Western Europe.
- Definitions of the indicators and indexes is given in the comment field in each slide. Definition of regions is given at the last slide. BAK Economics is responsible for data and analyses. BAK Economics and Region Västra Götaland should be cited using the material.

Main findings

West Sweden

- West Sweden is attractive and competitive at a good European and international level.
- West Sweden is developing slightly stronger than the average region in Western Europe and the US and has good prospects for continuing to do so in the long term.
- The particularly strong aspects are job creation, business sector investments in research and development, a high and growing share of the economy in innovation-driven sectors, a strong structural potential in industry, a fast growing population and a high attractiveness for companies. The quality of the universities is valued as good.
- The weaker sides are productivity and accessibility to continental and global markets. GDP per capita is quite low but relative growth rates has risen during the last decades.
- The impact of the Pandemic was modest on economic growth compared to Western Europe in 2020. It was low on job creation but high on continental and global accessibility.

Main findings

Oslo

- Oslo is very attractive and competitive at a European and international level.*
- Oslo is developing much stronger than the average region in Western Europe and the US and has good prospects for continuing to do so in the long term.
- The particularly strong aspects are high economic and population growth, a very well educated workforce, very high productivity and a promising structure of the industry.
- The relatively weaker areas are business investments in R&D, a somewhat smaller ICT and innovation driven sector and a large public sector.
- The population of Oslo including Akershus and Östfold is quite small compared to the benchmark regions and also situated far from the larger markets in Europe.
- The impact of the Pandemic in 2020 was low on economic growth compared to Western Europe. It was high on job creation and on continental and global accessibility.

* Oslo, Akershus, Östfold

Oslo and West Sweden

- Data for Oslo-Västsverige as an integrated region is presented in the graphs. The two regions share border and coast and are already closely connected in many ways and areas as trade, work, tourism, commodity trade, culture, etcetera.
- Data shows that Oslo and West Sweden seen together are structurally complementary and showcase a very well educated population, a strong innovation capacity, high growth figures, very high competitiveness and attractiveness with a population close to 4 million.
- The prerequisites to shorten the time distance between the main cities of the regions to a level where they will reap the full potential of a broader societal and economic cooperation is unique in a Nordic context. The potential gains are large.*
- The distance between the main cities are short and the investment in the missing railway link between them will lead to increased productivity, a more sustainable transportation system for people and goods and will be a milestone for the Nordic Vision of becoming the most sustainable and integrated region in Europe by 2030.

* OECD (2018); *The Megaregion of Western Scandinavia*, European Commission (2017); *Seventh report on economic, social and territorial cohesion*

Main findings

Öresund

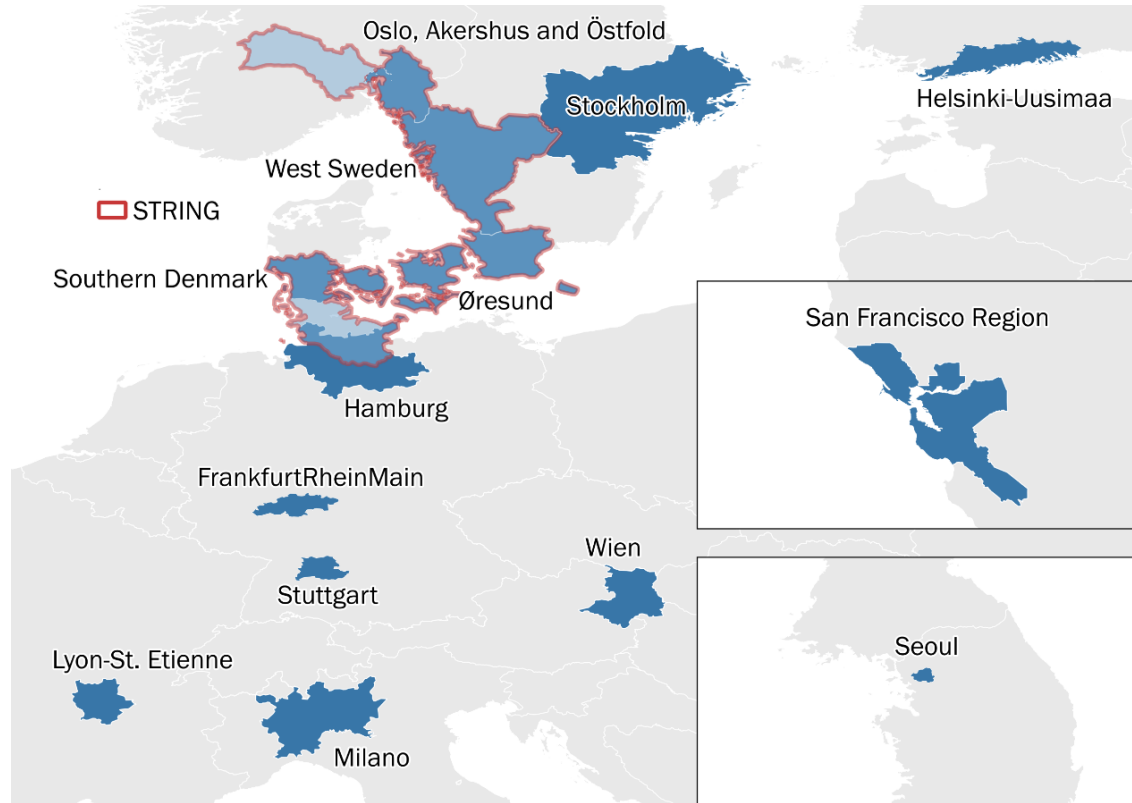
- Öresund is very attractive and competitive at a European and international level.
- Öresund has been developing somewhat stronger than the average region in Western Europe and the US and has good prospects for continuing to do so in the long term.
- The particularly strong aspects are a relatively large market and good access to other markets in Europe and globally, high productivity, the quality of universities, the number of patents created and a fast growing innovation driven sector in the economy.
- The weaker sides are relatively high unemployment (due to a high level in Skåne, the Swedish part of Öresund) and a quite slow job growth.
- The impact of the Pandemic in 2020 was modest on economic growth compared to Western Europe. It was average for job creation and high on continental and global accessibility.

Main findings

Hamburg

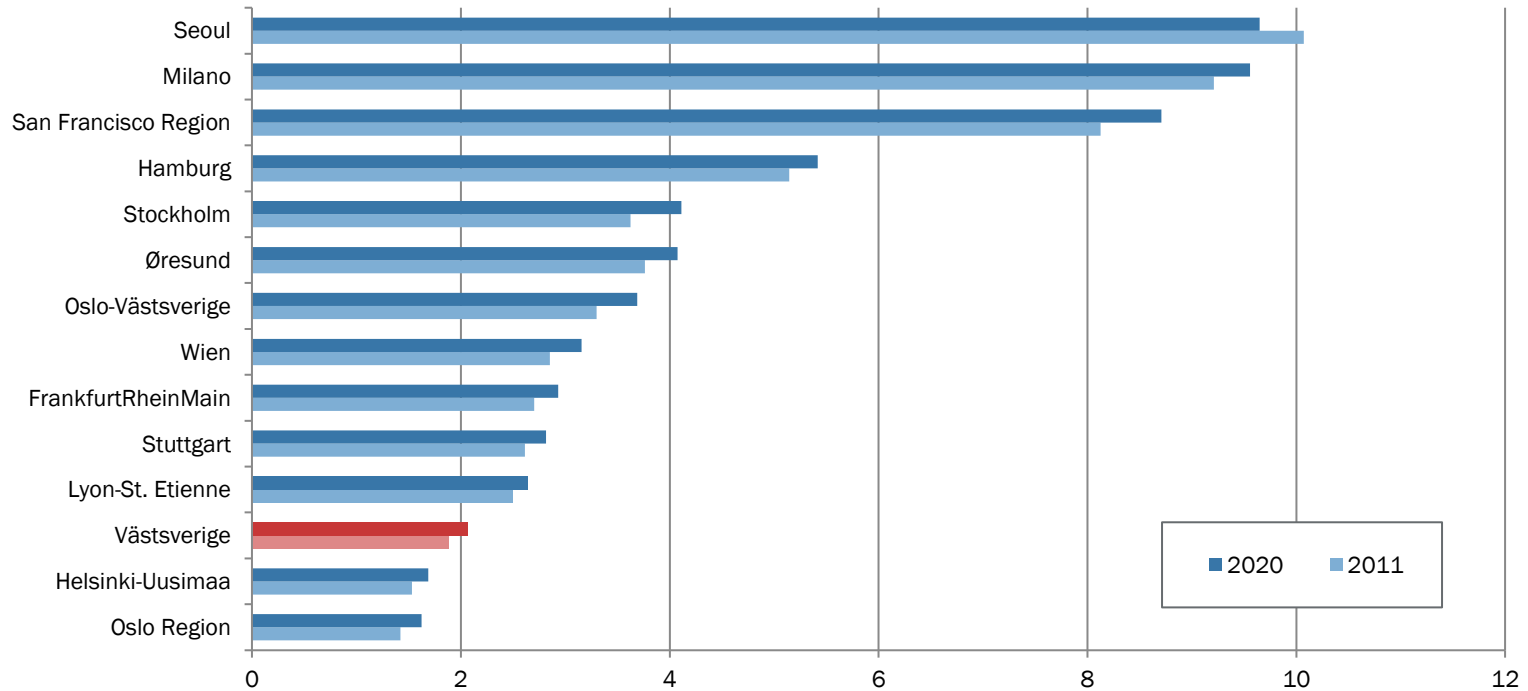
- The Hamburg Metropolitan Region is attractive and competitive at a European and international level.
- Hamburg has developed slightly stronger than the average region in Western Europe and the US and seems to have potential for continuing to do so in the long term.
- The particularly strong aspects is a large home market and connectivity to other European markets. Job growth and productivity are higher than the Western European average. The urban driven part of the economy is very strong and the public driven sector relatively small. The taxation on talent is low in a West European perspective. Unemployment is low.
- The relatively weaker sides are slow population and economic growth, old population, low company R&D, few patents and the quality of universities in relation to the regions size.
- The impact of the Pandemic in 2020 was quite severe on economic growth compared to Western Europe. It was low on job creation and high on continental/global accessibility.

Definition of Benchmarking Regions



General Information

Population

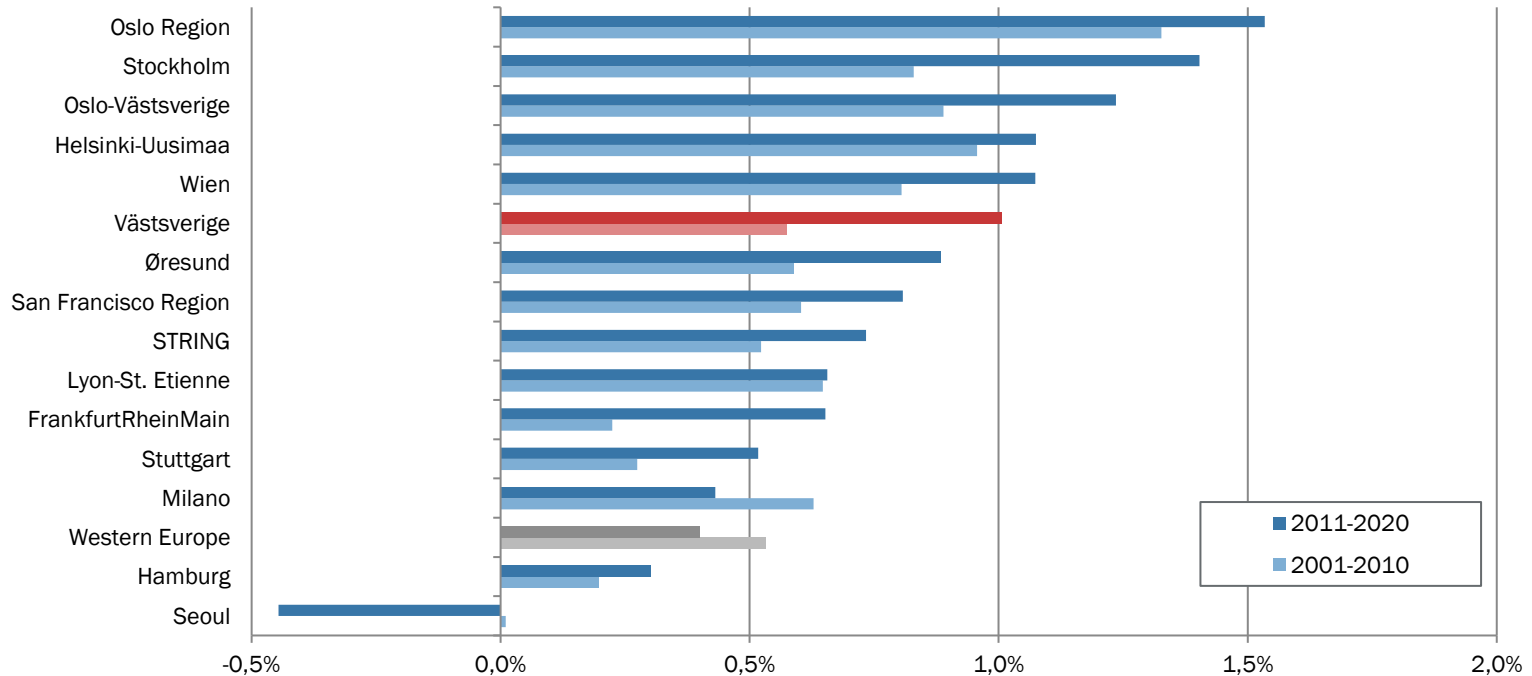


Note In Million persons, 2020/2011, Western Europe and STRING is not depicted in the graph due to large size

Source BAK Economics

General Information

Population Growth

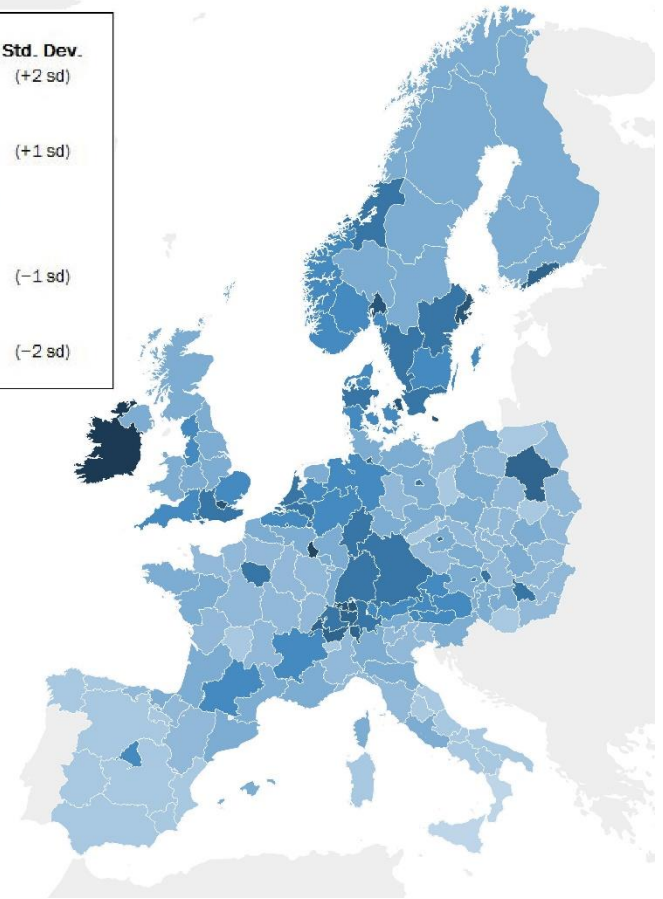
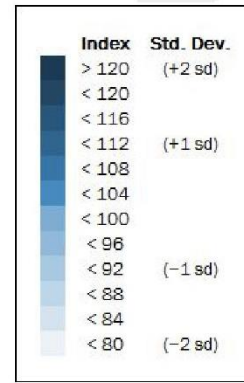
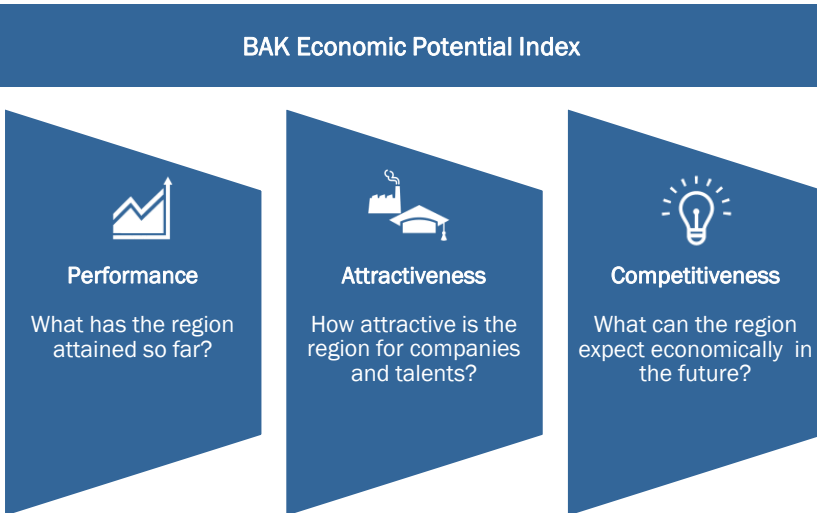


Note In % p.a.
 Source BAK Economics

BAK Economic Potential Index 2020

Monitoring regional economic analysis: A comparison of European regions

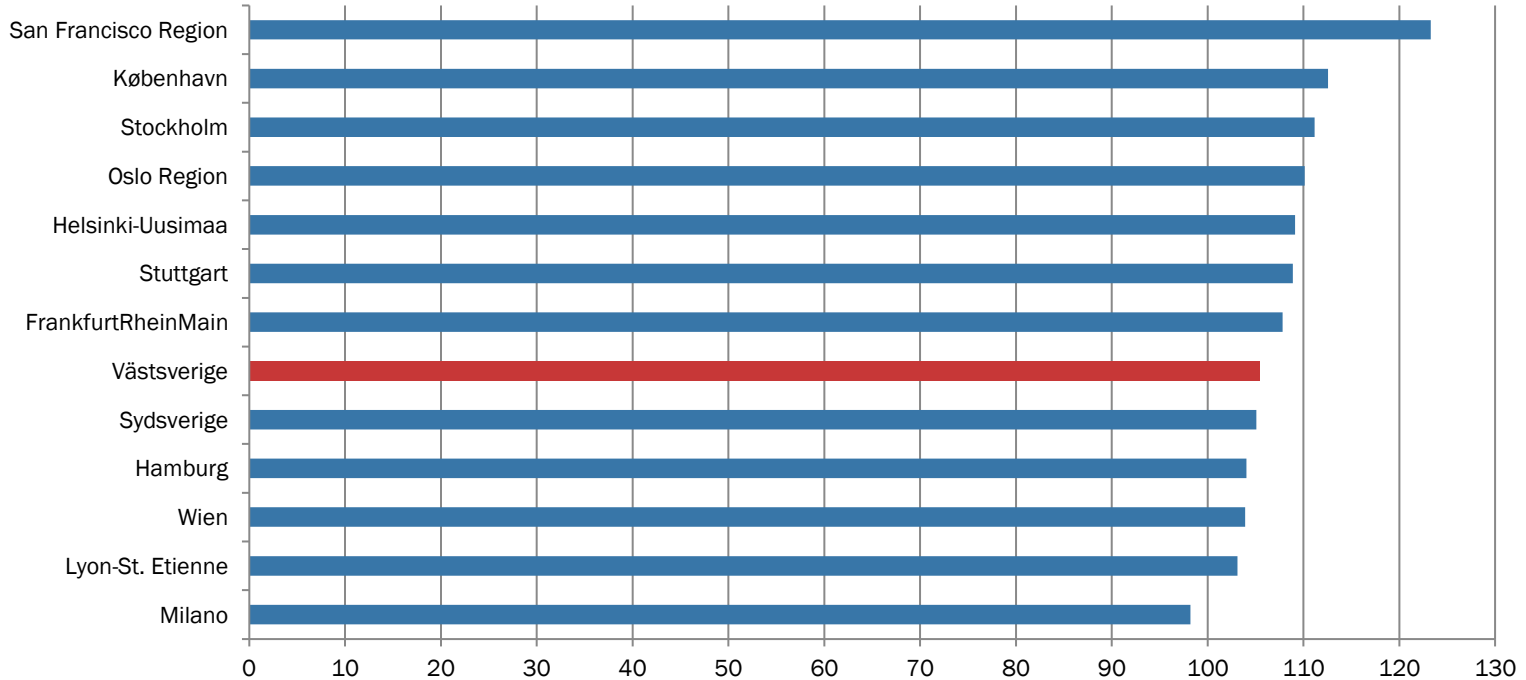
Assessing the economic potential



Average of TL 2 Regions in Western Europe and US = 100

Economic Potential

BAK Economic Potential Index



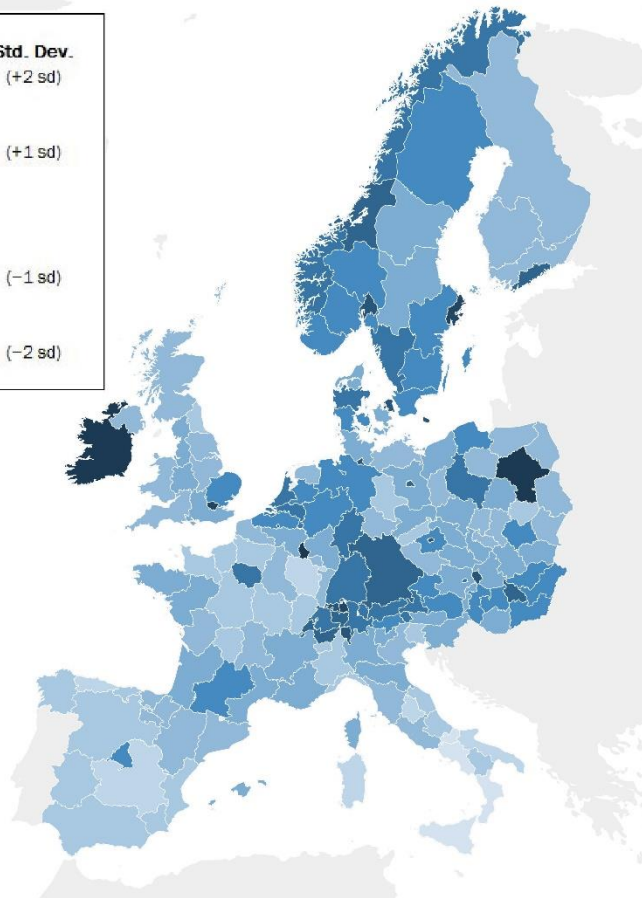
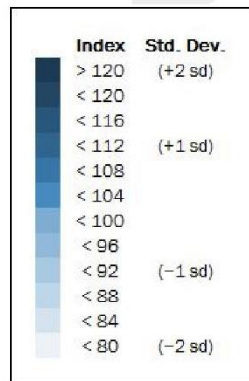
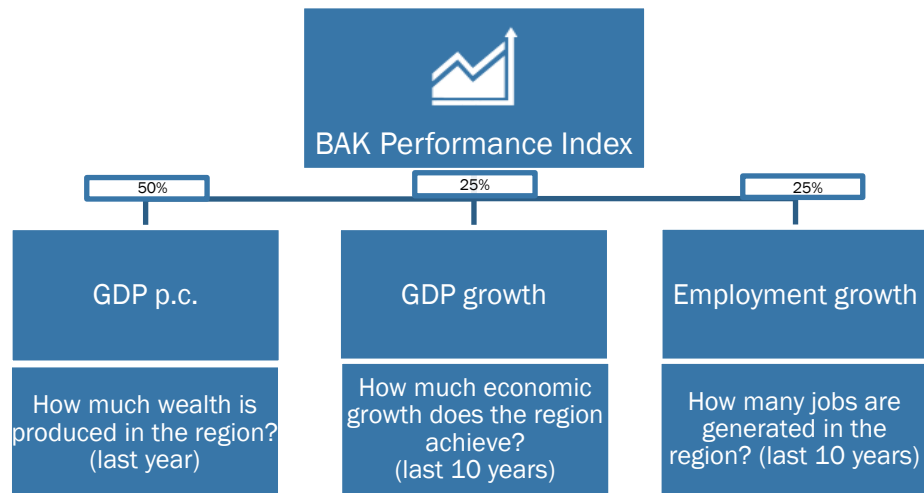
Note Index, WE15 & US = 100, RED 2021

Source BAK Economics

BAK Performance Index 2020

Monitoring regional economic analysis: A comparison of European regions

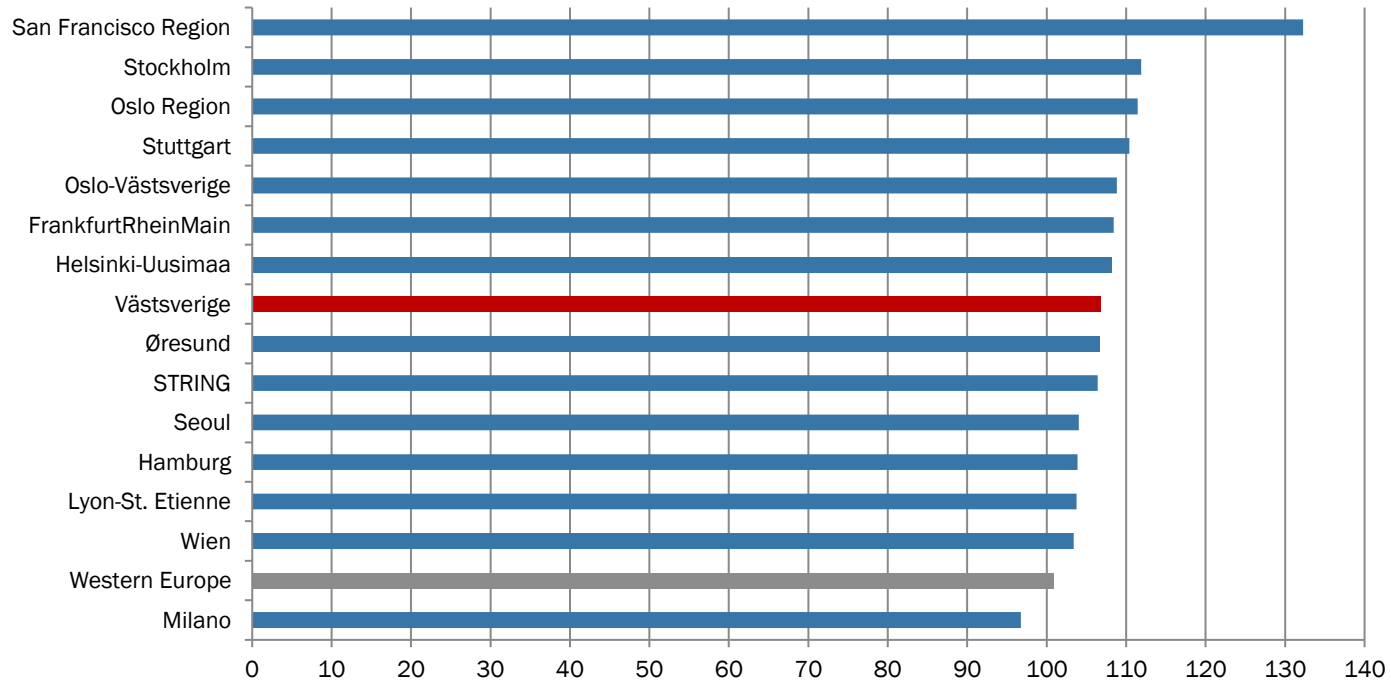
Assessing the economic performance



Average of TL 2 Regions in Western Europe and US = 100

Economic Performance

BAK Performance Index

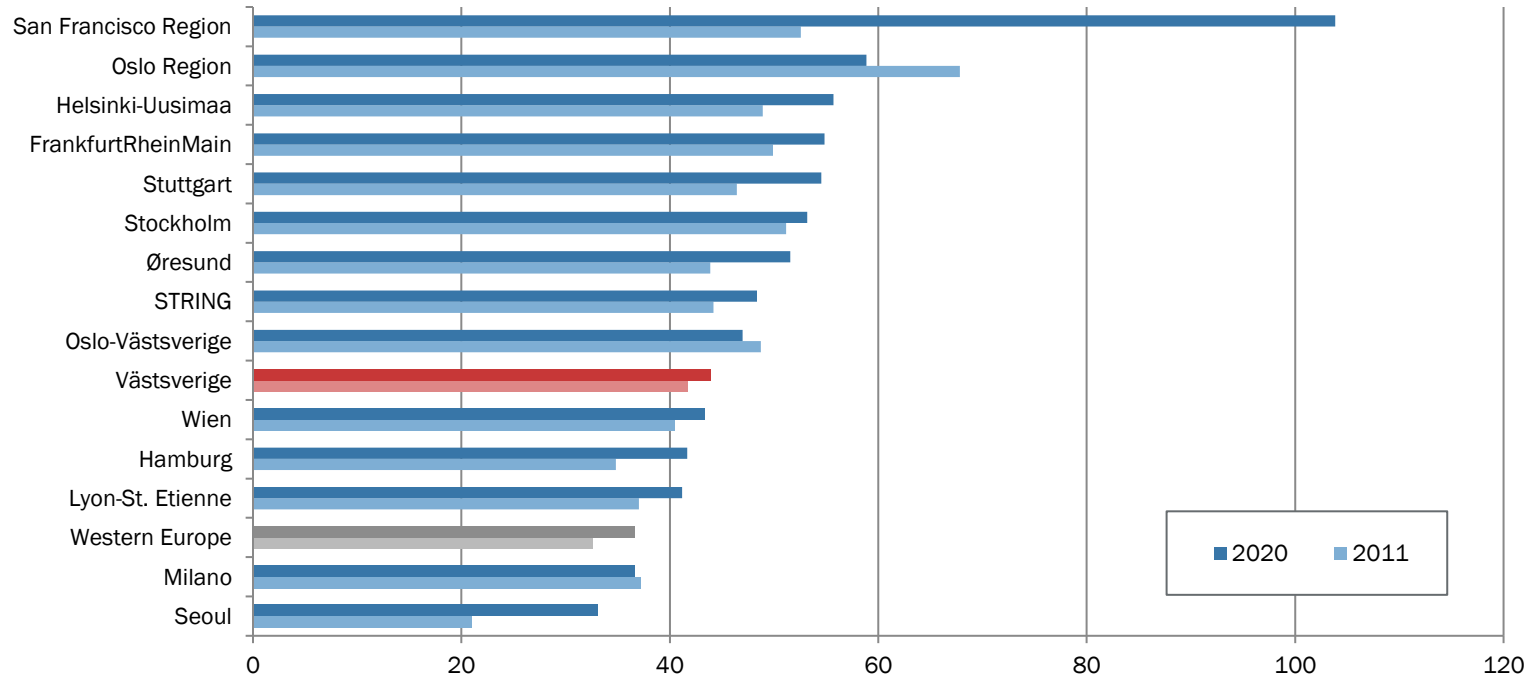


Note Index, WE15 & US = 100, RED 2021

Source BAK Economics

Economic Performance

GDP per Capita

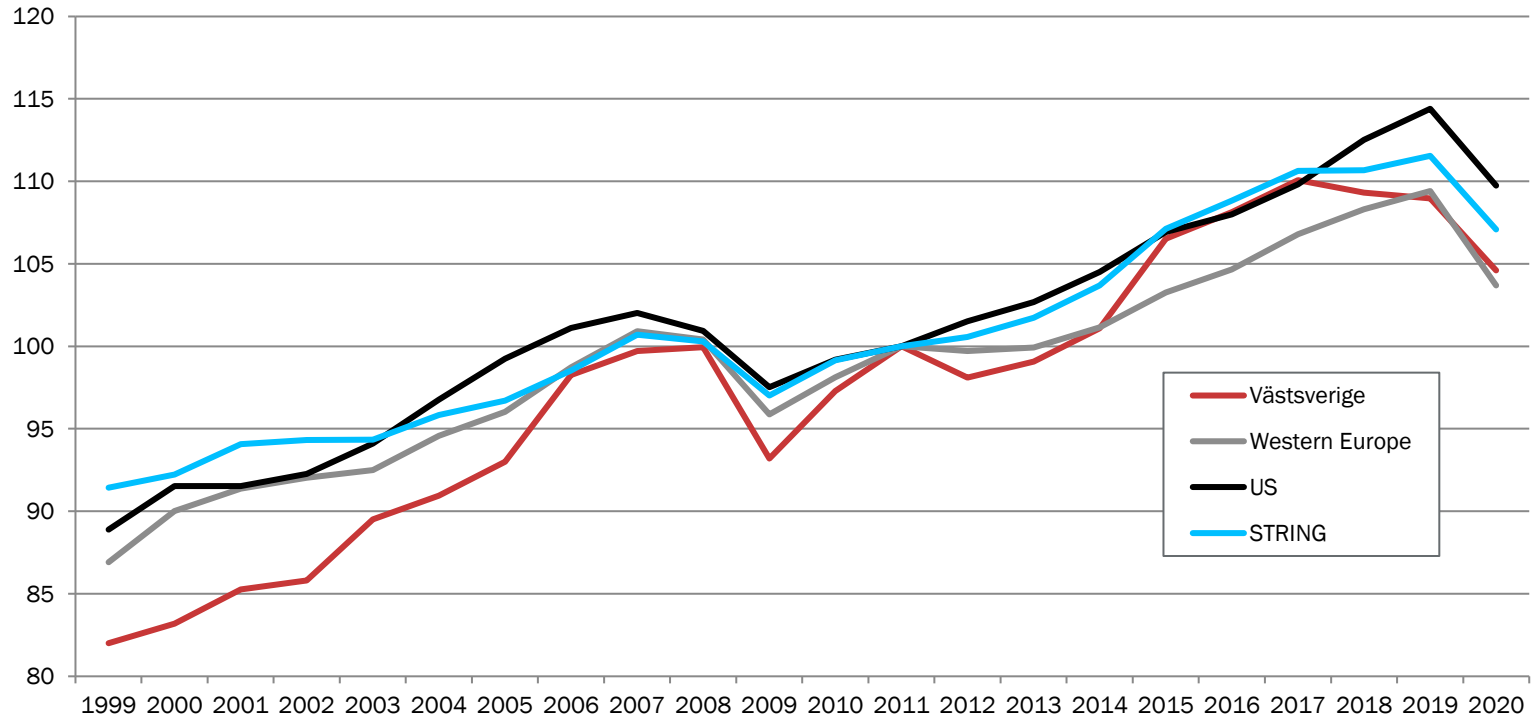


Note In 1'000 EUR (at current prices and exchange rates)

Source BAK Economics, OECD, National Statistical Offices, OEF

Economic Performance

Growth of real GDP per Capita

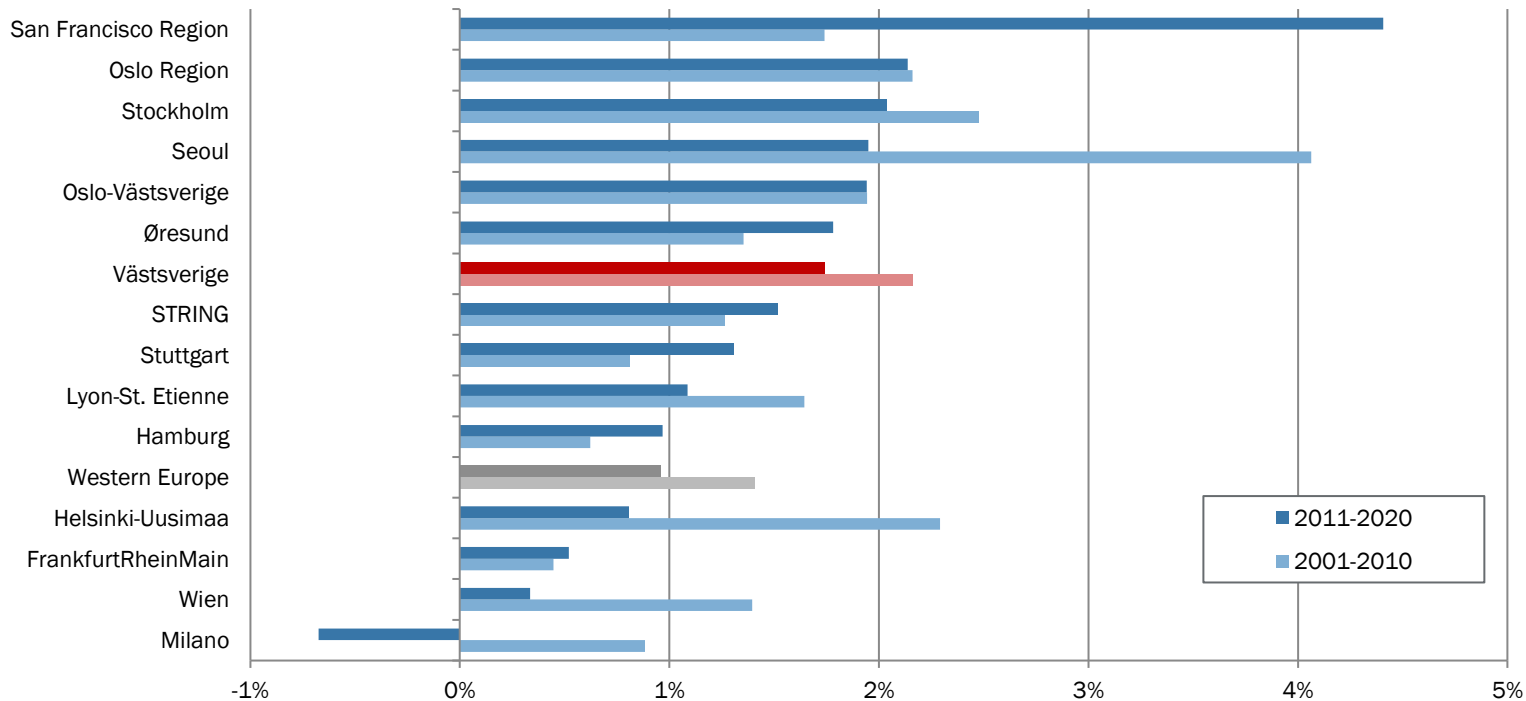


Note Index, 2011 = 100 (at prices of preceding year)

Source BAK Economics, OECD, National Statistical Offices, OEF

Economic Performance

Real GDP Growth

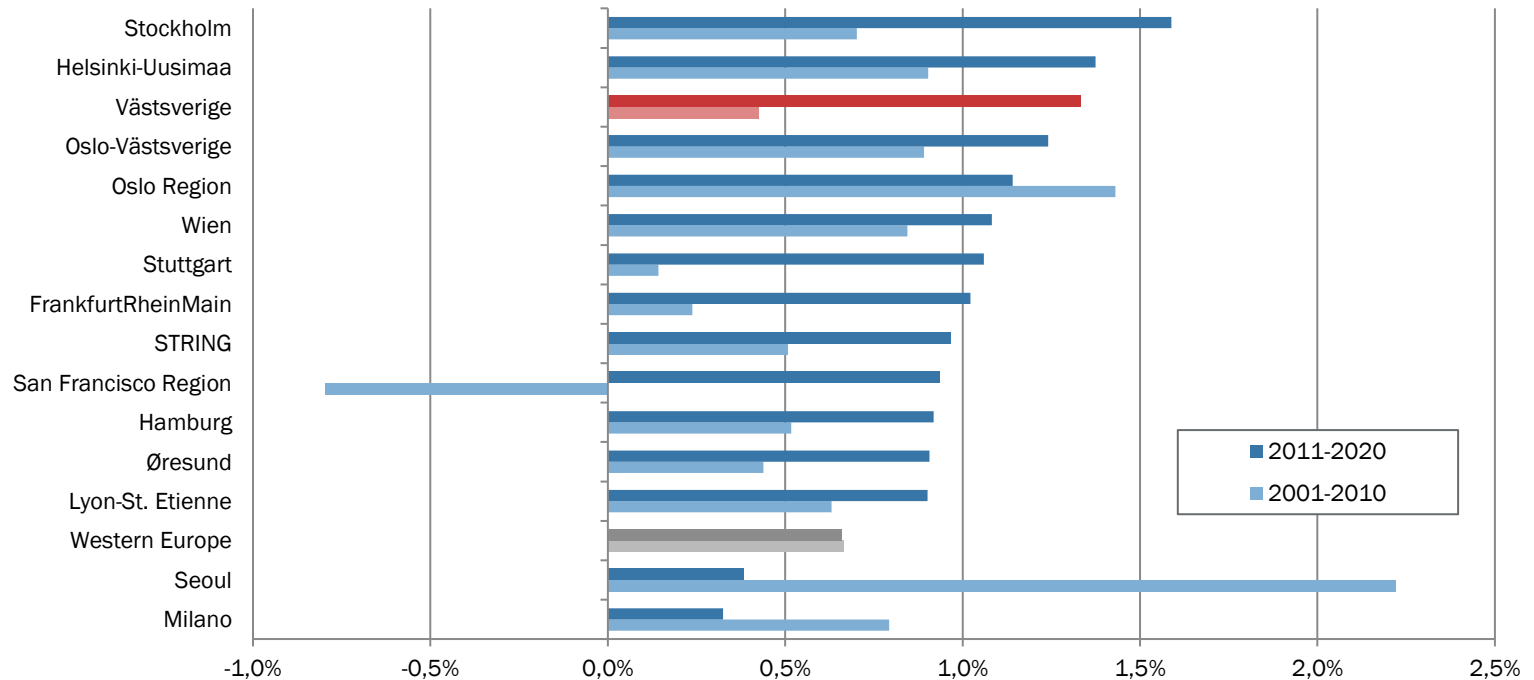


Note In % p.a. (at prices of preceding year)

Source BAK Economics, OECD, National Statistical Offices, OEF

Economic Performance

Employment Growth

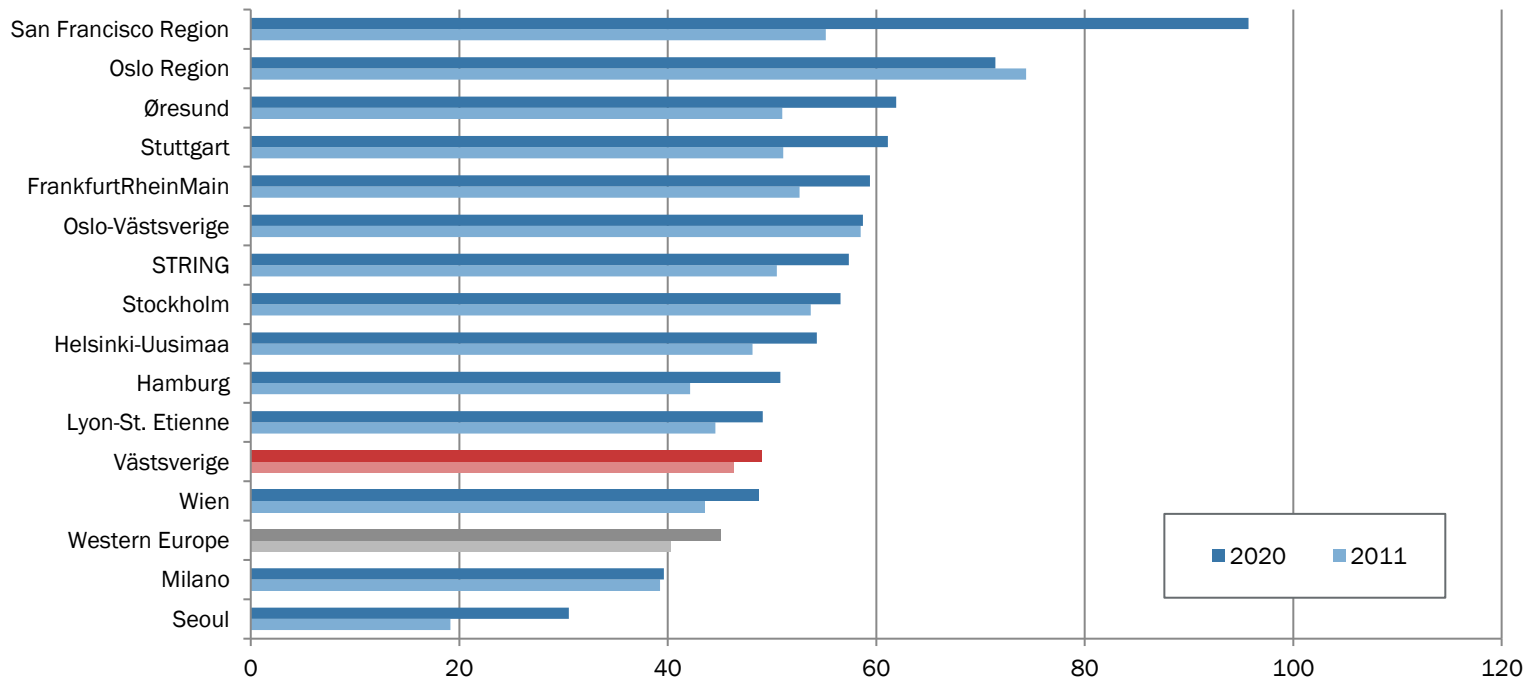


Note In % p.a.

Source BAK Economics, OECD, National Statistical Offices, OEF

Economic Performance

Hourly Productivity

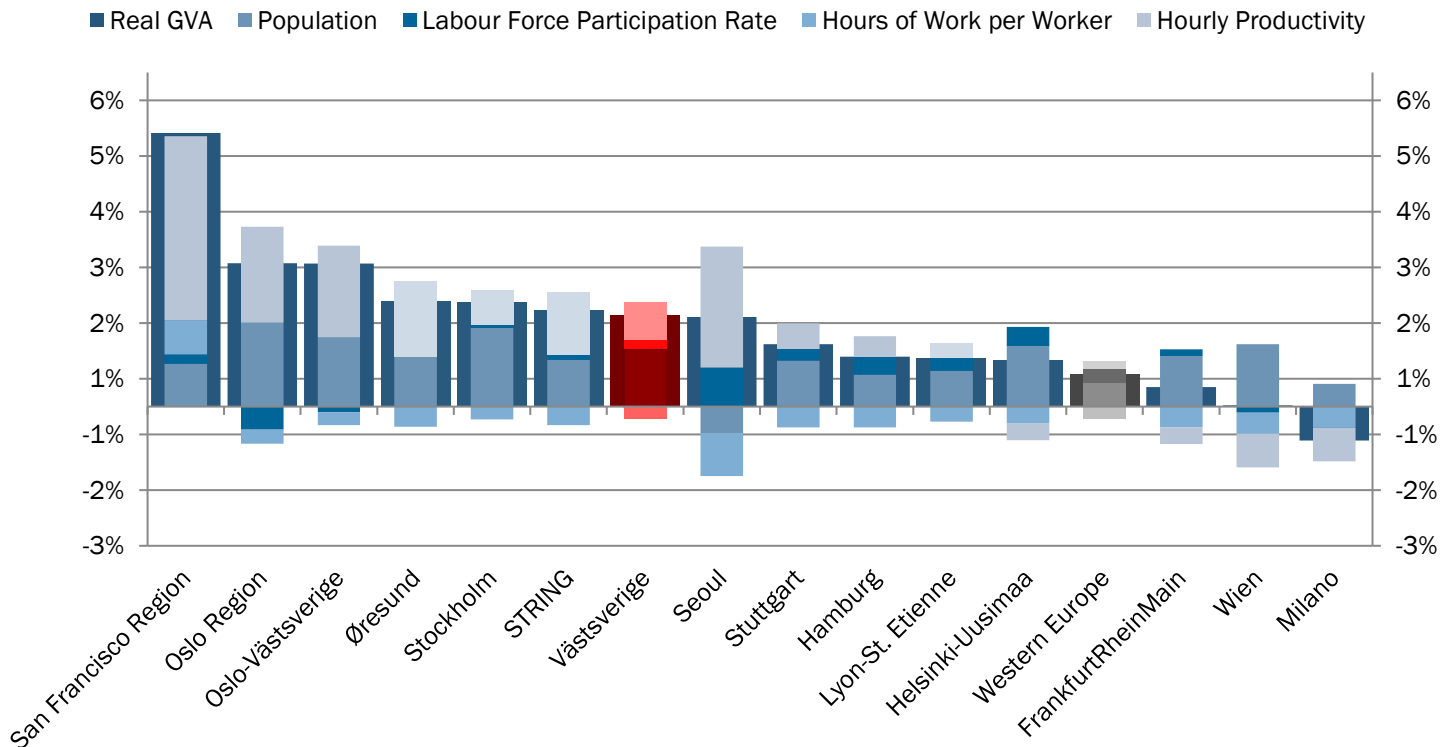


Note In EUR per hour worked (at current prices and exchange rates)

Source BAK Economics, OECD, National Statistical Offices, OEF

Economic Performance

Decomposition of real Gross Value Added growth

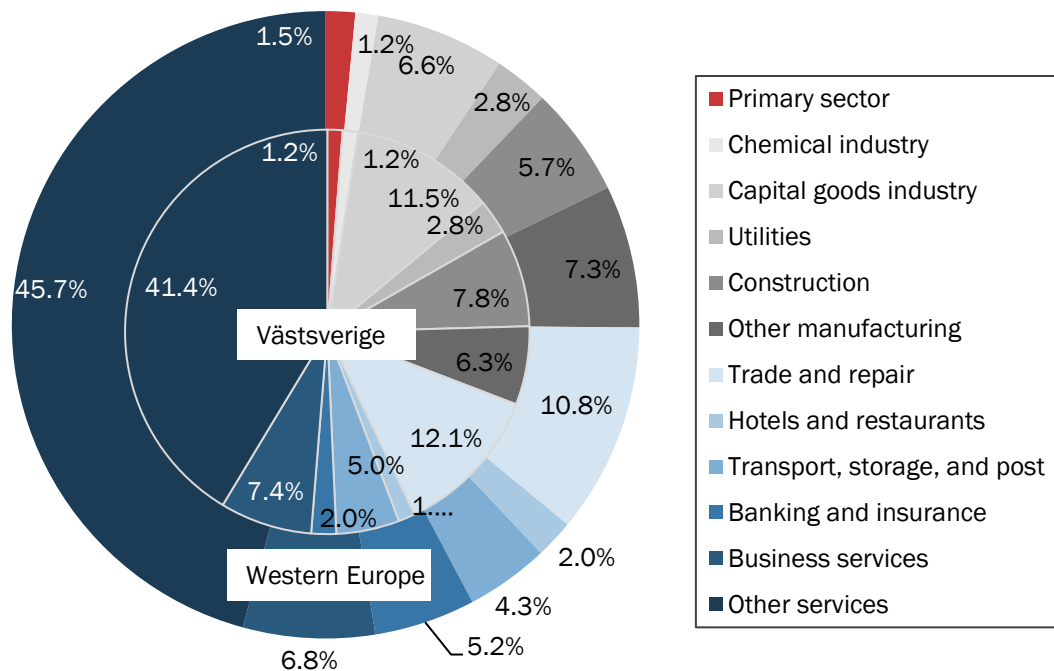


Note In % p.a., 2011-2020

Source BAK Economics, OECD, National Statistical Offices, OEF

Economic Structure

Economic Structure






Note Total share of nominal gross value added in USD, 2020










Source BAK Economics, OECD, National Statistical Offices, OEF

Overview Driver Sectors


ICT Sector

-  Manufacture of computer, electronic and optical products
-  Telecommunications
-  IT and other information services

Innovation Sector

-  Manufacture of pharmaceuticals, medicinal chemical and botanical products
-  Manufacture of irradiation, electromedical and electrotherapeutic equipment
-  Manufacture of optical instruments and photographic equipment
-  Manufacture of electric motors, generators, transformers and electricity distribution and control apparatus
-  Manufacture of batteries and accumulators
-  Manufacture of machinery and equipment n.e.c.
-  Manufacture of motor vehicles, railway locomotives, ships and boats, air and spacecraft
-  Manufacture of military fighting vehicles
-  Manufacture of medical and dental instruments and supplies














Urban Sector

-  Trade and repair of automobiles and consumer durables
-  Financial and business services
-  Transport
-  Hotels and restaurants
-  Entertainment, culture and sport
-  Personal services
-  Private Households
-  Architectural and engineering activities

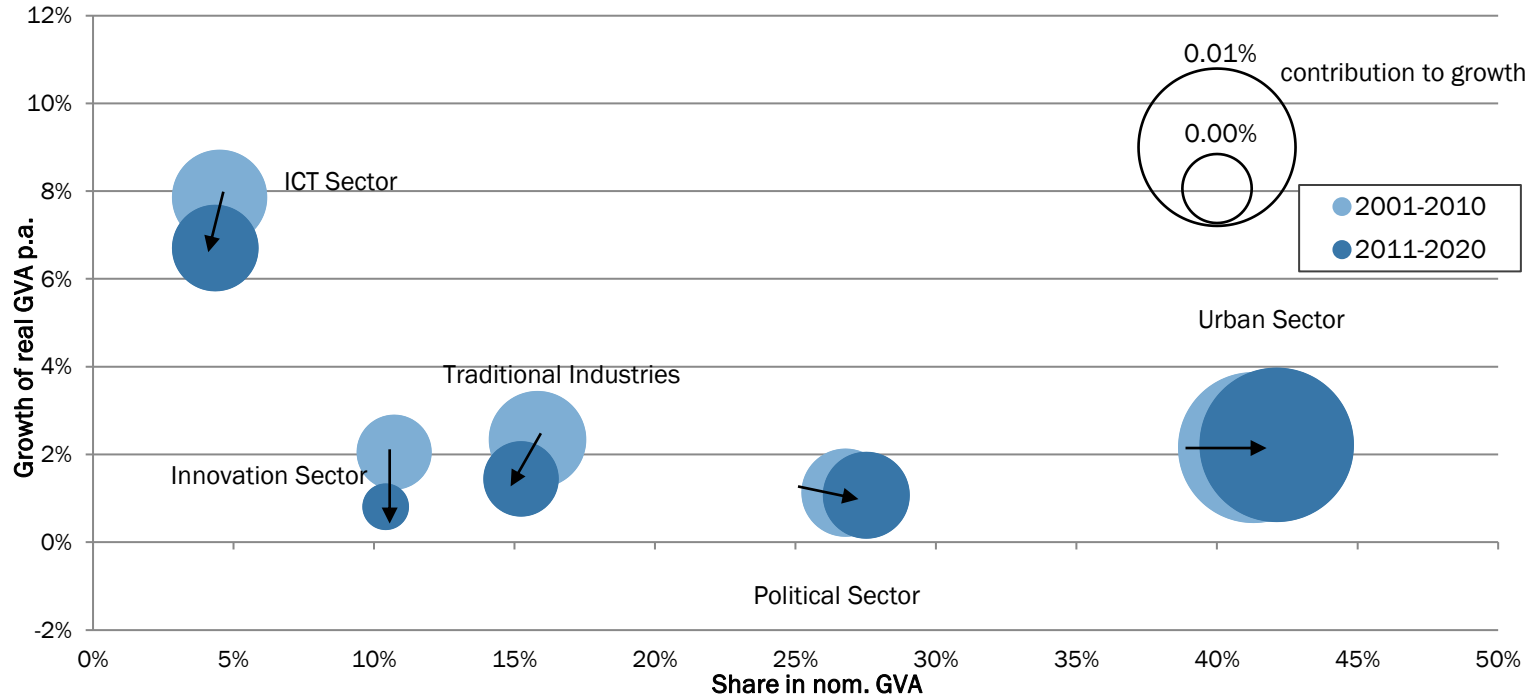
Political Sector

-  Agriculture, forestry and fishing
-  Manufacture of weapons and ammunition
-  Manufacture of transport equipment n.e.c.
-  Energy and water supply
-  Scientific research and development
-  Public administration and defence; compulsory social security
-  Education
-  Health and Social services
-  Creative, arts and entertainment activities; libraries, archives, museums and other cultural activities; gambling and betting activities
-  Activities of membership organizations
-  Sewage treatment, refuse disposal

Traditional Sector

-  Food, beverage, tobacco products
-  Textiles, garment, furs, leather products and shoes
-  Processing of wood
-  Paper- and boardmaking / Printing and publishing
-  Coke, refined petroleum products
-  Rubber and plastic products
-  Other products from nonmetallic minerals
-  Metals and metal products / Mechanical engineering
-  Mining and quarrying
-  Manufacture of chemicals and chemical products
-  Construction
-  Manufacture of wiring, wiring devices, electric lighting equipment and other electrical equipment
-  Manufacturing not elsewhere classified

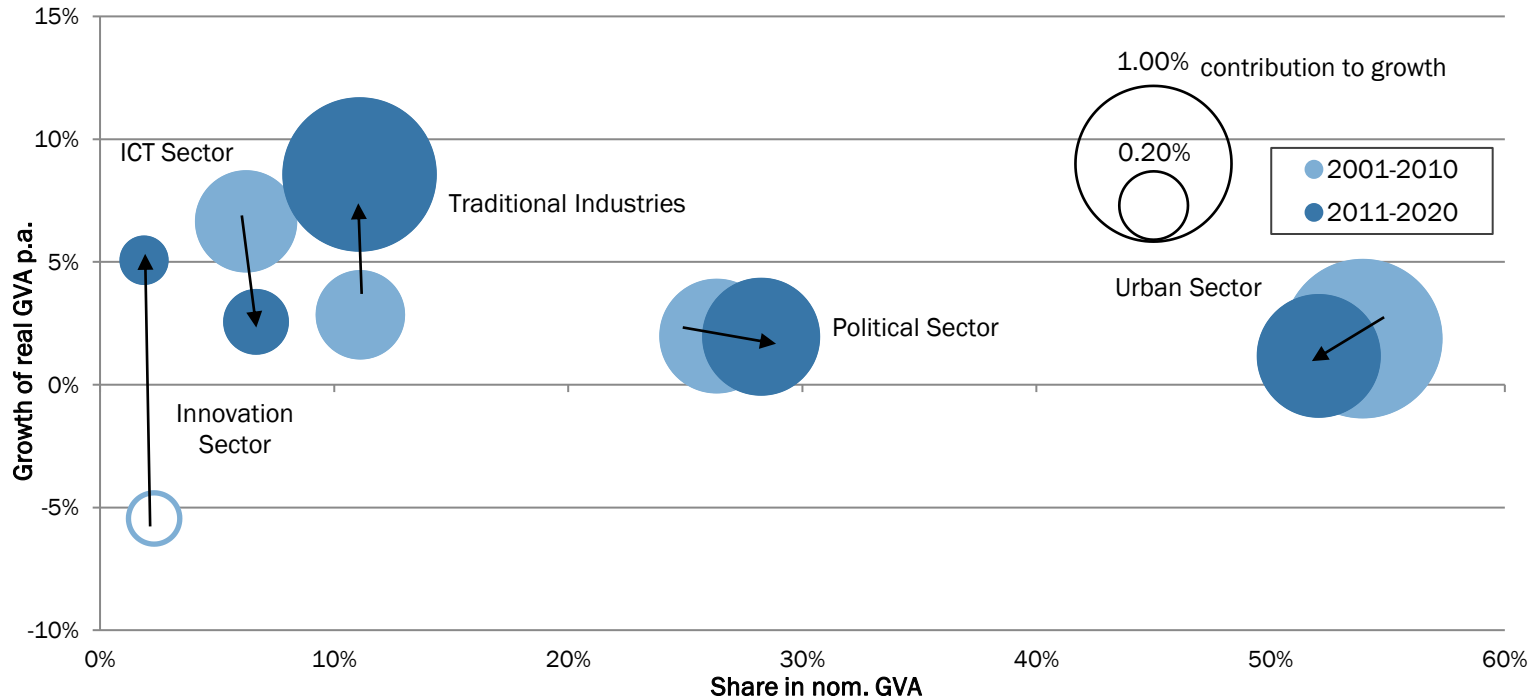
Driver Sectors Västsverige



Note Total share of nominal gross value added and real gross value added growth, 2011-2020

Source BAK Economics, OECD, National Statistical Offices, OEF

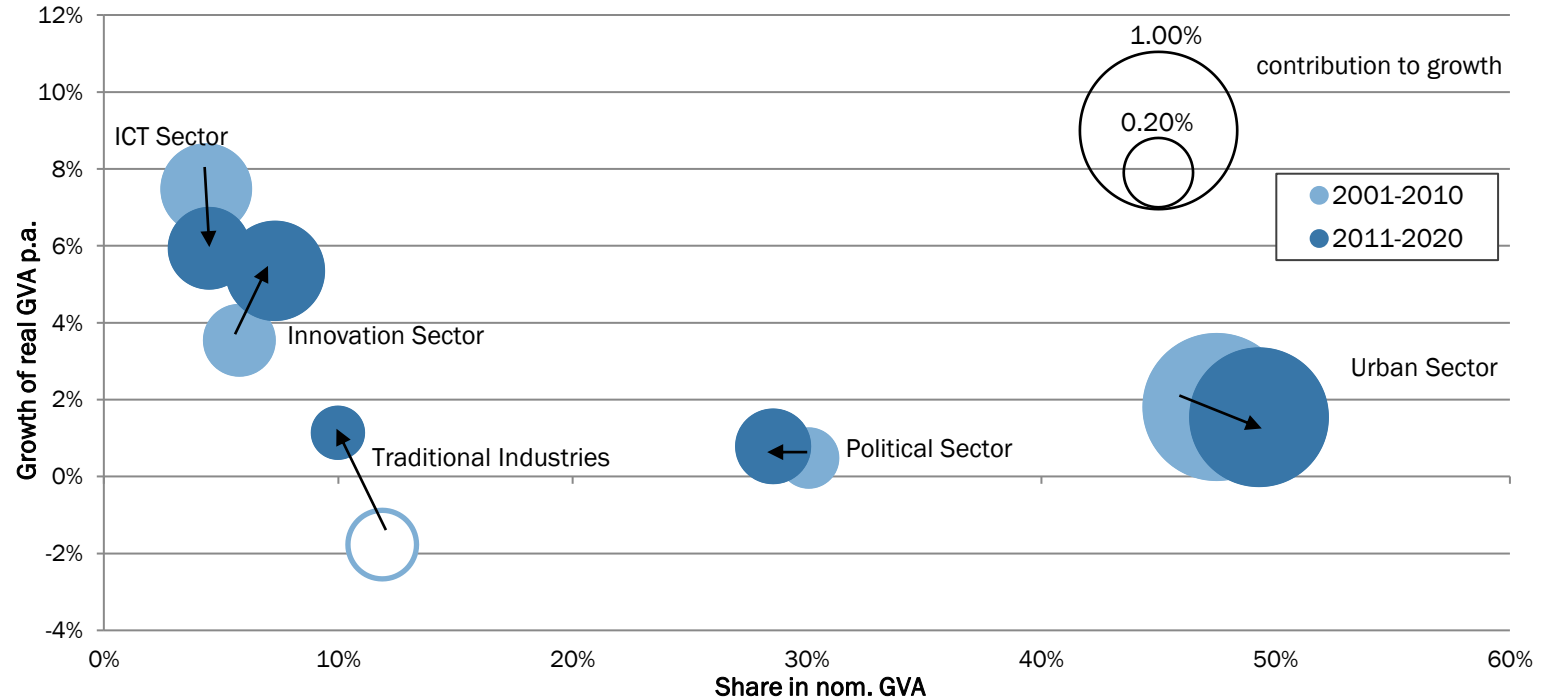
Driver Sectors Oslo Region



Note Total share of nominal gross value added and real gross value added growth 2011 – 2020

Source BAK Economics, OECD, National Statistical Offices, OEF

Driver Sectors Øresund

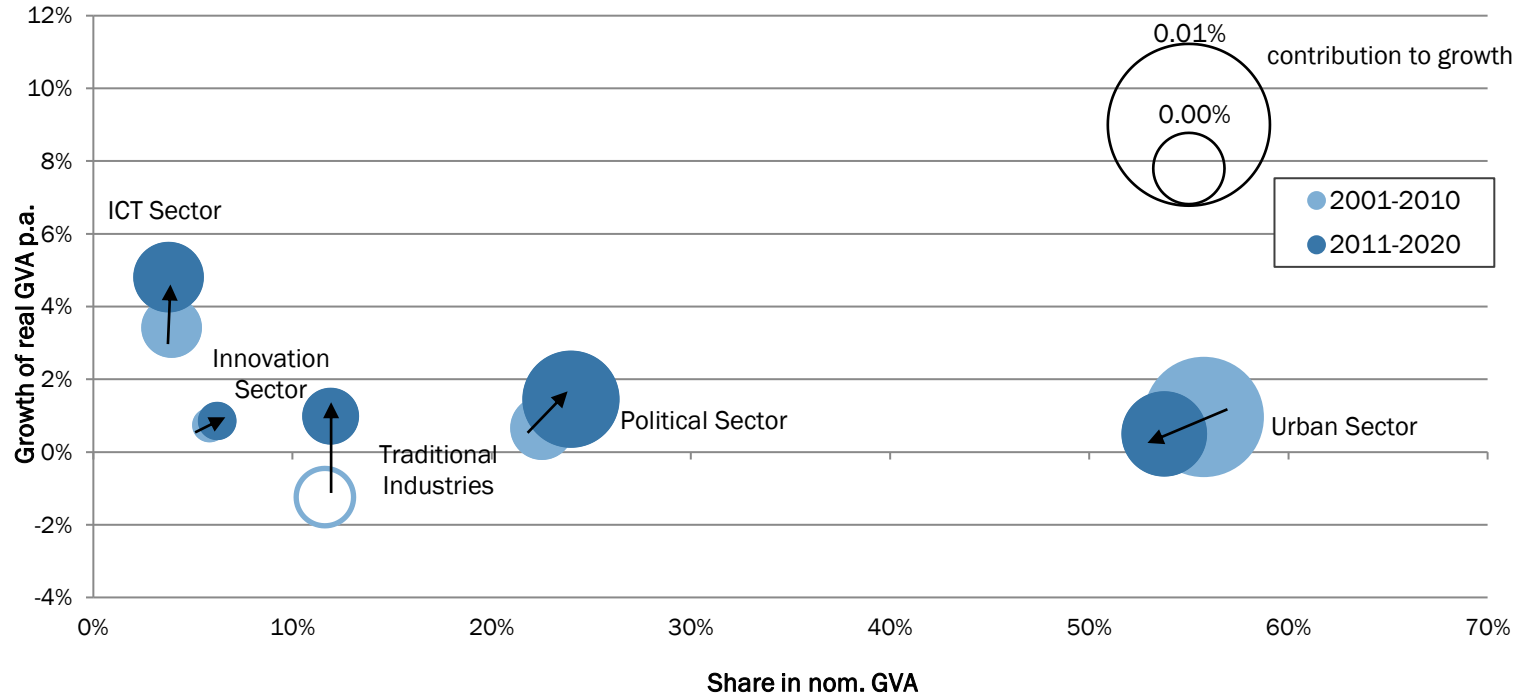


Note Total share of nominal gross value added and real gross value added growth 2011 – 2020

Source BAK Economics, OECD, National Statistical Offices, OEF

Industries

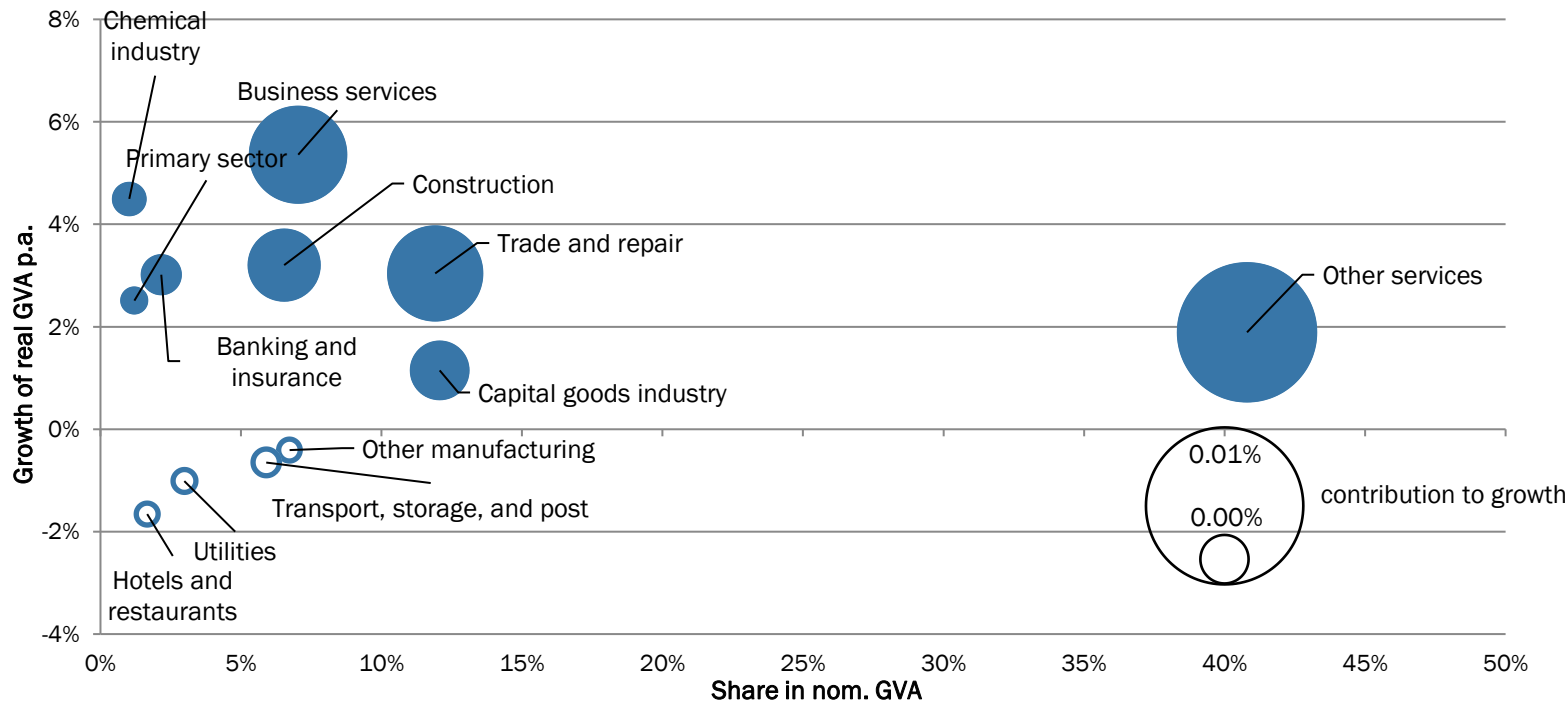
Driver Sectors Hamburg



Note Total share of nominal gross value added and real gross value added growth, 2011–2020

Source BAK Economics, OECD, National Statistical Offices, OEF

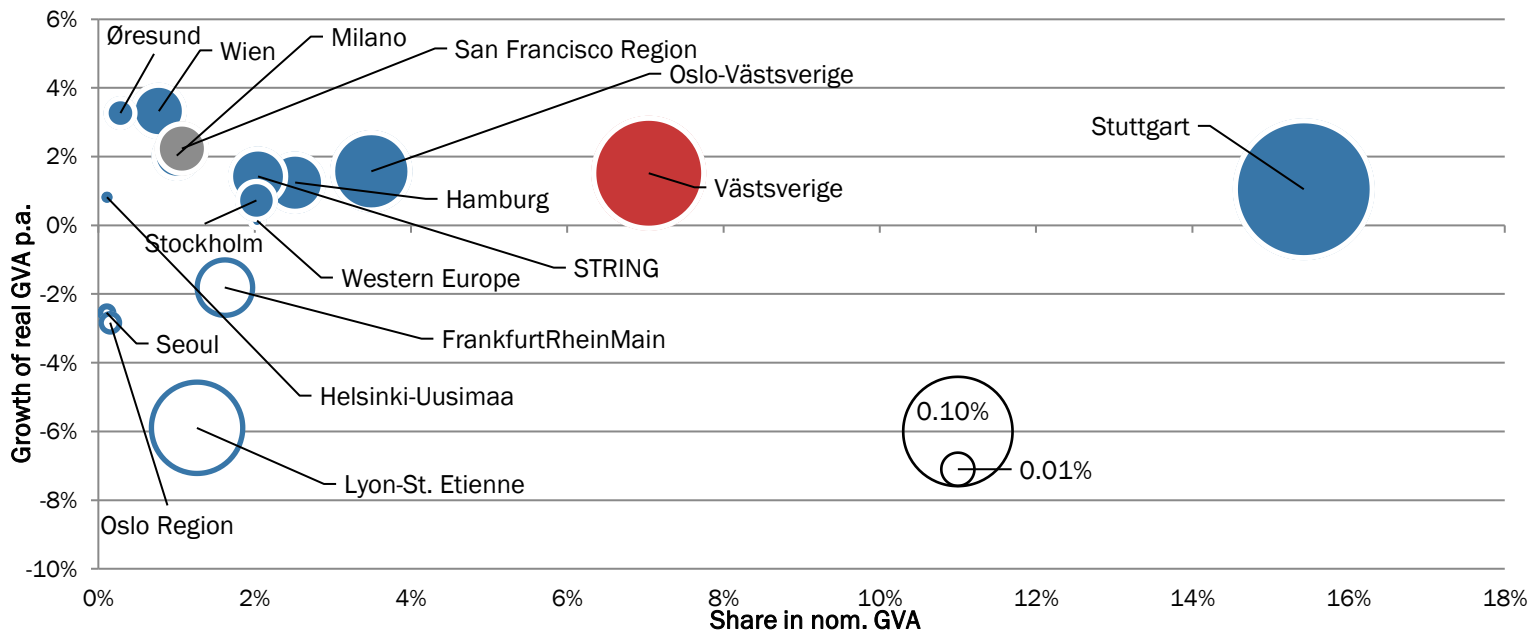
Contribution of Industries: Västsverige



Note Total share of nominal gross value added and real gross value added growth, 2011–2020

Source BAK Economics, OECD, National Statistical Offices, OEF

Growth contribution: Motorvehicles and Parts, other Means of Transport

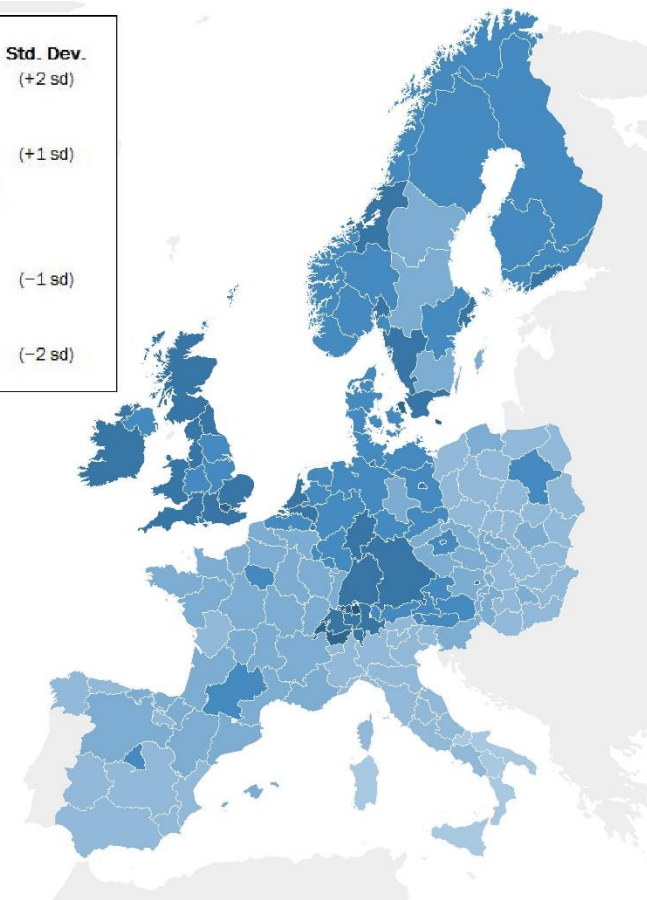
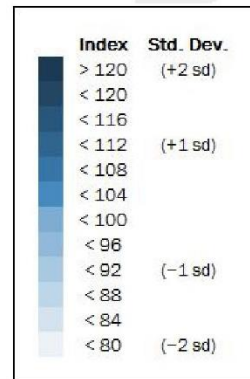
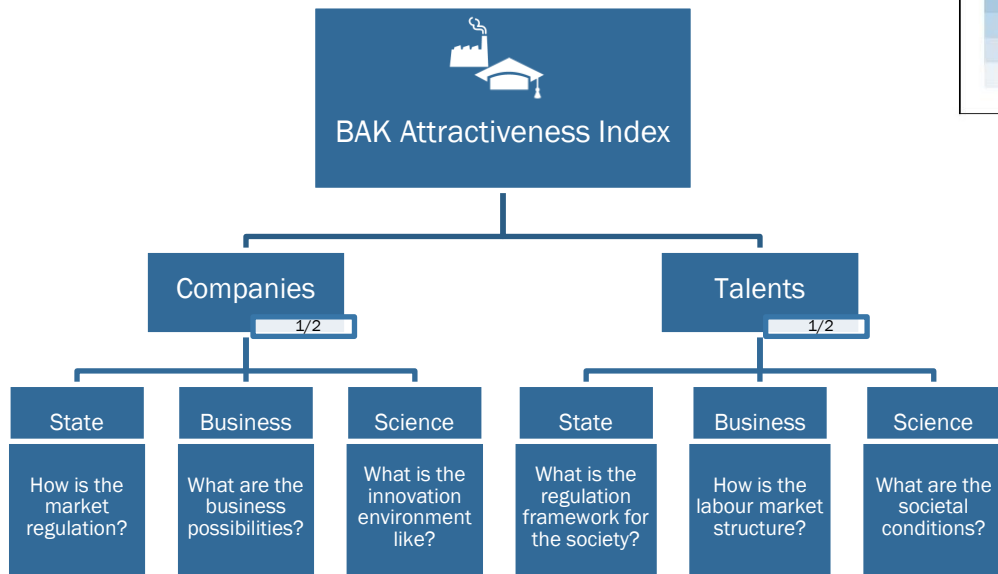


Notes Real gross value added growth rate in % (at constant prices and exchange rates); Nominal gross value added in % (in USD; at current prices and exchange rates, PPP corrected) 2011-2020, Seoul was omitted due to its small size

Source BAK Economics, OECD, national statistical offices, OEF

BAK Attractiveness Index 2020

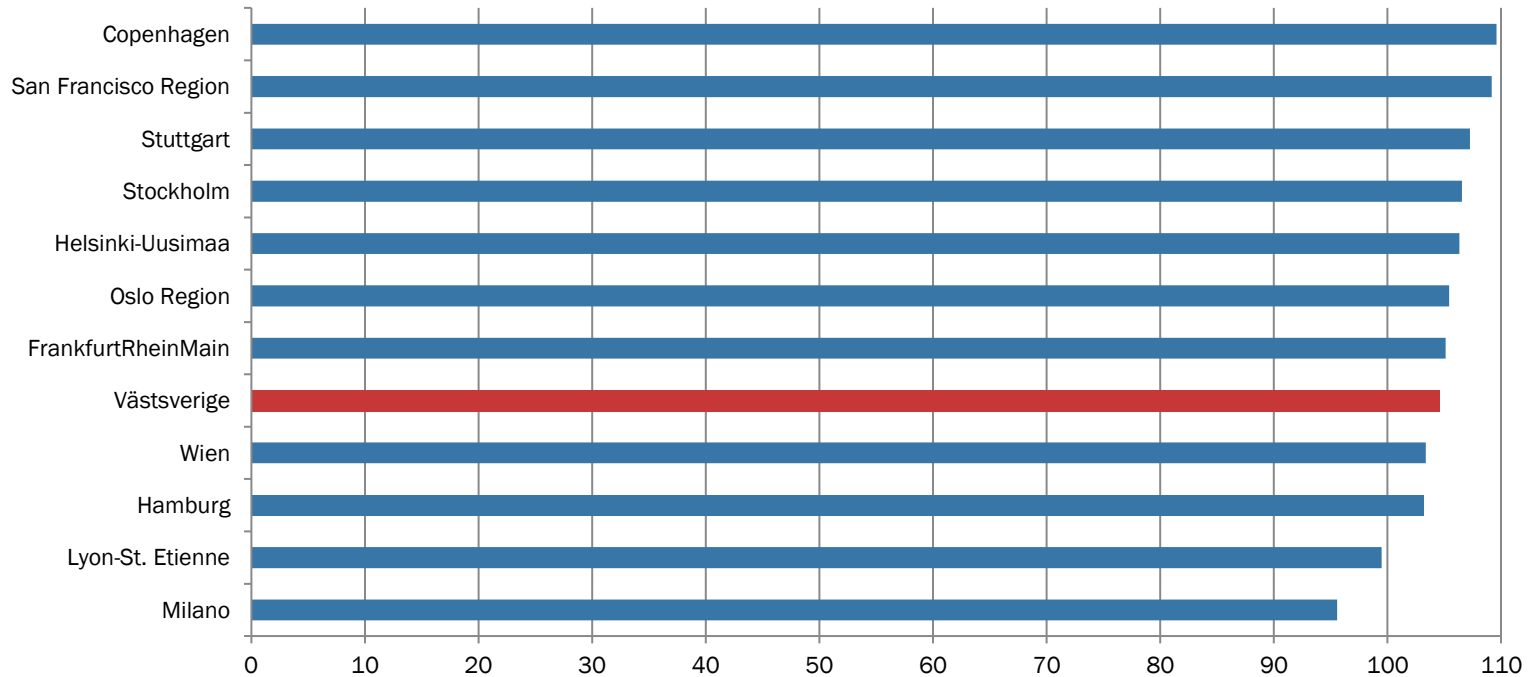
Monitoring regional economic potential:
A comparison of European regions



Average of TL 2 Regions in Western Europe and US = 100

Regional Attractiveness

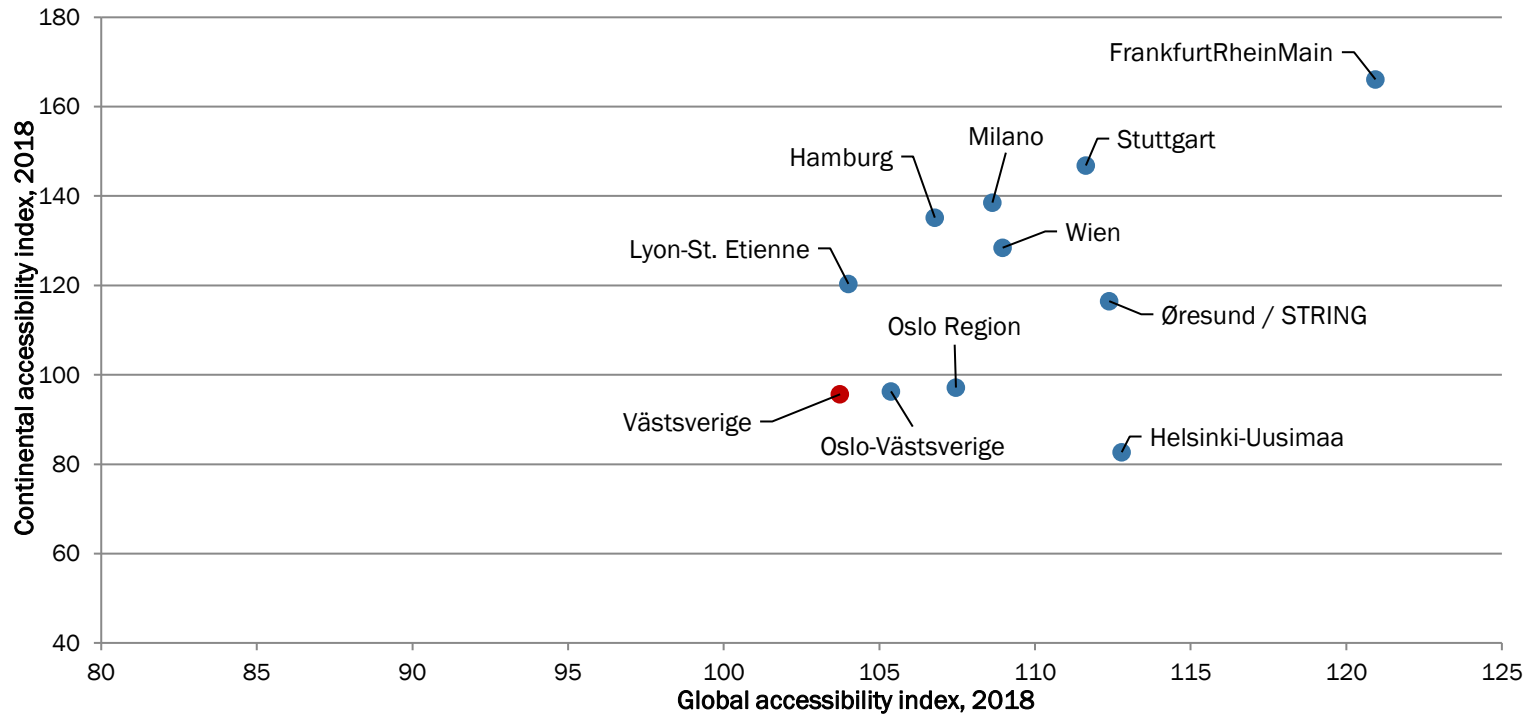
BAK Attractiveness Index



Note Index, WE15 & US = 100, RED 2021

Source BAK Economics

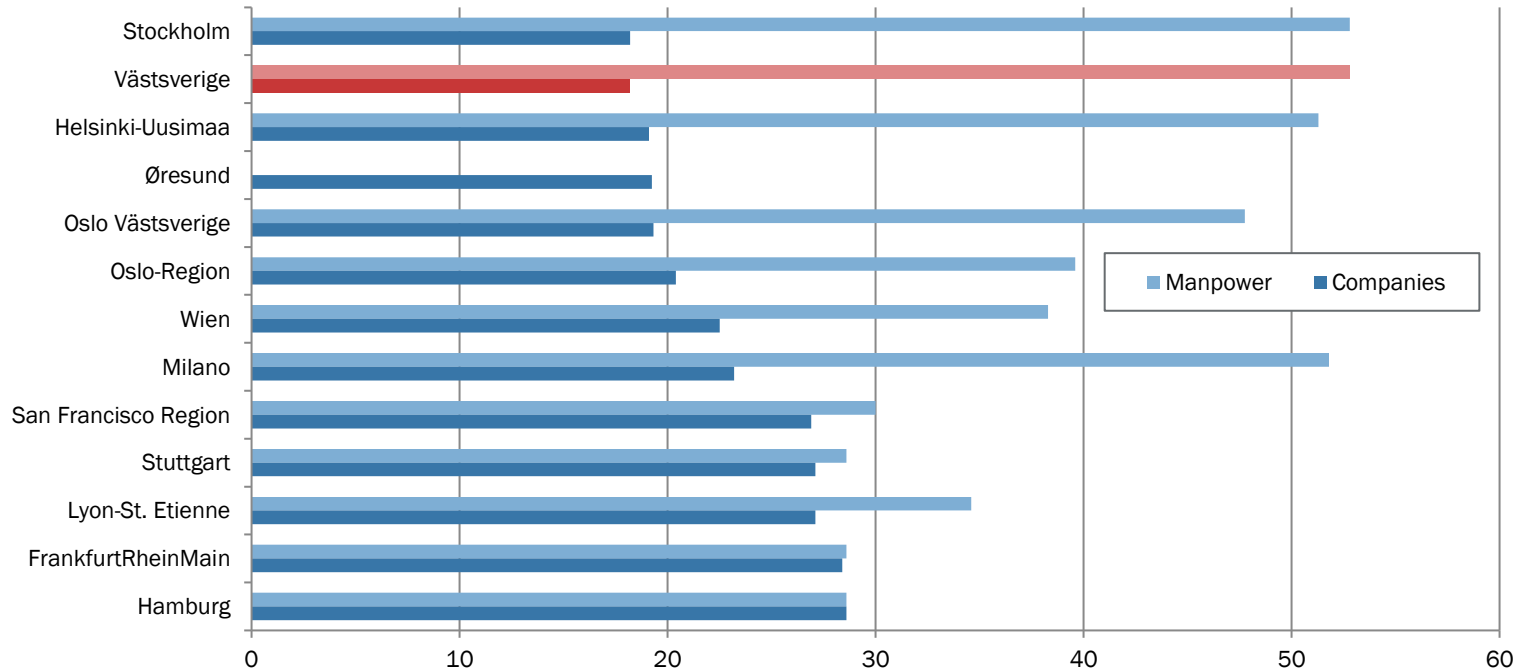
Global and Continental Accessibility, 2018



Note Index (average accessibility of regions 2002 = 100)

Source BAK Economics, IVT

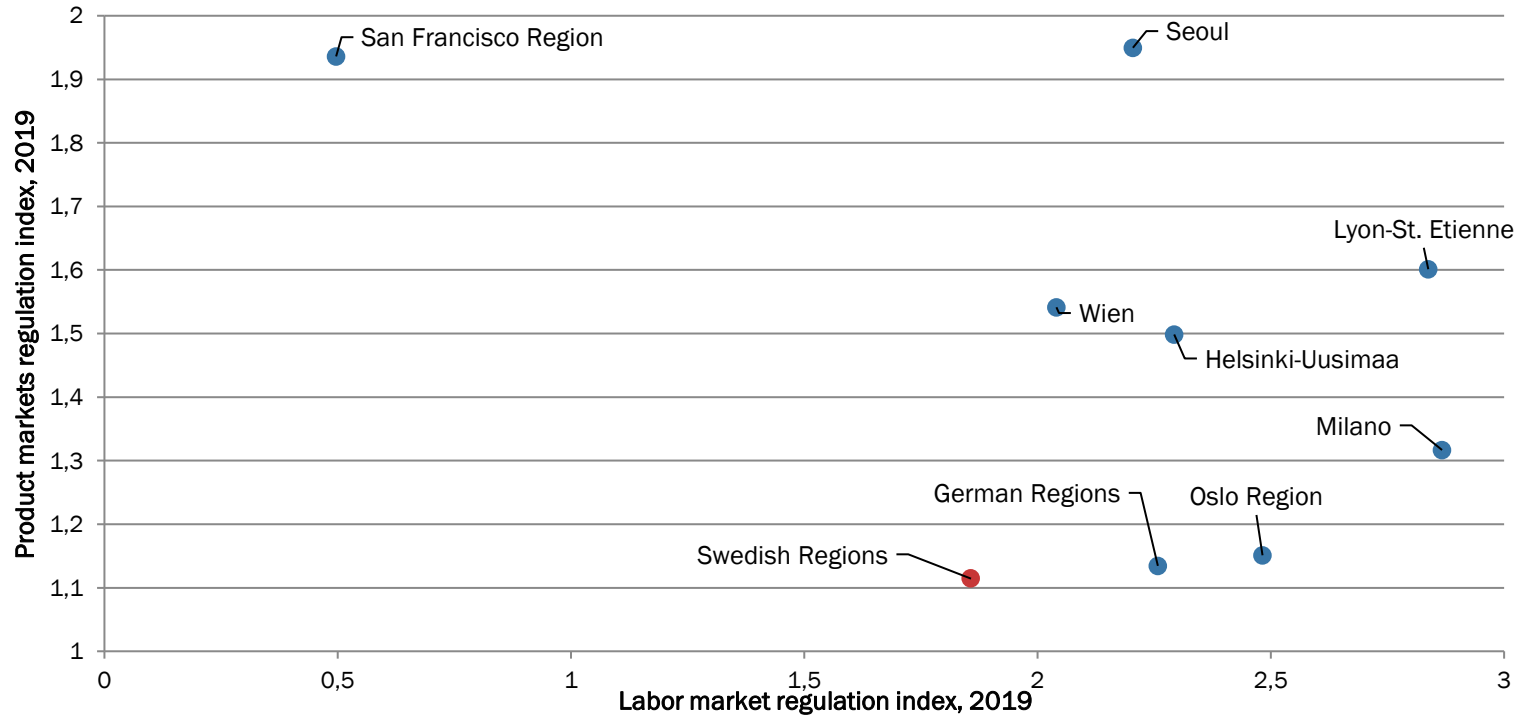
Taxation of Companies and Highly Qualified Manpower, 2021



Note Taxation of companies and highly qualified manpower, 2021 (sorted by Companies; lowest = best)

Source BAK Economics, ZEW

Regulation of Product and Labor Markets, 2019

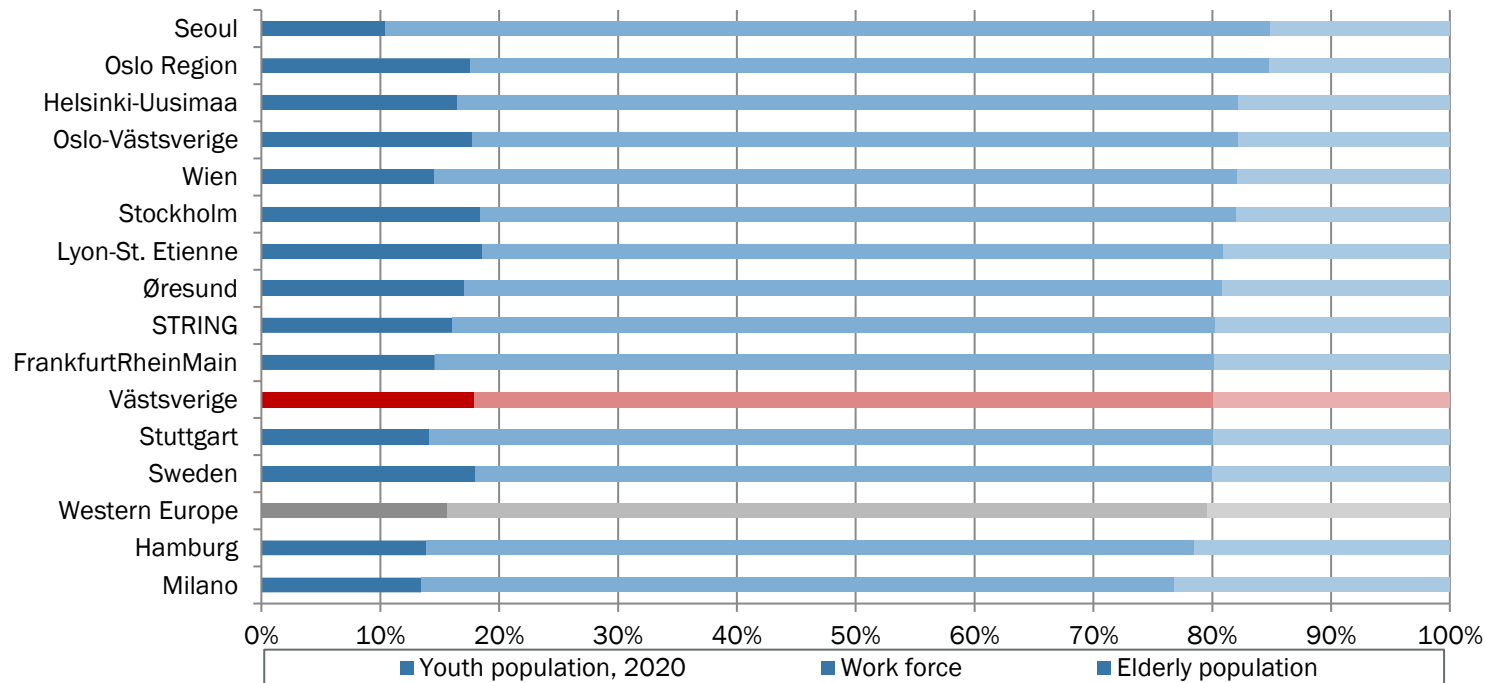


Note Index (0 = very liberal / 6 = very restrictive)

Source OECD, Cato Institute, BAK Economics

Regional Attractiveness

Population Composition, 2020

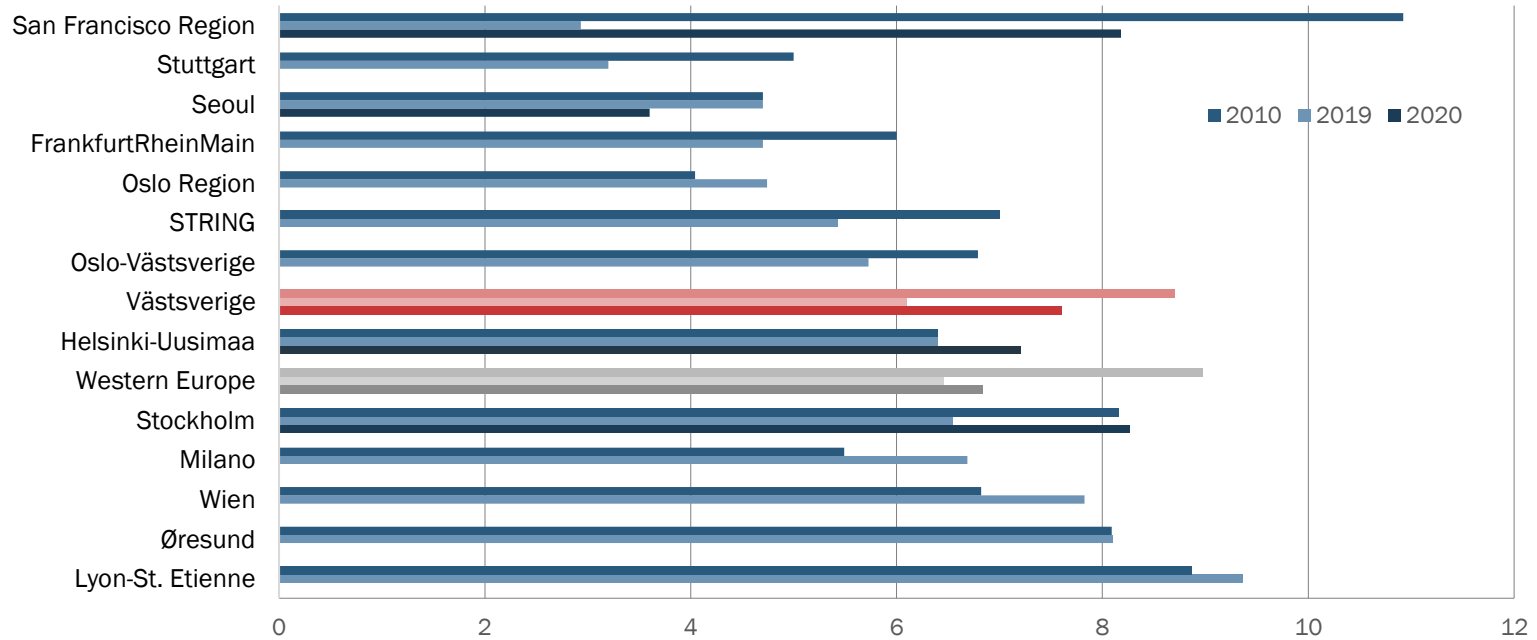


Note Percentage share of young population, working force, and elderly population (sorted by share of young population + work force)

Source BAK Economics, OECD

Regional Attractiveness

Unemployment Rate

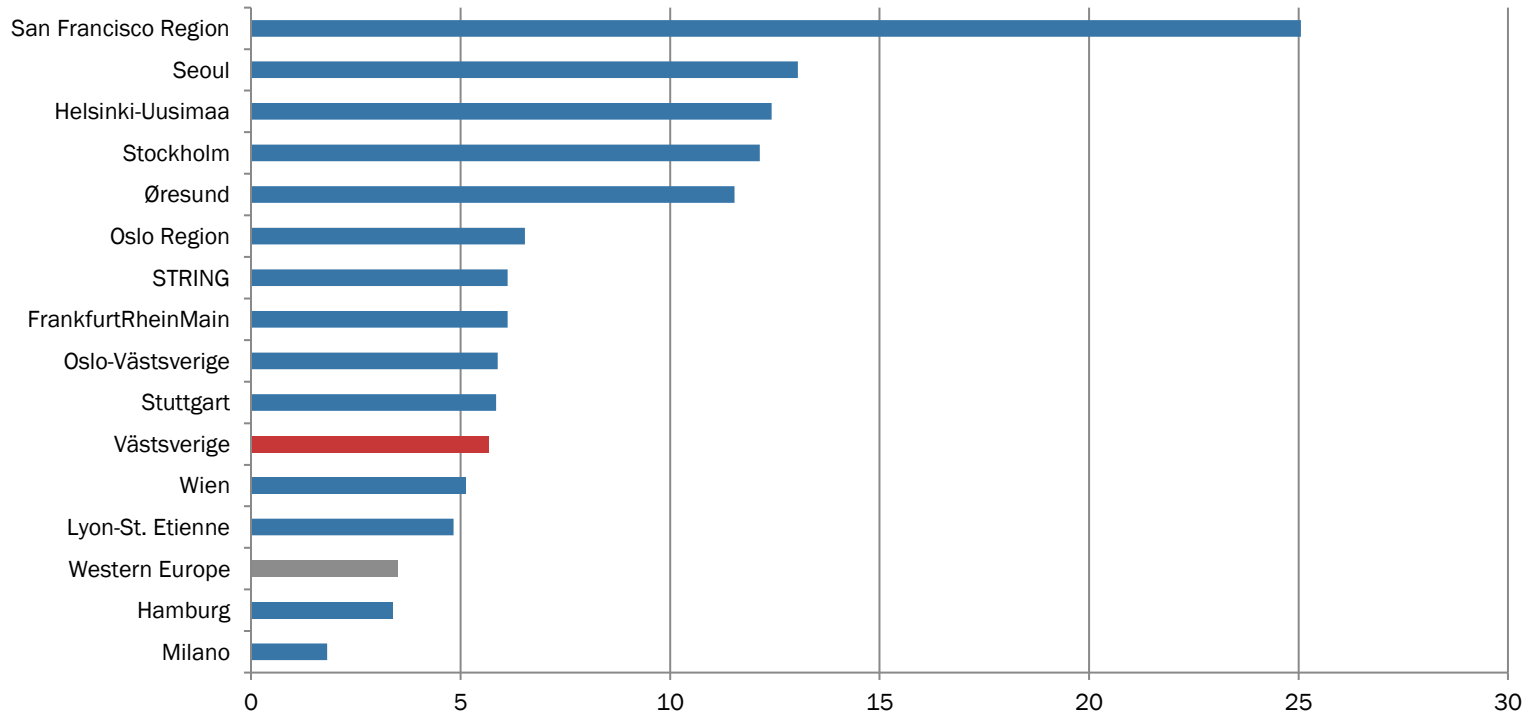


Note In %, Wien 2013; Frankfurt, Stuttgart, Øresund, Lyon 2014; STRING, Oslo-Västssverige, Oslo Region 2016; Milano 2017 (sorted by 2019)

Source BAK Economics, OECD

Regional Attractiveness

Patent Intensity

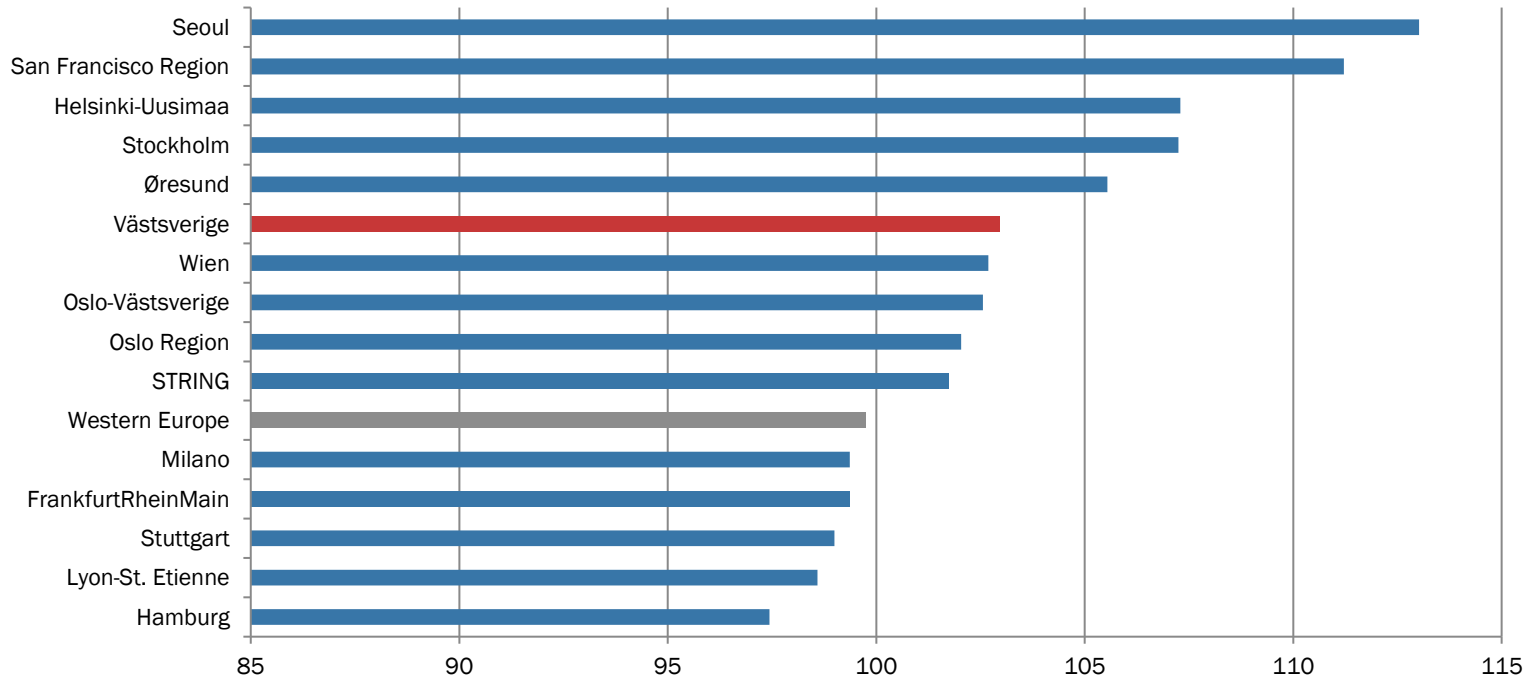


Note Number of patent applications per 1'000 employees in secondary sector, 2016-2018

Source BAK Economics, OECD Regpat March 2021

Regional Attractiveness

Quality of Universities, 2020



Note Index quality of universities in all sciences, (100 = average of all TL2 in WE and US), 2020

Source BAK Economics, CTWS Leiden 2020

Quality of Universities – Methodological Notes

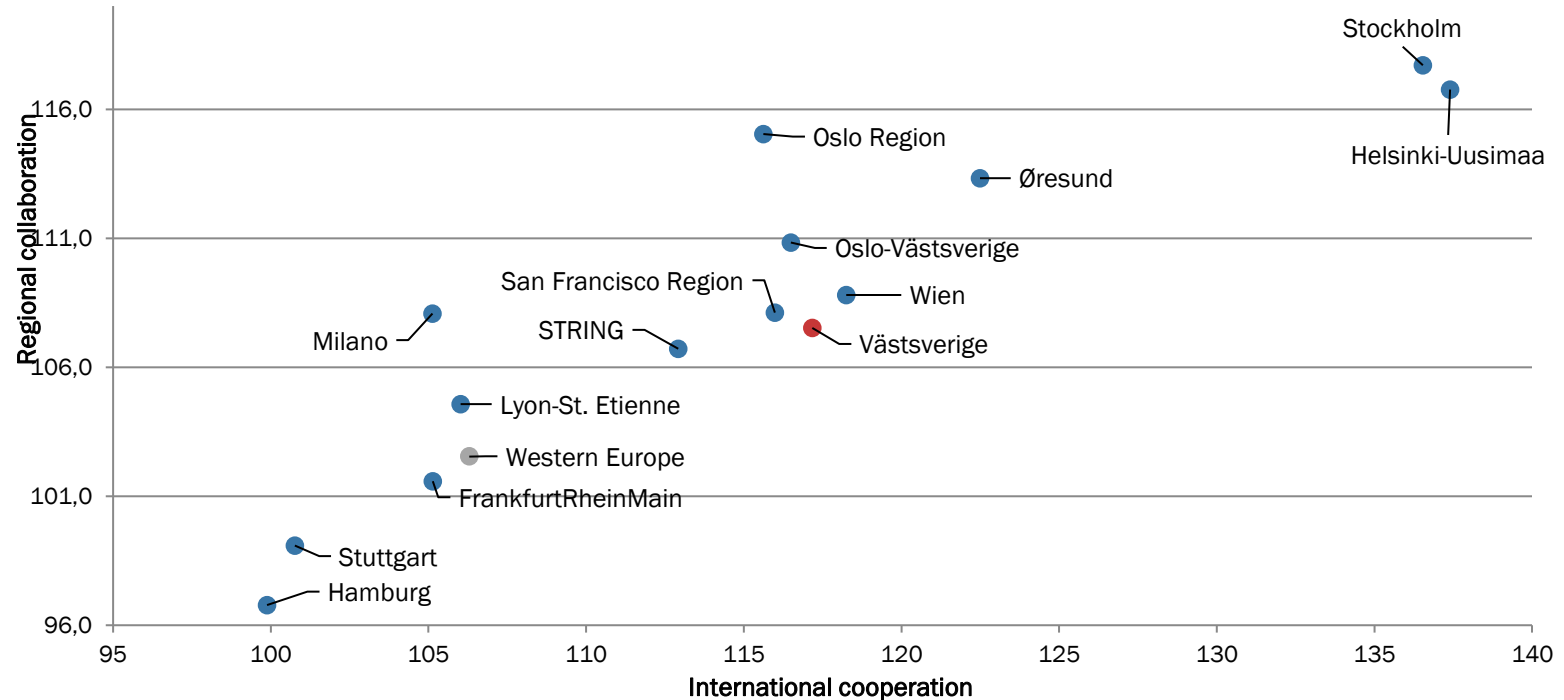
Besides patents, the number of publications is another valid indicator for measuring the innovative strength of a region. The world's leading universities foster high level scientific research and are essential for the development and dissemination of knowledge and skills.

The graph on the page before this shows the quality of universities in all sciences.

The BAK Quality of Universities Index relies on the CWTS Ranking of Leiden and is a measure of the intensity of the universities' quality in any given region. This intensity is measured by the university's number of scientific publications which count among the top 10% of cited publications adjusted (with a non-linear function) for the size of the population of the region.

The region's overall score depends on both the intensity of the quality of the universities within the region (3/4 weight) and the intensity of the quality of the universities in the surrounding regions (1/4 weight). The index is normalized. The average of all TL2 regions in Western Europe and the US is set to 100 and the standard deviation of the variable across the same set is calculated. This is set to 10. Therefore, an index value of 110 means the region's intensity of the quality of its universities is one standard deviation better than the average of all Western European and US TL2 regions.

Regional and International Quality of Universities, 2020

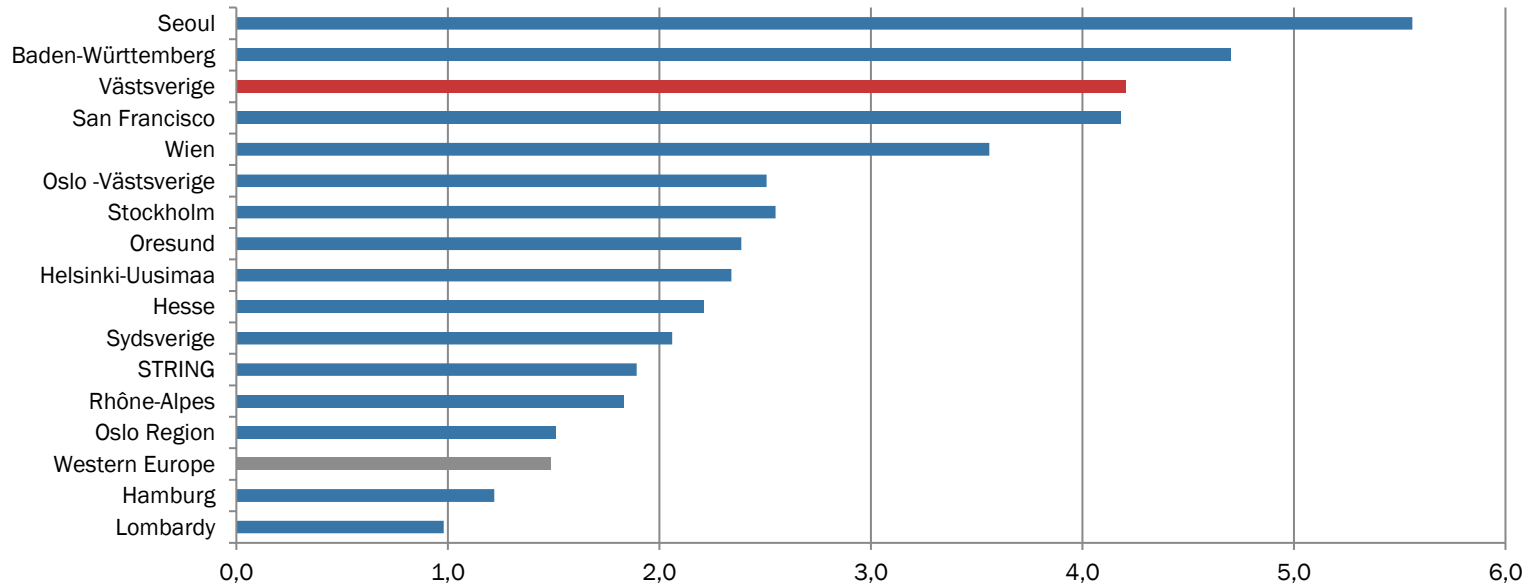


Note Indices international and regional collaboration (100 = average of all TL2 in WE and US), 2020

Source BAK Economics, CTWS Leiden 2020

Regional Attractiveness

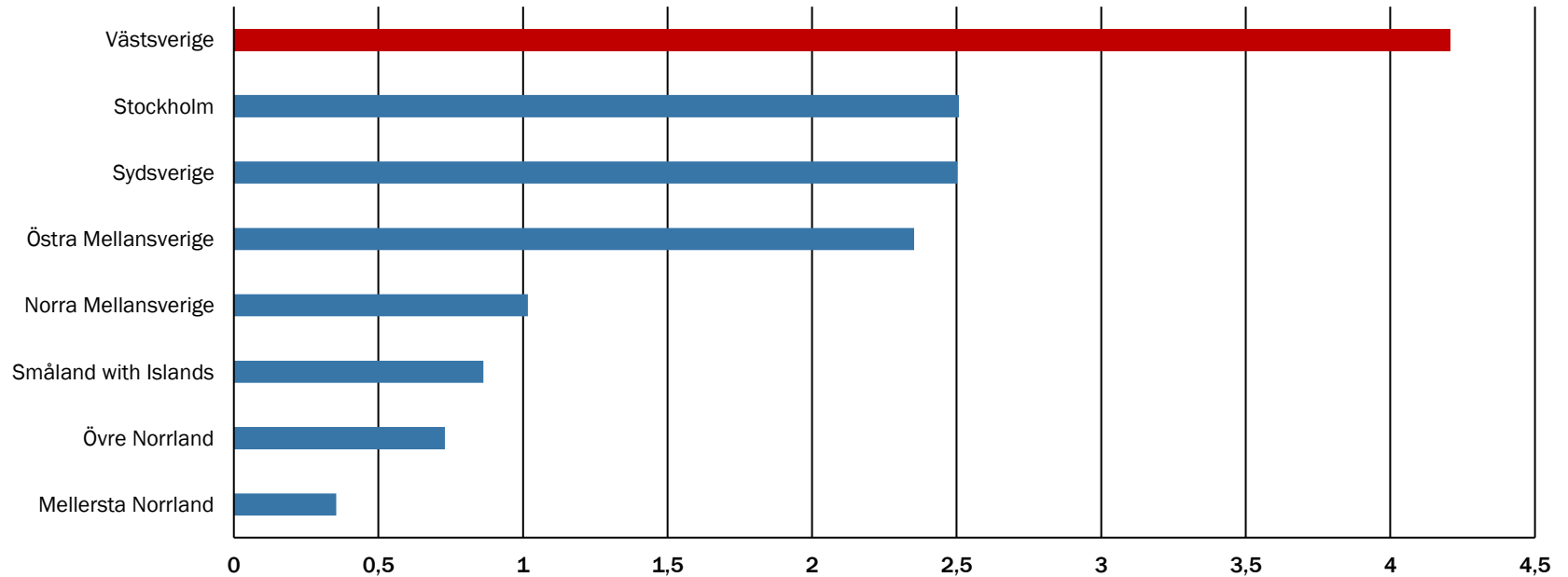
Expenditures on Research and Development



Note Expenditures on research and development in business sector only exist on a higher level for the following regions: Frankfurt=Hesse, Milano=Lombardy, Stuttgart=Baden-Württemberg, San Francisco=California (2014), Seoul=Capital Region. Data refer to the latest available year between 2015-17, (Swedish regions 2019, Rhône-Alpes 2013).

Source OECD (September 2020), Statistik Austria, SCB

Expenditures on Research and Development in Sweden

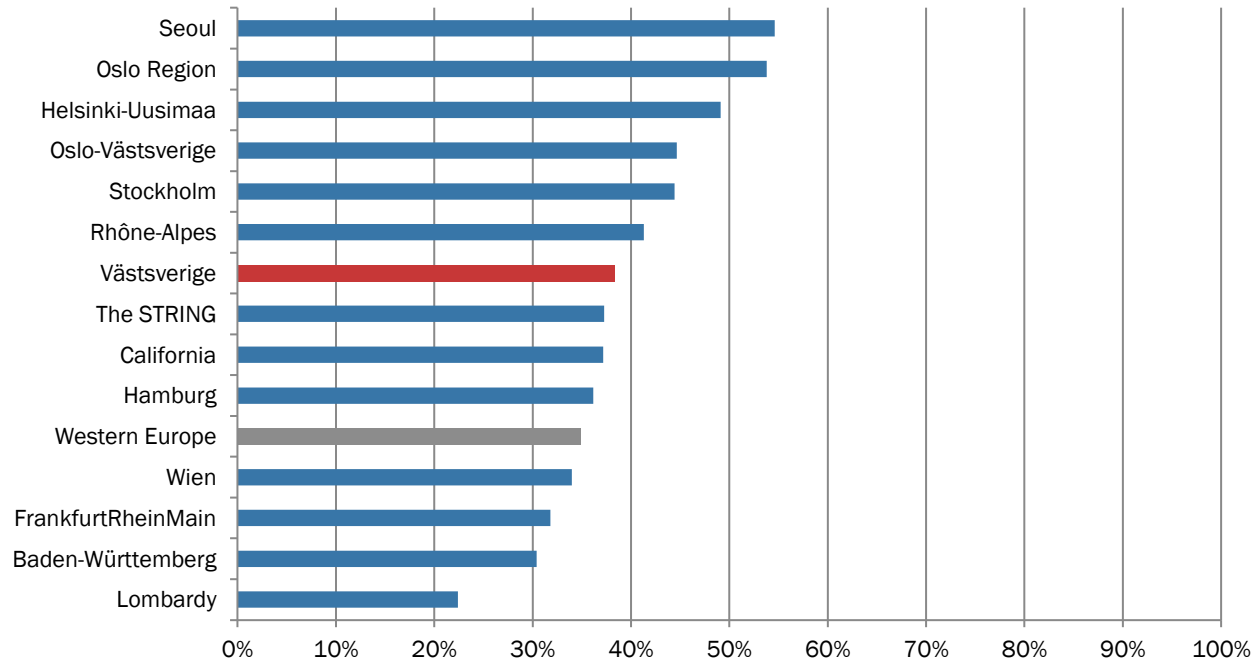


Note Expenditures on research and development in business sector in % of GDP for Swedish Regions, 2019

Source SCB, BAK Economics

Regional Attractiveness

Labour Force with Tertiary Education

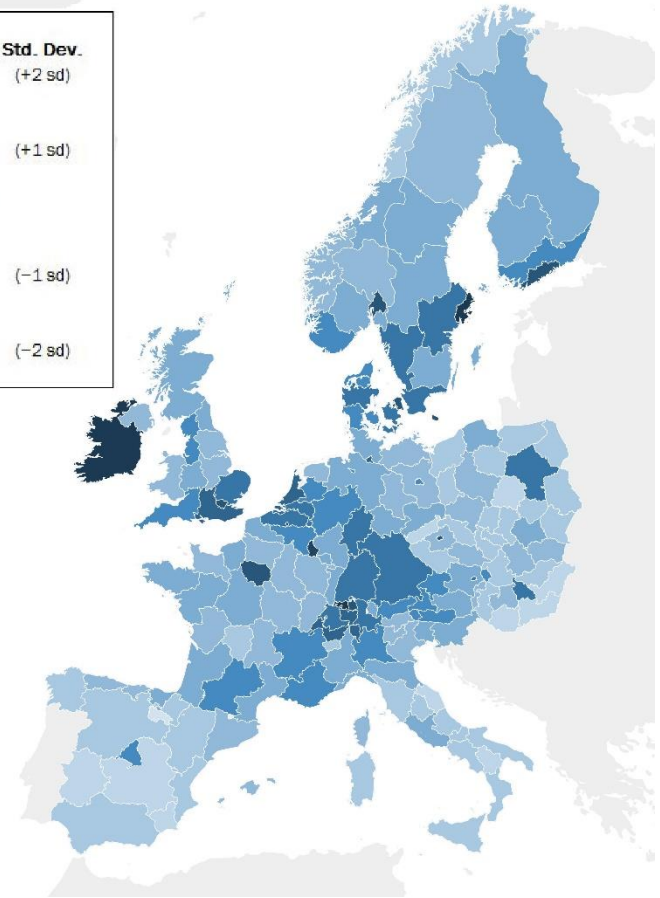
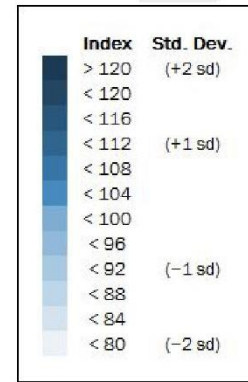
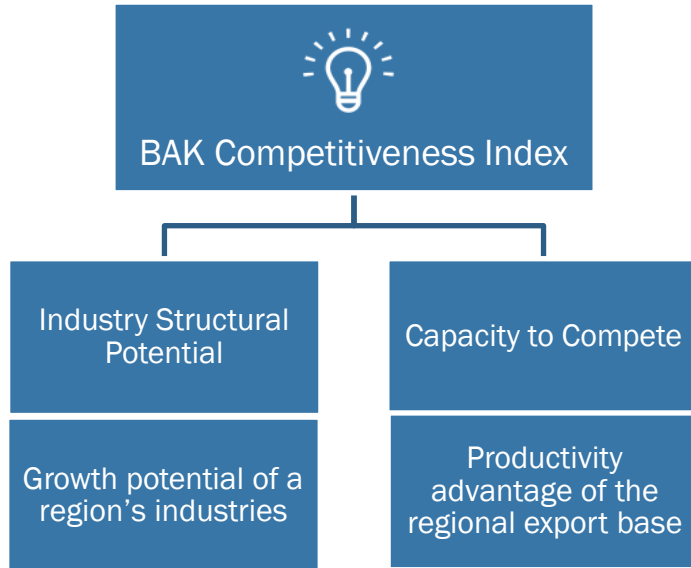


Note Share of labour force (in %) with attained tertiary education, 2017. Seoul 2016, California 2016.

Source BAK Economics, OECD

BAK Competitiveness Index 2020

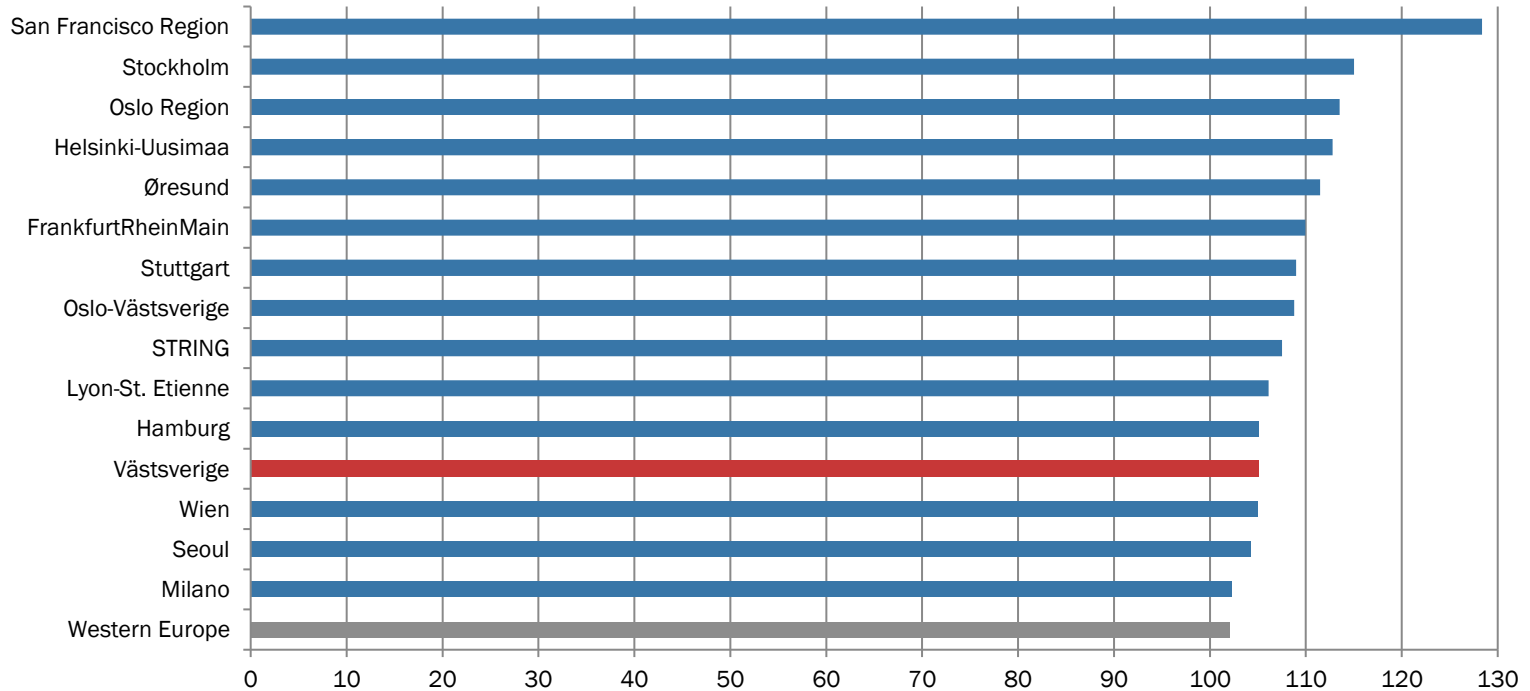
Monitoring regional economic potential:
A comparison of European regions



Average of TL 2 Regions in Western Europe and US = 100

Competitiveness

BAK Competitiveness Index

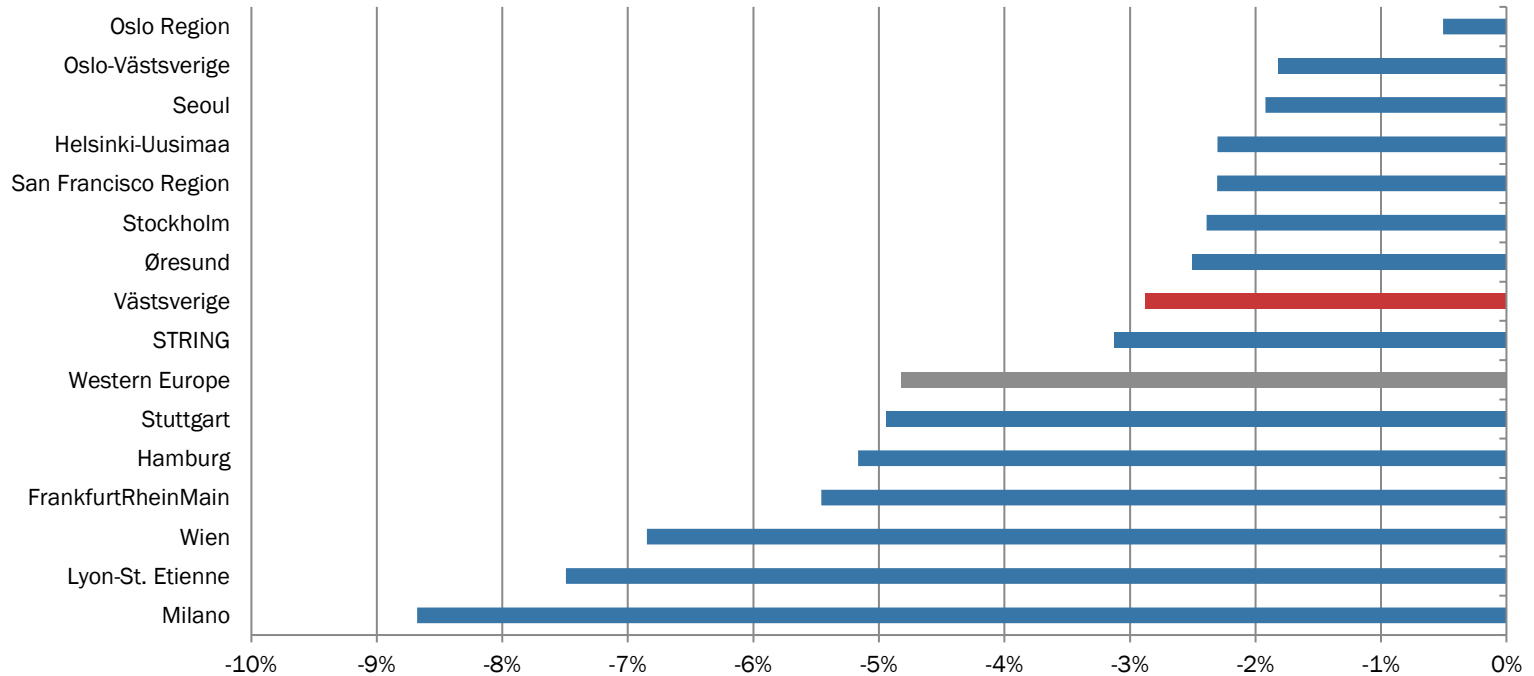


Note Index, WE15 & US = 100, RED 2021

Source BAK Economics

Impact Pandemic

Real GDP Growth 2019-2020

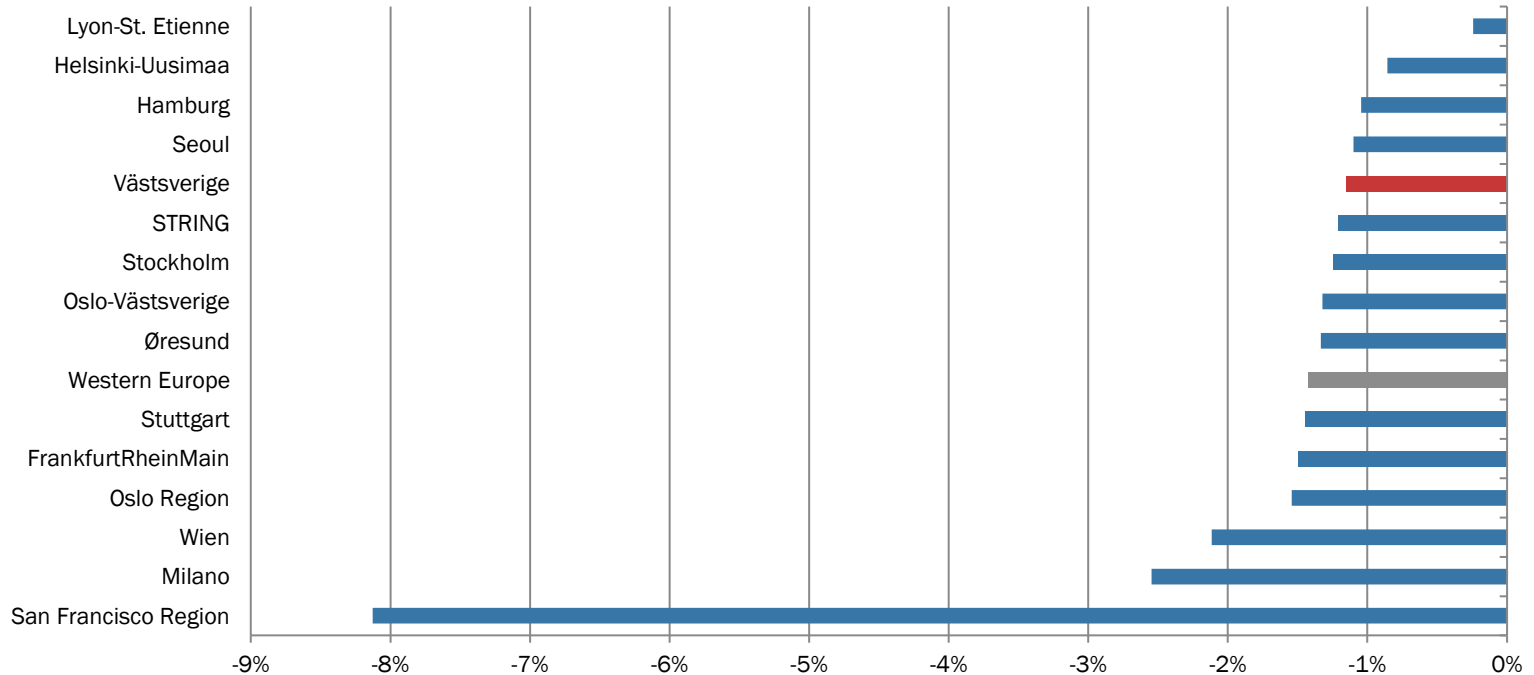


Note In % p.a. (at prices of preceding year)

Source BAK Economics, OECD, National Statistical Offices, OEF

Impact Pandemic

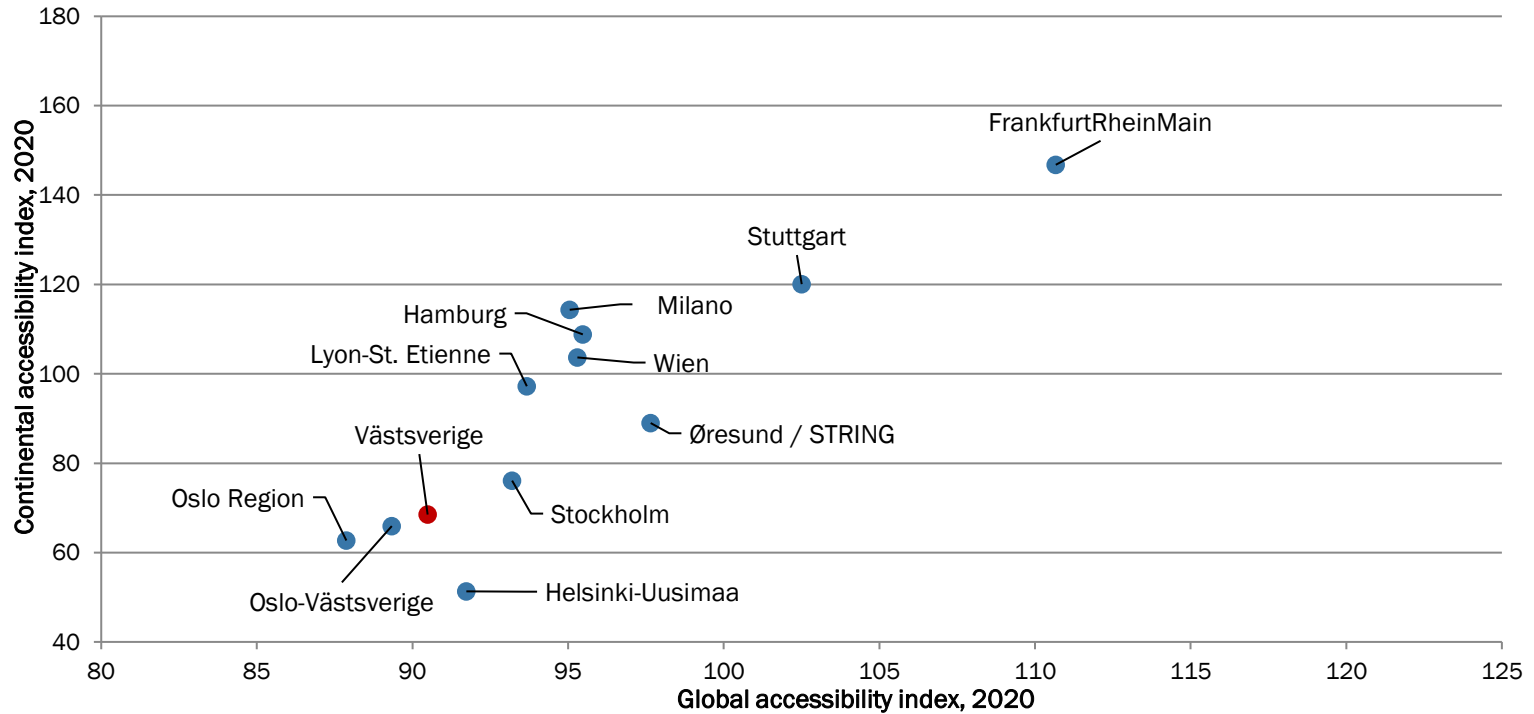
Employment Growth 2019-2020



Note In % p.a.

Source BAK Economics, OECD, National Statistical Offices, OEF

Global and Continental Accessibility, 2020

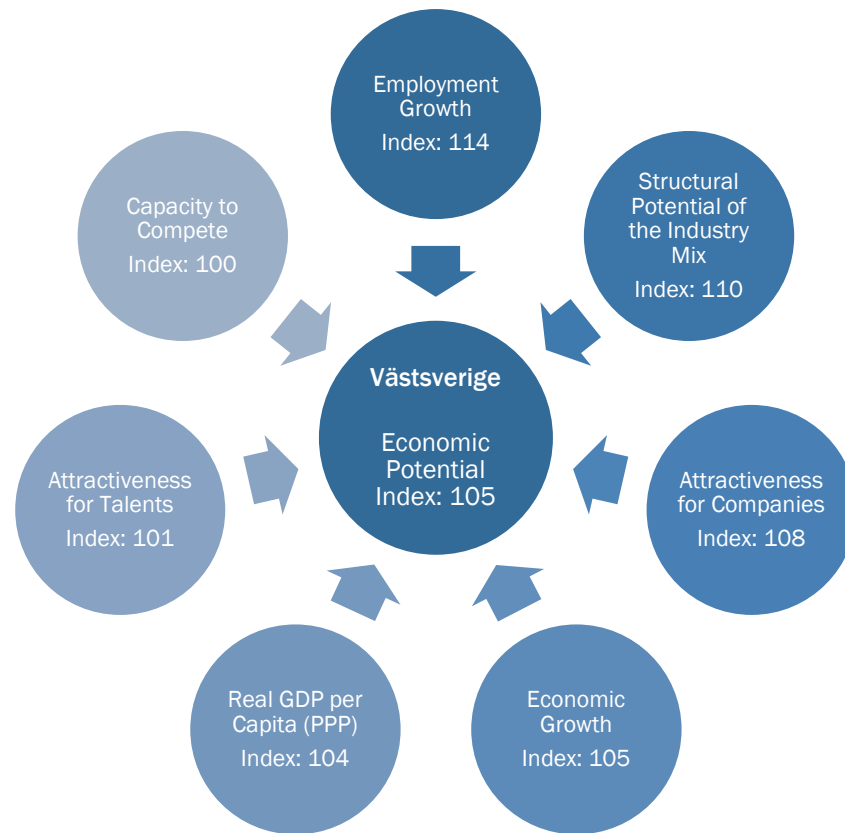


Note Index (average accessibility of regions 2002 = 100)

Source BAK Economics, IVT

Regional Portrait

Västsverige

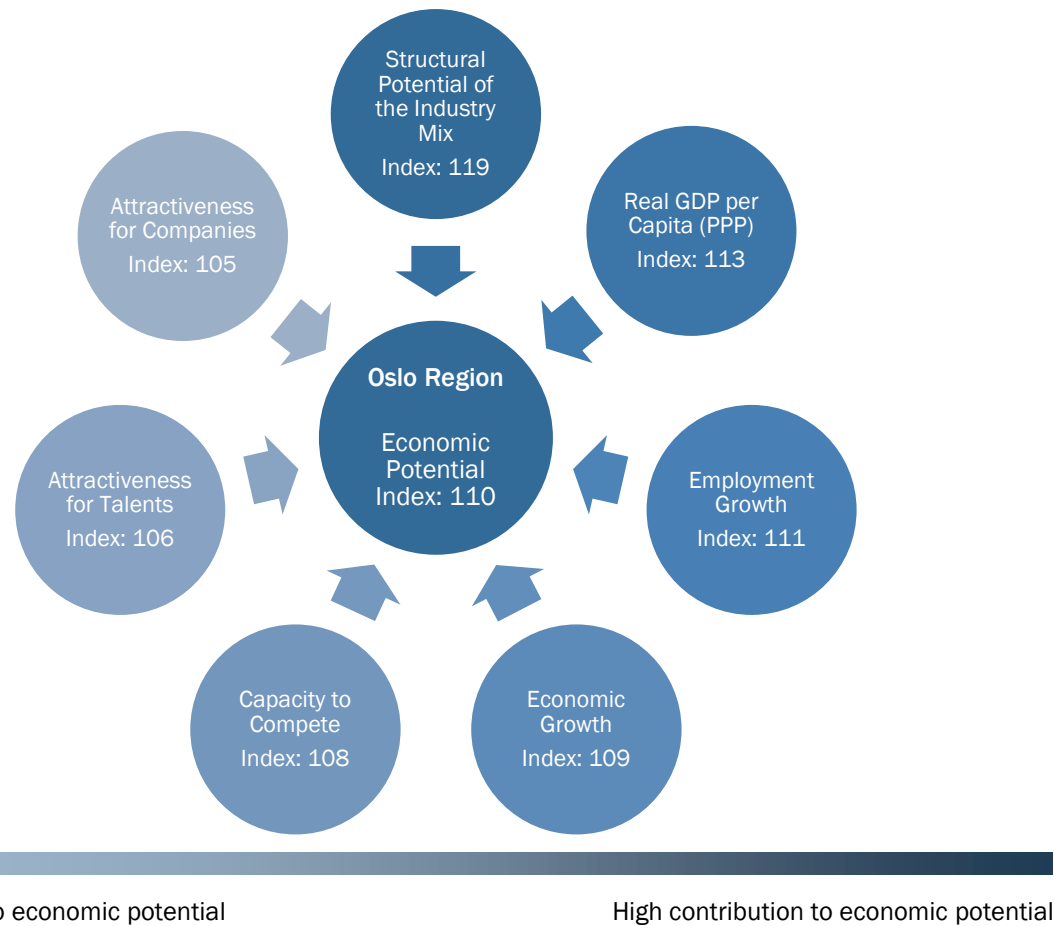


Low contribution to economic potential

High contribution to economic potential

Regional Portrait

Oslo Region



Definition of Benchmarking Regions

Region	Country	Typ	Description	BAKCode
Wien	AT	Espon	Metropolitan Region	ATxAxMWN
Stuttgart	DE	3	Spatial Planning Regions	DE1xx72x
FrankfurtRheinMain	DE	3	Spatial Planning Regions	DE7xx51x
Hamburg	DE	BAK	Metropolitan Region	DExAxMHA
Helsinki-Uusimaa	FI	2	Suuralueet/Storområden	FI1Bx
Lyon-St. Etienne	FR	BAK	BAK aggregate	FRxAxLYS
STRING	INT	BAK	BAK aggregate	INTxAxTSN + DK03x
Oslo-Västsverige	INT	OECD	BAK aggregate	NOxAxOAO + SE23x
Western Europe	INT	BAK	Group of Countries	INTxAxW15
Øresund	INT	AEBR	BAK aggregate	INTxAxORE
Milano	IT	BAK	BAK aggregate	ITxAxMMP
Seoul	KR	3	Special city	KR01x1xx
Oslo, Akershus and Östfold	NO	BAK	BAK aggregate	NOxAxOAO
Västsverige	SE	2	Riksområden	SE23x
Stockholm	SE	BAK	BAK aggregate	SExAxMSH
San Francisco Region	US	BAK	BAK aggregate	USxAxSSO