BAK
economic intelligence

West Sweden and STRING
Regional Economic Benchmark 2020

December 2020

VGR Analys 2020:57

VÄSTRA
GÖTALANDSREGIONEN

Benchmark perspectives, selection of regions, definitions, sources

- The benchmark perspectives are economic performance, attractiveness and compete-tiveness. They sum up to an evaluation of the economic potential. There are also slides on reactions to, possible effects of and conditions to cope with Covid-19.

- 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), the area from Oslo to Skåne (Western Scandinavia) and Western Europe.

- Definitions of the indicators and indexes is given in the comment field in each slide. Definition of the 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.

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 is job creation, business sector investments in research and development, a high and rapidly growing share of the economy in innovation-driven sectors and a fast growing population. 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 growth rates has risen sharply during the last decade.

- The foreseen effects of the Covid-19 pandemic is somewhat larger than for the average region in OECD. Three out of ten jobs are labeled as threatened. Almost four out of ten jobs should be possible to do from home.

Oslo

- Oslo (incl Viken) 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 working force, high productivity and a promising structure of the industry.

- The relatively weaker areas are business investments in R&D, a small innovation driven sector and a large public sector, job creation and economic growth the last decade.

- The population of Oslo including Viken is quite small compared to the benchmark regions and also situated far from the larger markets in Europe.

- The foreseen effects of the Covid-19 pandemic is somwhat larger than for the average region in OECD. One third of all jobs are seen as threatened. 45 percent of all jobs might be possible to do from home.

Öresund

- Öresund is very attractive and competitive at a European and international level.

- Öresund has been developing much stronger than the average region in Western Europe and the US and has very 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, the quality of universities, the number of patens created and a large ICT and a large and fast growing innovation driven sector in the economy.

- The weaker sides are relatively high unemployment (due to a very high level in Skåne, the Swedish part of Öresund) and a quite slow job growth.

- The foreseen effects of the Covid-19 pandemic is relatively smaller compared to the average region in OECD. Three out of ten jobs are labeled as threatened. More than four out of ten jobs should be possible to do from home.
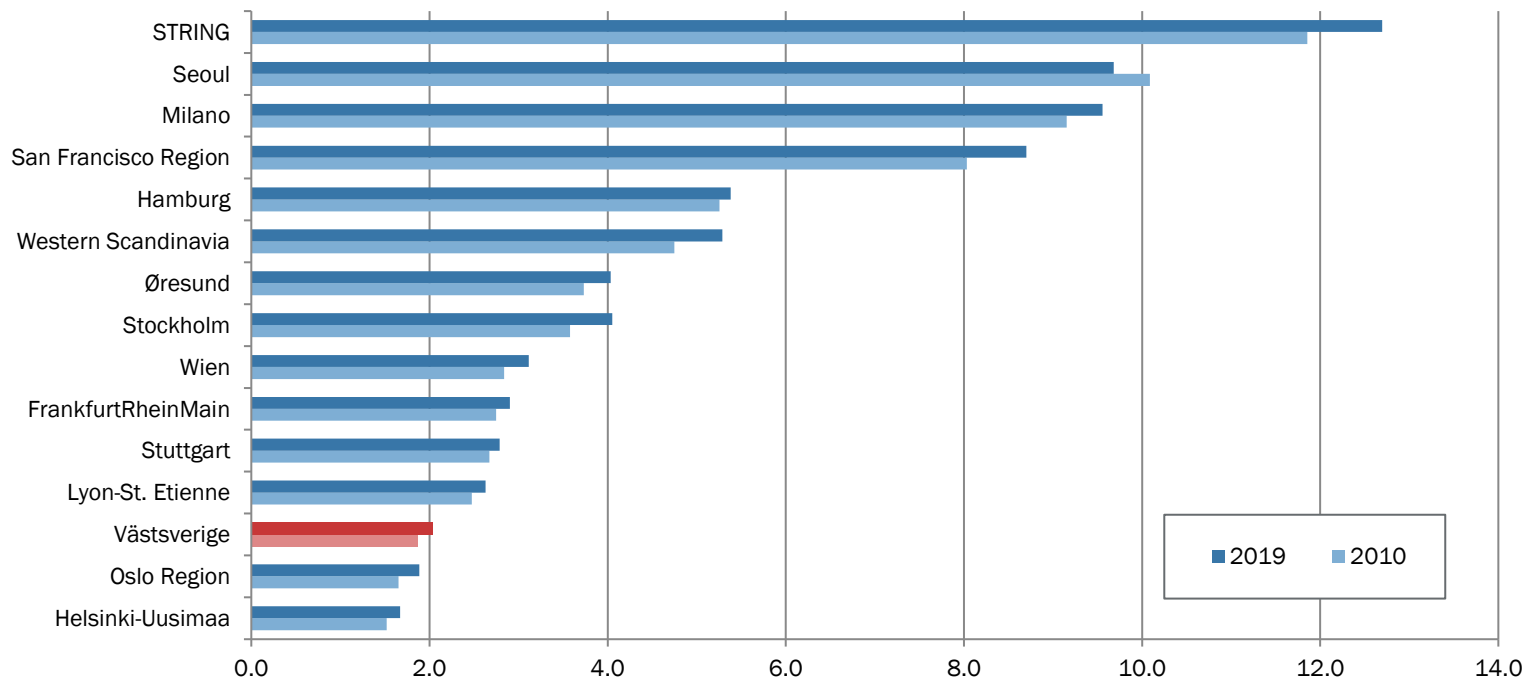
Hamburg

- 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, high job growth and quite strong productivity. The urban driven part of the economy is very strong and the public driven sector is 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, an old population, low company R&D, few patents and quality of universities in relation to the regions size.

- The foreseen effects of the Covid-19 pandemic is relatively small compared to the average region in OECD. Three out of ten jobs are labeled as threatened. More than four out of ten jobs should be possible to do from home.
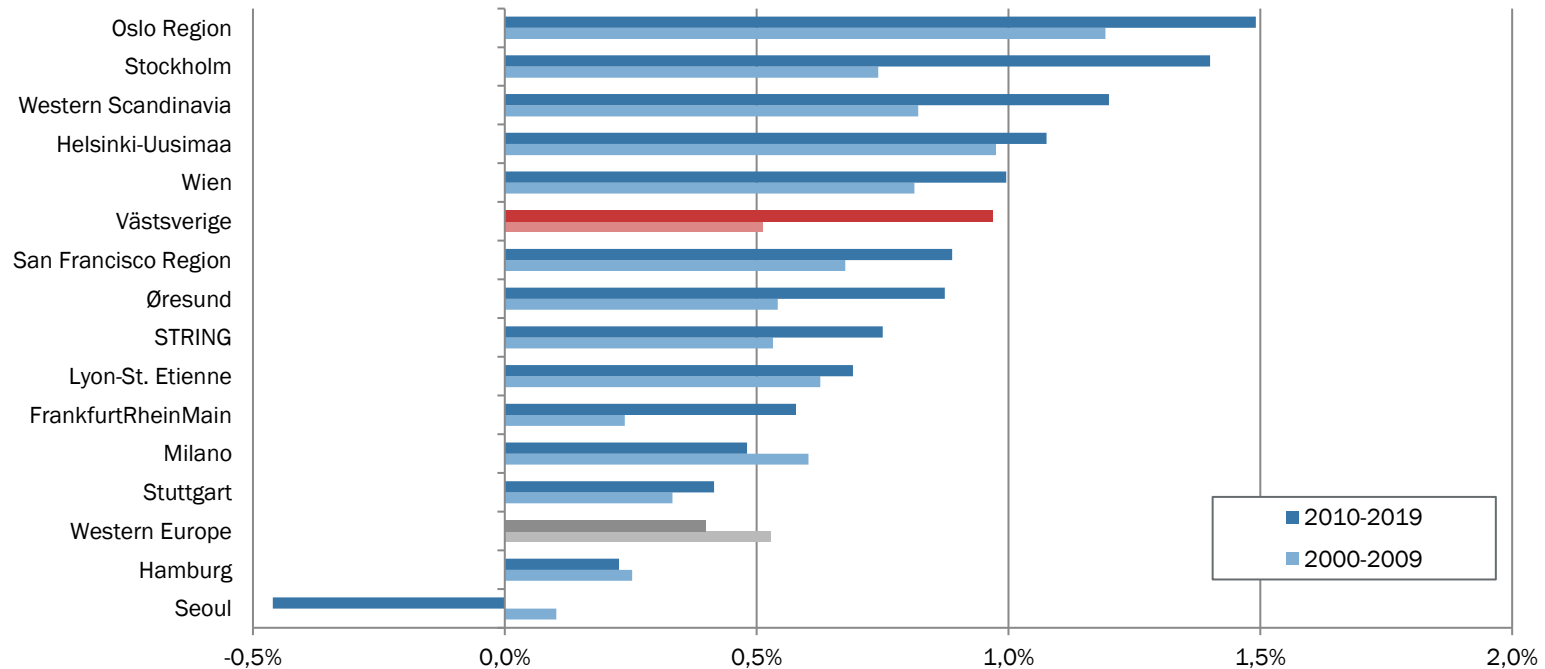
Population

Note   In Million persons, 2019/2010, Western Europe is not depicted in the graph due to large size
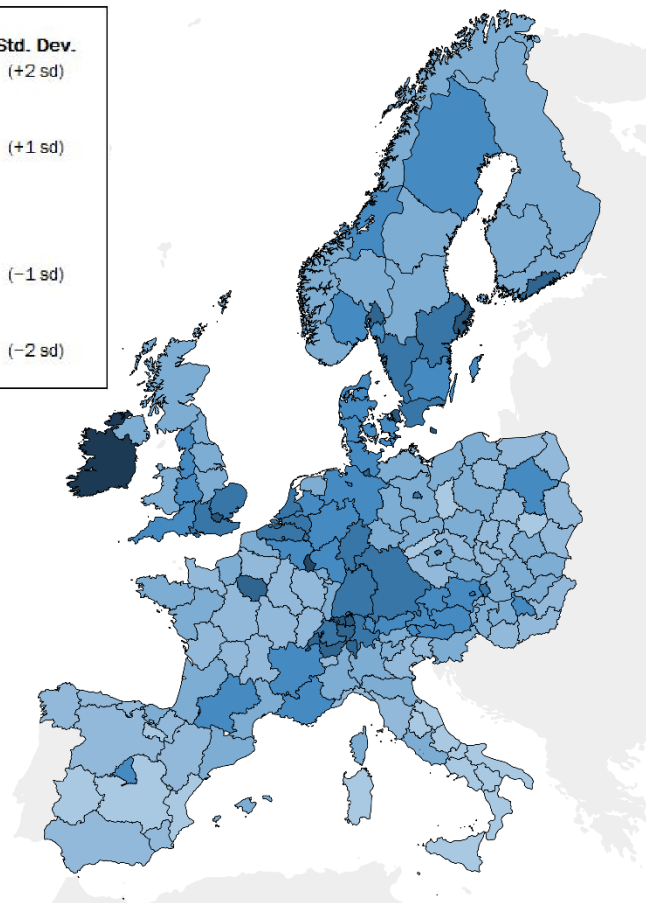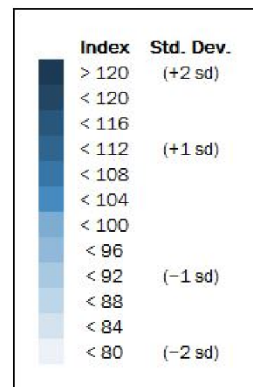
Source   BAK Economics

Population Growth

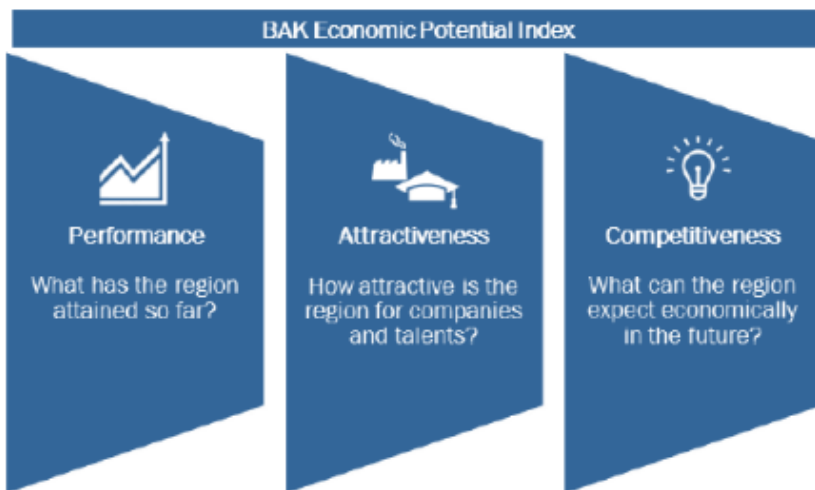|	
Note	In % p.a.
Source	BAK Economics

BAK Economic Potential Index 2019

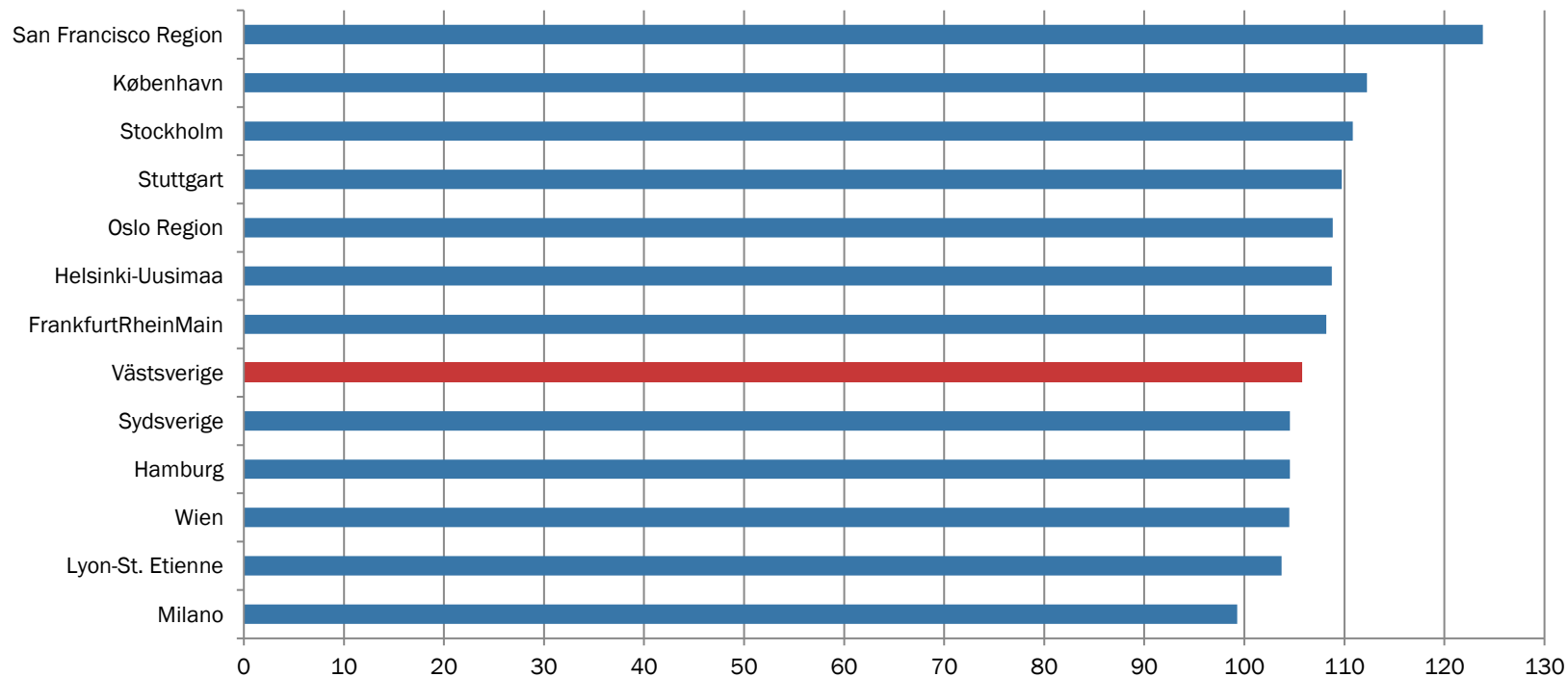**Monitoring regional economic analysis:
A comparison of European regions**

Assessing the economic potential

Index	Std. Dev.
> 120	(+2 sd)
< 120	
< 116	
< 112	(+1 sd)
< 108	
< 104	
< 100	
< 96	
< 92	(−1 sd)
< 88	
< 84	
< 80	(−2 sd)

BAK Economic Potential Index

Performance
What has the region attained so far?

Attractiveness
How attractive is the region for companies and talents?

Competitiveness
What can the region expect economically in the future?

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

BAK Economic Potential Index

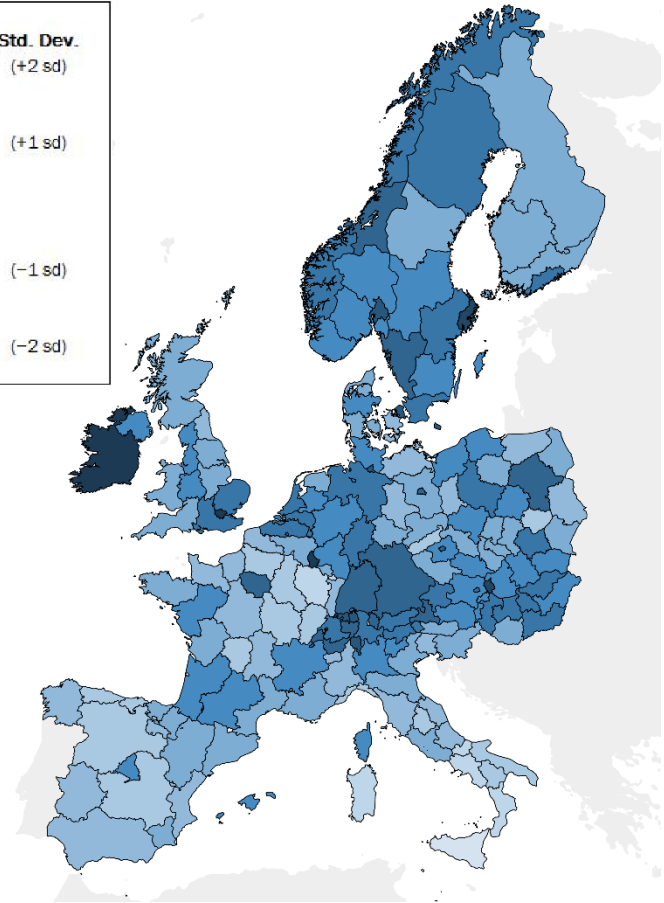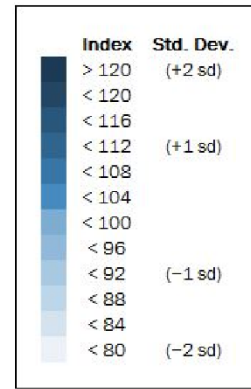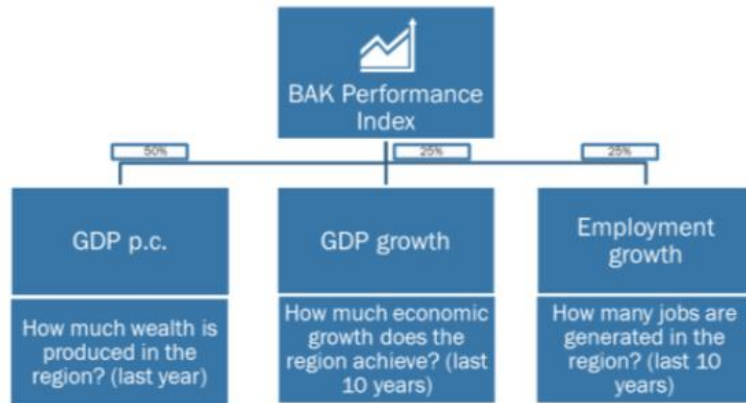| Region	Index
San Francisco Region	
København	
Stockholm	
Stuttgart	
Oslo Region	
Helsinki-Uusimaa	
FrankfurtRheinMain	
Västsverige	
Sydsverige	
Hamburg	
Wien	
Lyon-St. Etienne	
Milano	

Note   Index, WE15 & US = 100, RED 2020

Source   BAK Economics

BAK Performance Index 2019

**Monitoring regional economic analysis:
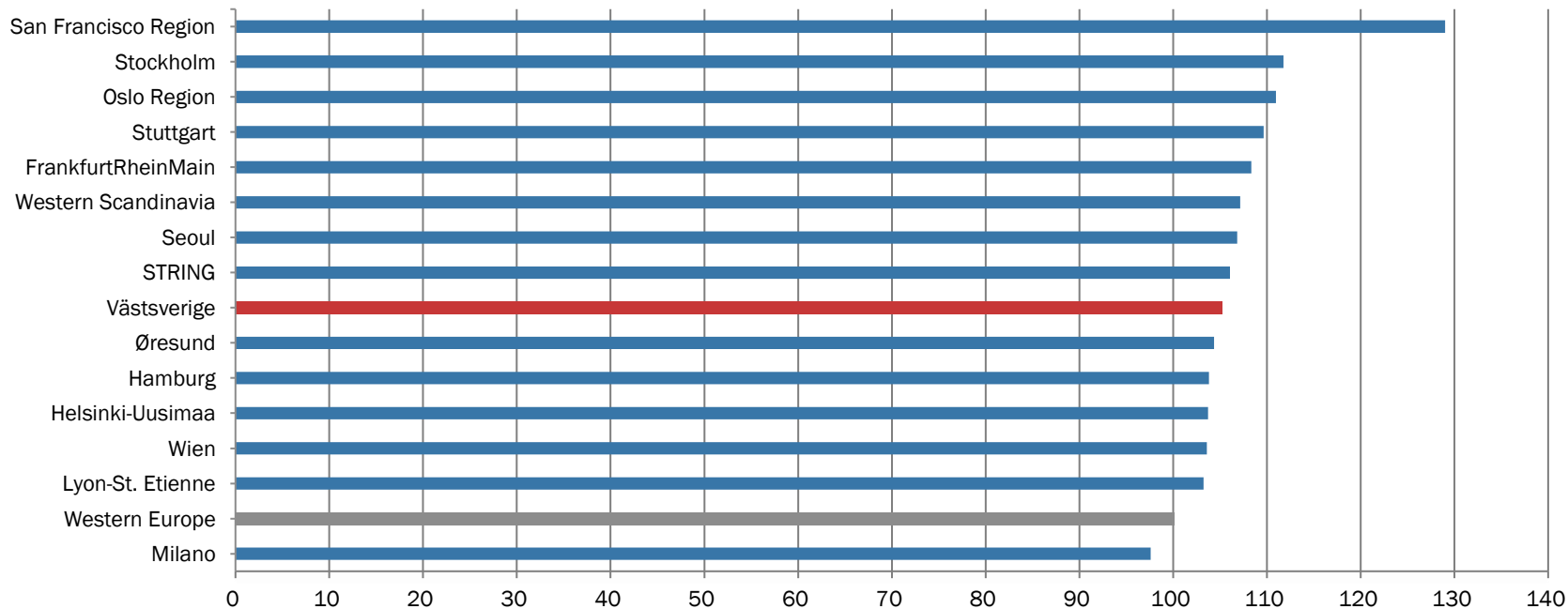A comparison of European regions**

Assessing the economic performance

Index	Std. Dev.
> 120	(+2 sd)
< 120	
< 116	
< 112	(+1 sd)
< 108	
< 104	
< 100	
< 96	
< 92	(−1 sd)
< 88	
< 84	
< 80	(−2 sd)

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

BAK Performance Index

Region	Index
San Francisco Region	129
Stockholm	112
Oslo Region	111
Stuttgart	110
FrankfurtRheinMain	109
Western Scandinavia	107
Seoul	107
STRING	106
Västsverige	106
Øresund	105
Hamburg	104
Helsinki-Uusimaa	104
Wien	104
Lyon-St. Etienne	103
Western Europe	100
Milano	98

Note   Index, WE15 & US = 100, RED 2020
Source   BAK Economics

Economic Performance
GDP per Capita

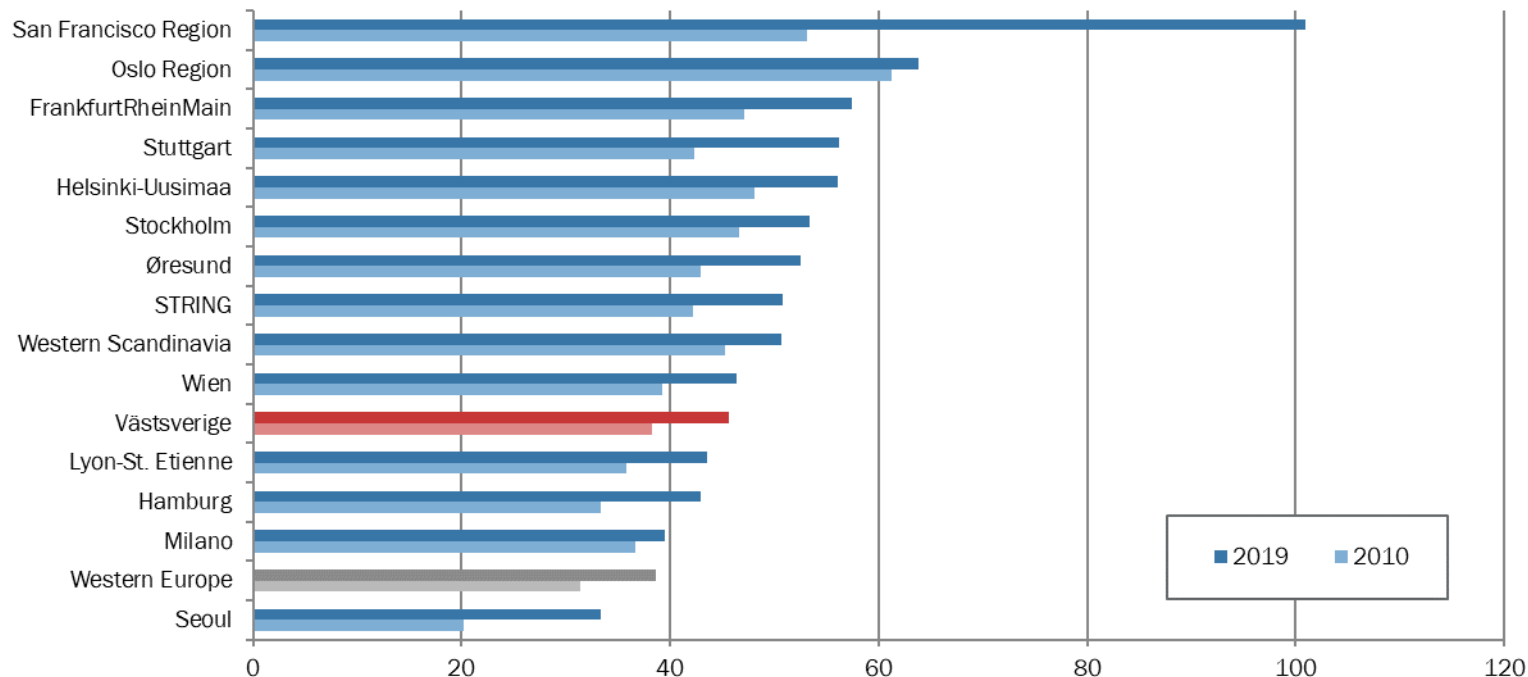Note — In 1'000 USD (at current prices and exchange rates, PPP corrected)

Source — BAK Economics, OECD, National Statistical Offices, OEF
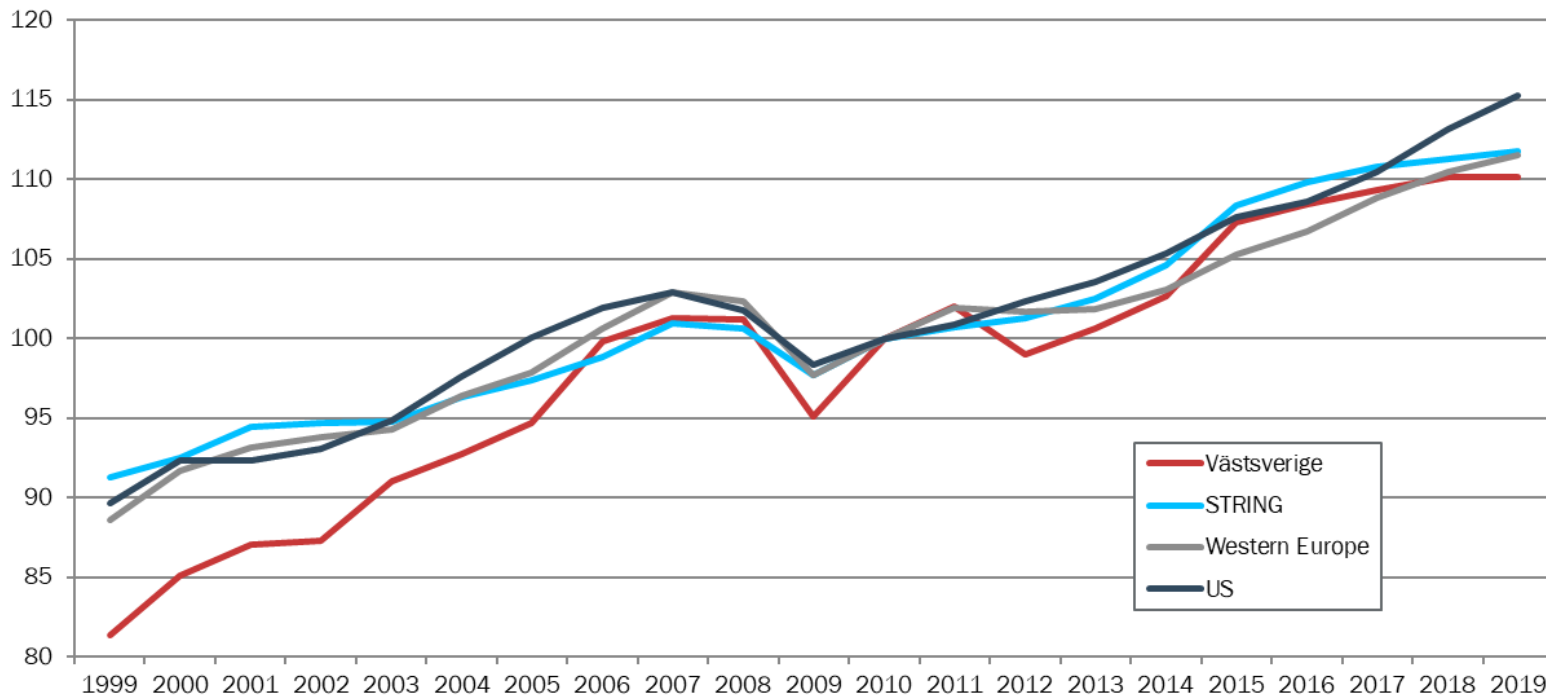
GDP per Capita

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

Source   BAK Economics, OECD, National Statistical Offices, OEF

Economic Performance
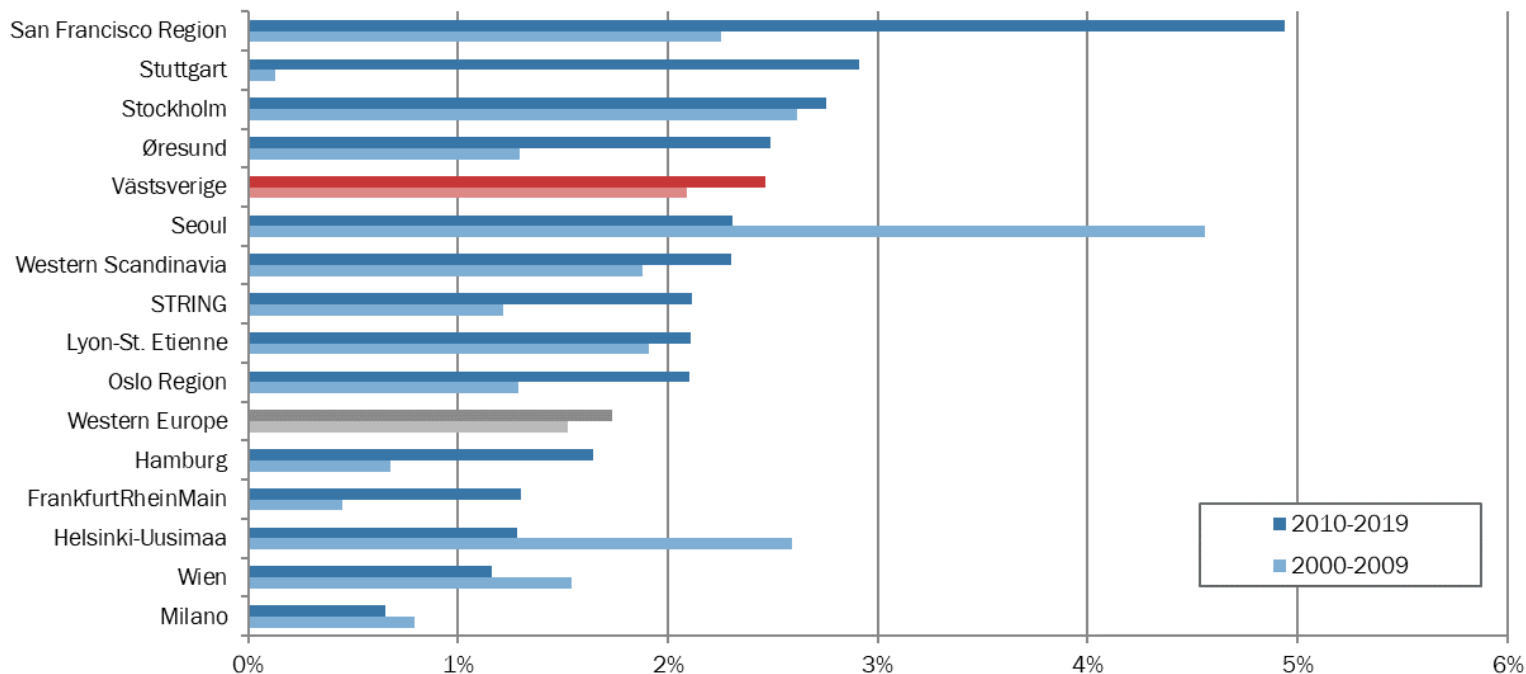# Growth of real GDP per Capita

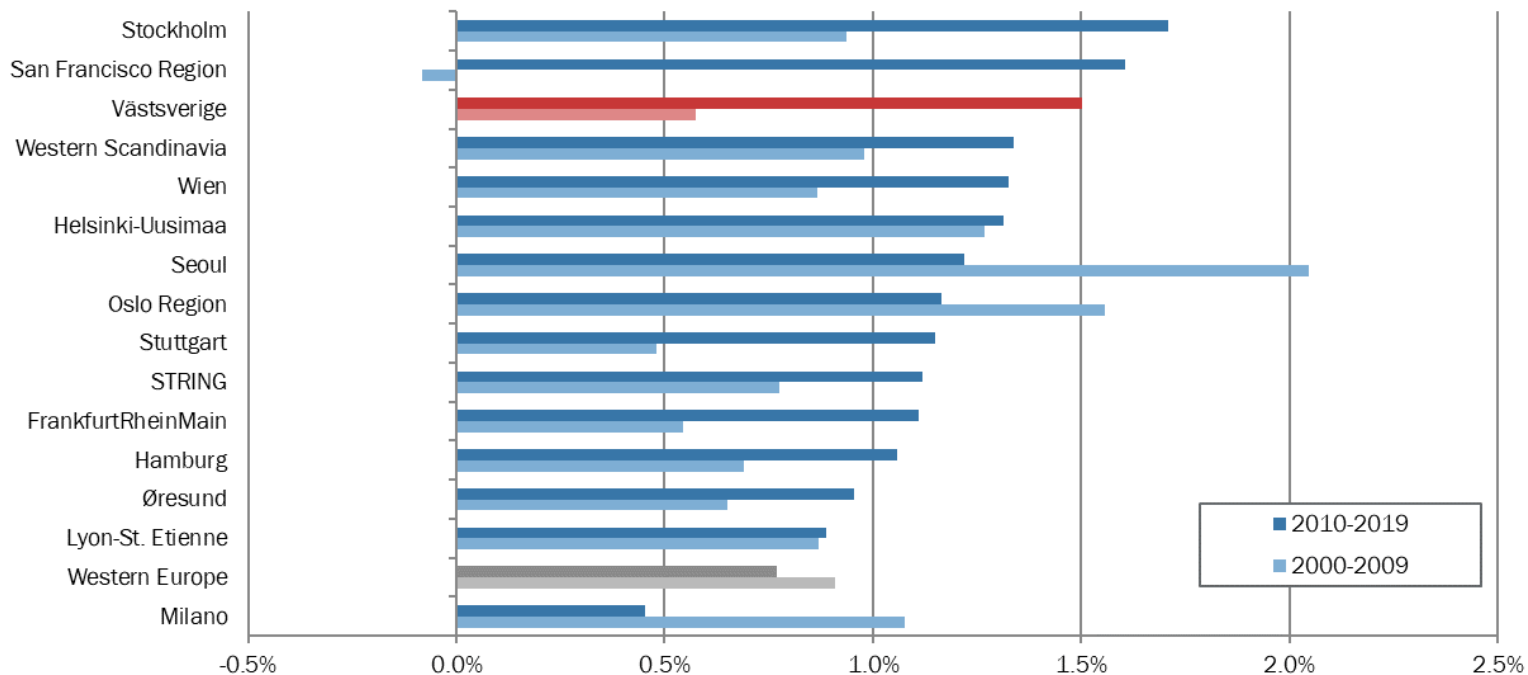| Note | Index, 2010 = 100 (at prices of preceding year) |
| Source | BAK Economics, OECD, National Statistical Offices, OEF |

Economic Performance
Real GDP Growth

Note   In % p.a. (at prices of preceding year)
Source   BAK Economics, OECD, National Statistical Offices, OEF

Employment Growth

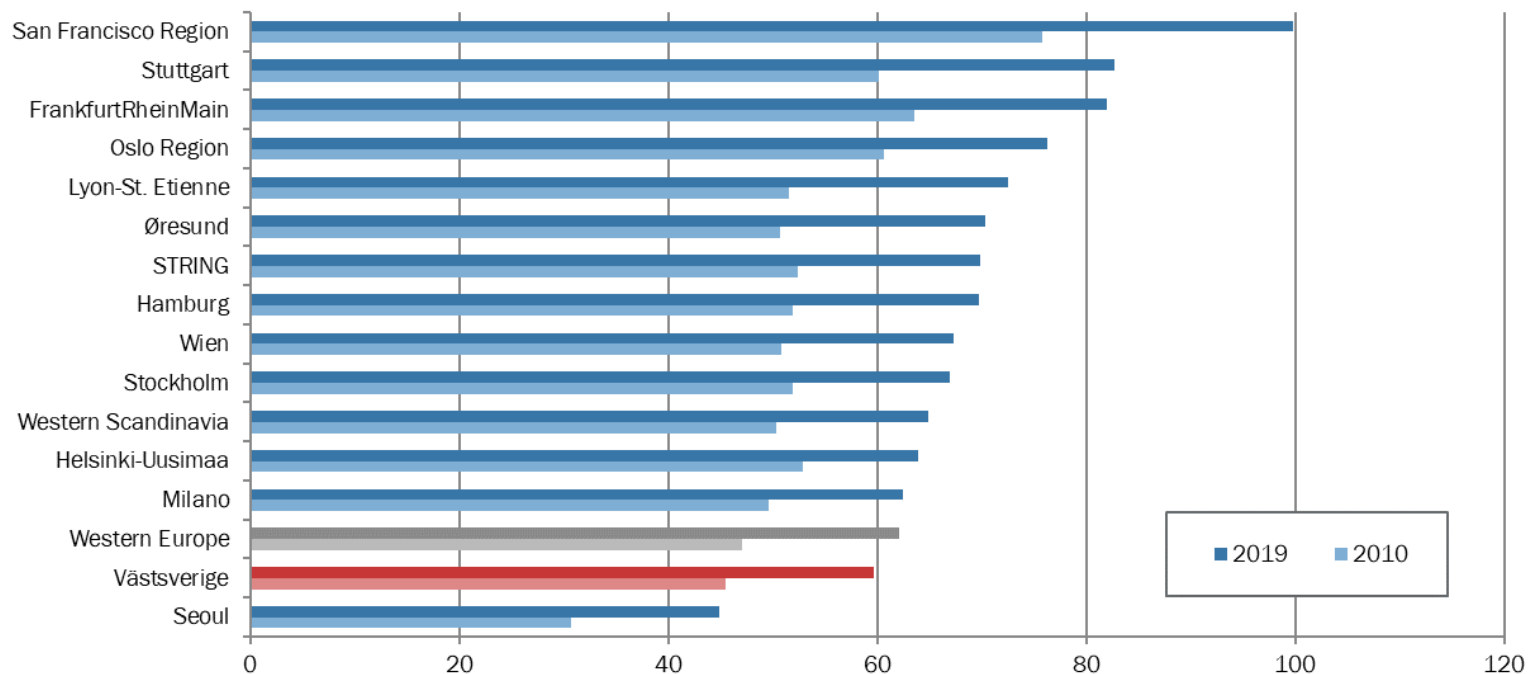

Note	In % p.a.
Source	BAK Economics, OECD, National Statistical Offices, OEF

Economic Performance
Hourly Productivity
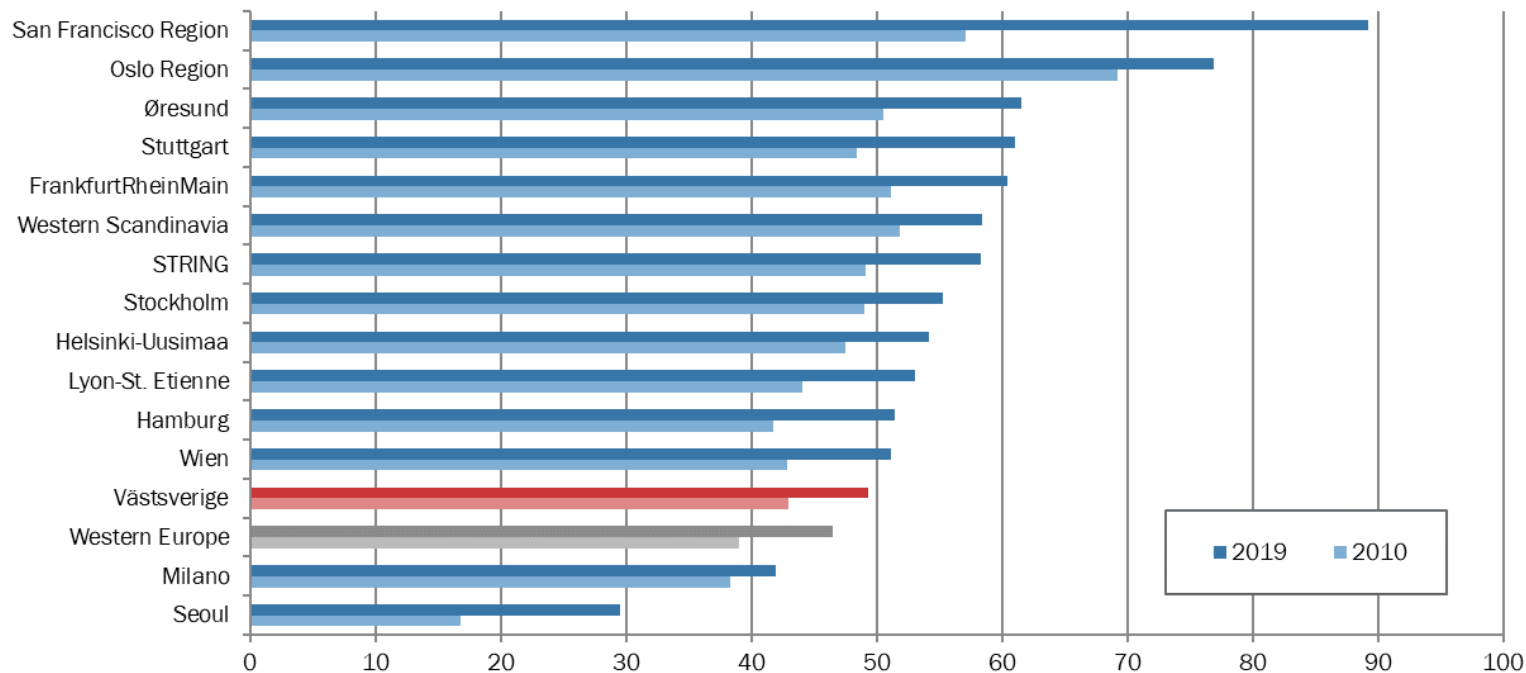

Note: In USD per hour worked (at current prices and exchange rates, PPP corrected)
Source: BAK Economics, OECD, National Statistical Offices, OEF
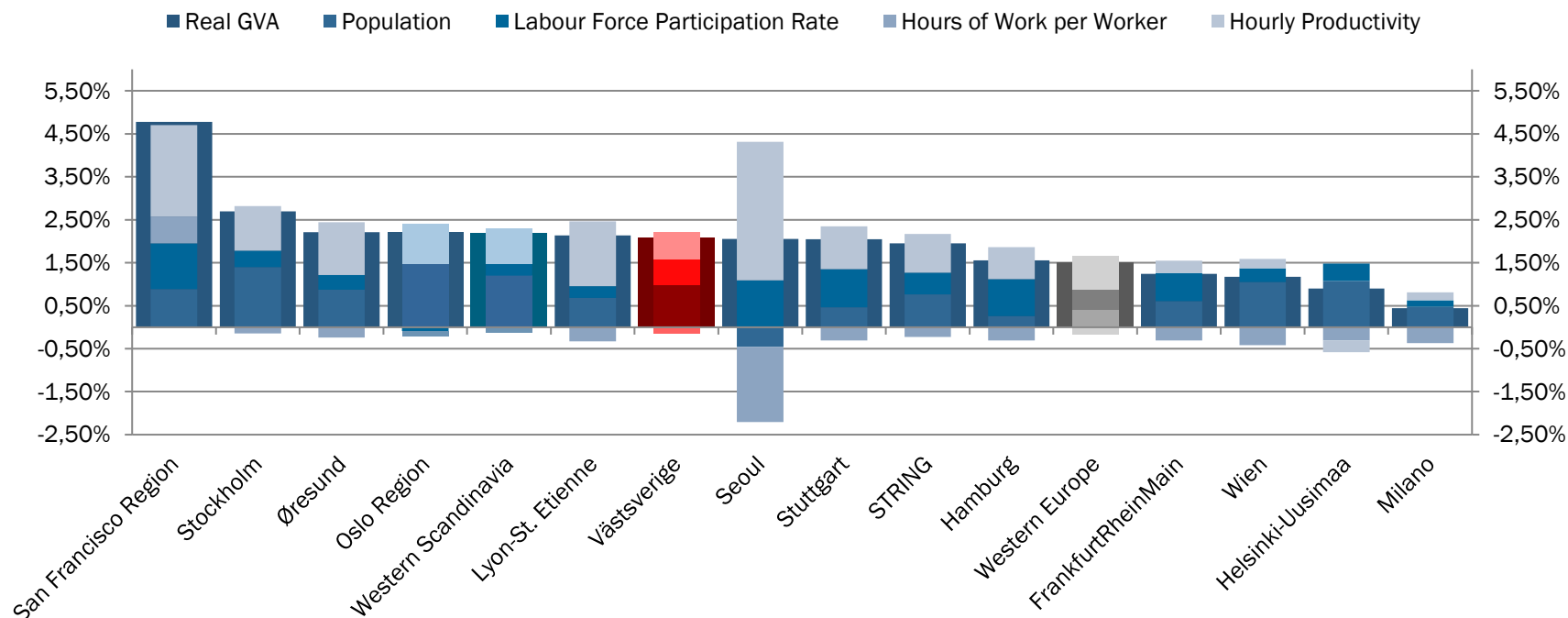
Hourly Productivity

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

Source BAK Economics, OECD, National Statistical Offices, OEF

Economic Performance
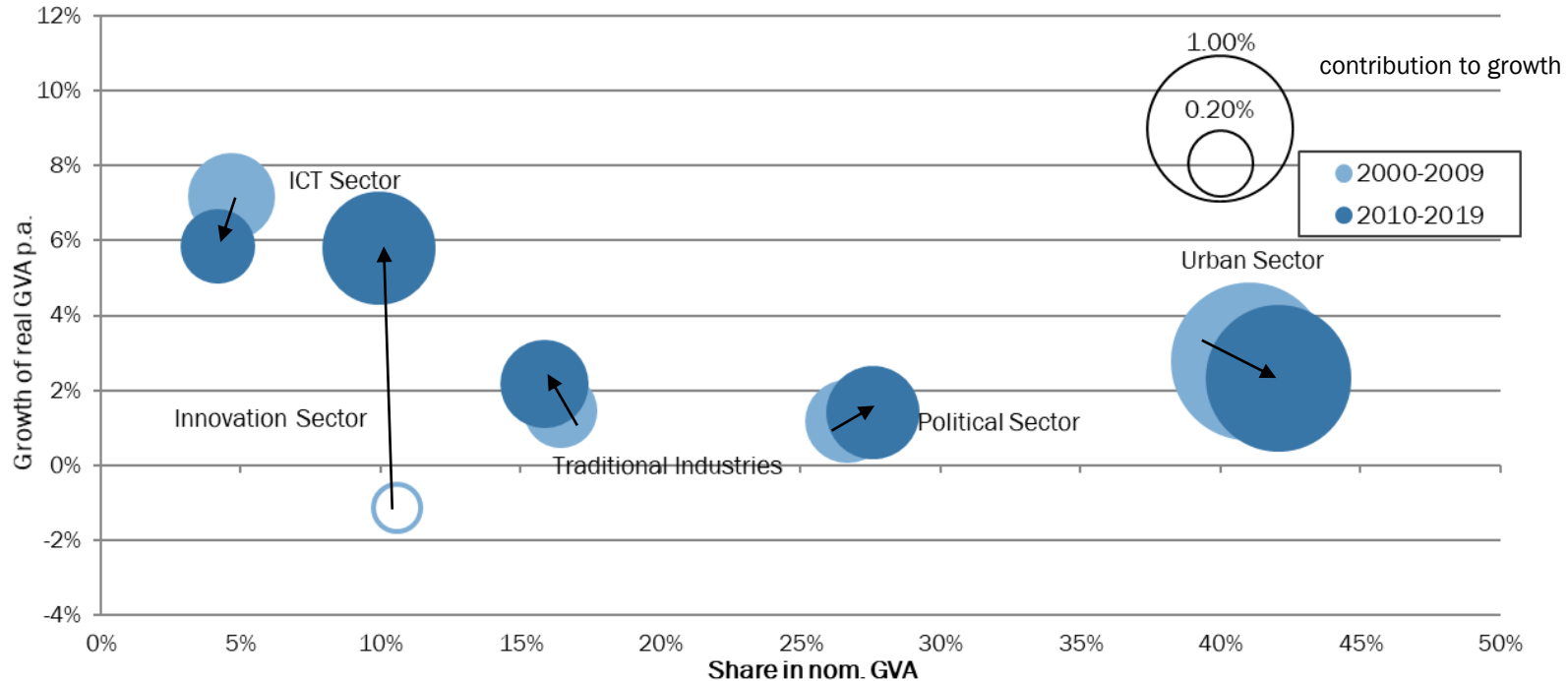# Decomposition of real Gross Value Added growth

Legend: ■ Real GVA ■ Population ■ Labour Force Participation Rate ■ Hours of Work per Worker ■ Hourly Productivity

Categories: San Francisco Region, Stockholm, Øresund, Oslo Region, Western Scandinavia, Lyon-St. Etienne, Västsverige, Seoul, Stuttgart, STRING, Hamburg, Western Europe, FrankfurtRheinMain, Wien, Helsinki-Uusimaa, Milano

Note	In % p.a., 2010-2019
Source	BAK Economics, OECD, National Statistical Offices, OEF

Driver Sectors Västsverige

Note   Total share of nominal gross value added and real gross value added growth, 2010-2019
Source   BAK Economics, OECD, National Statistical Offices, OEF

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
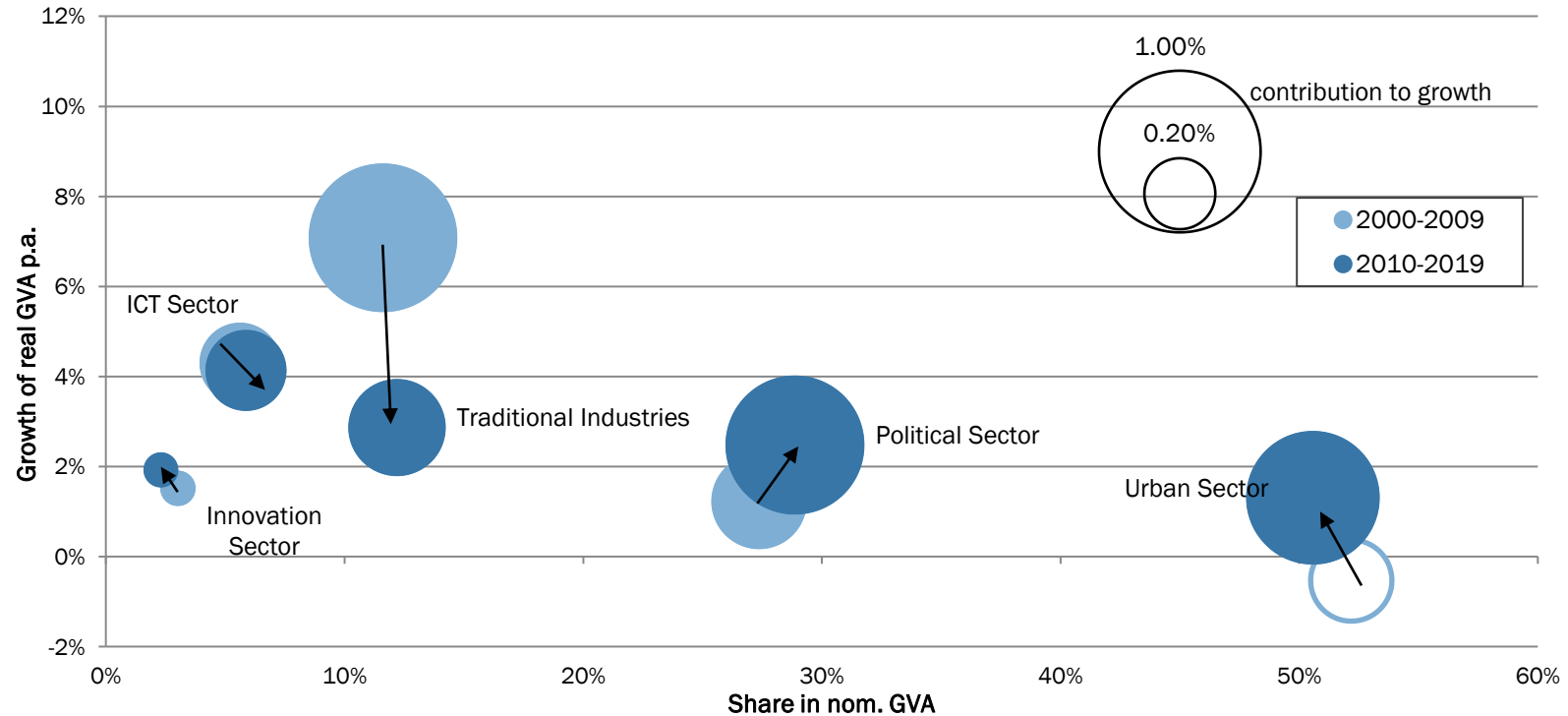- Architectural and engineering activities

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
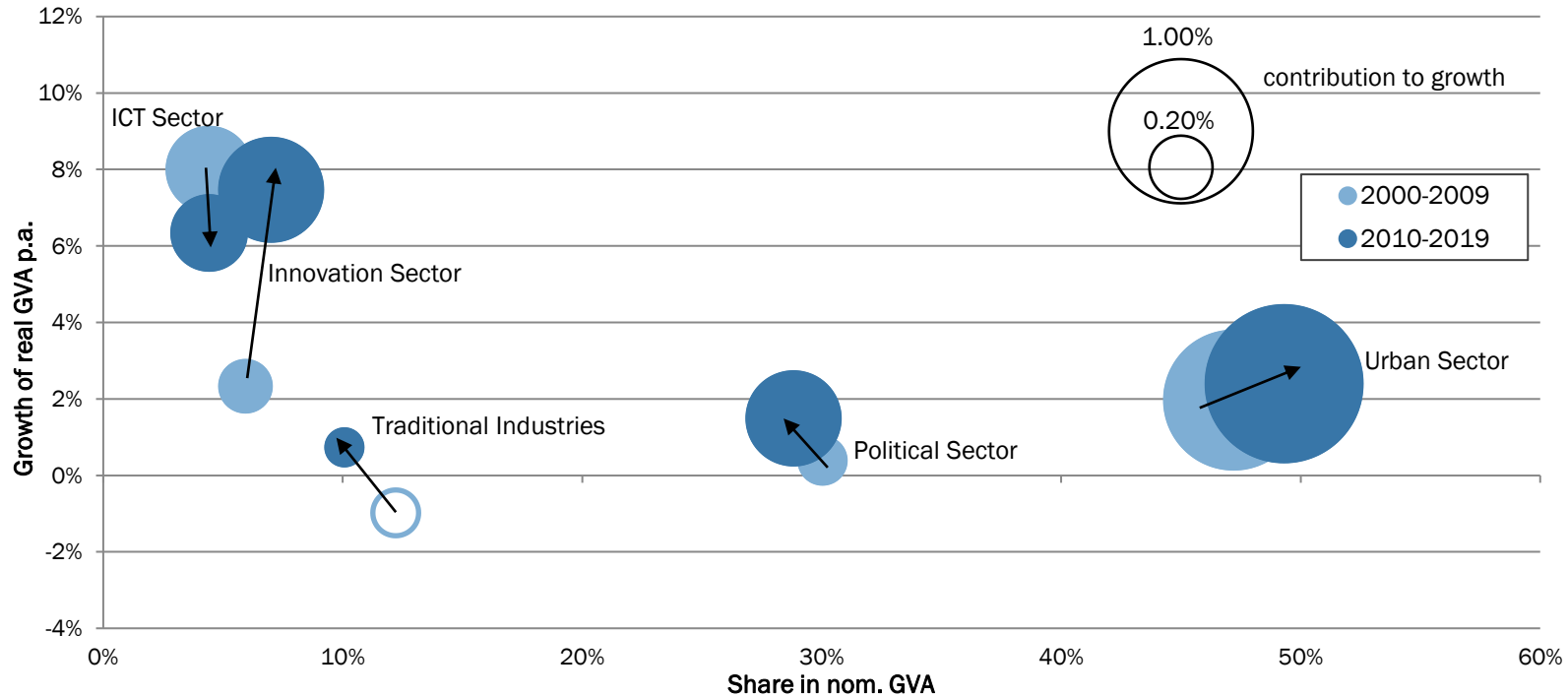
Industries
Driver Sectors Oslo Region

Note   Total share of nominal gross value added and real gross value added growth 2010 – 2019
Source   BAK Economics, OECD, National Statistical Offices, OEF

Driver Sectors Øresund
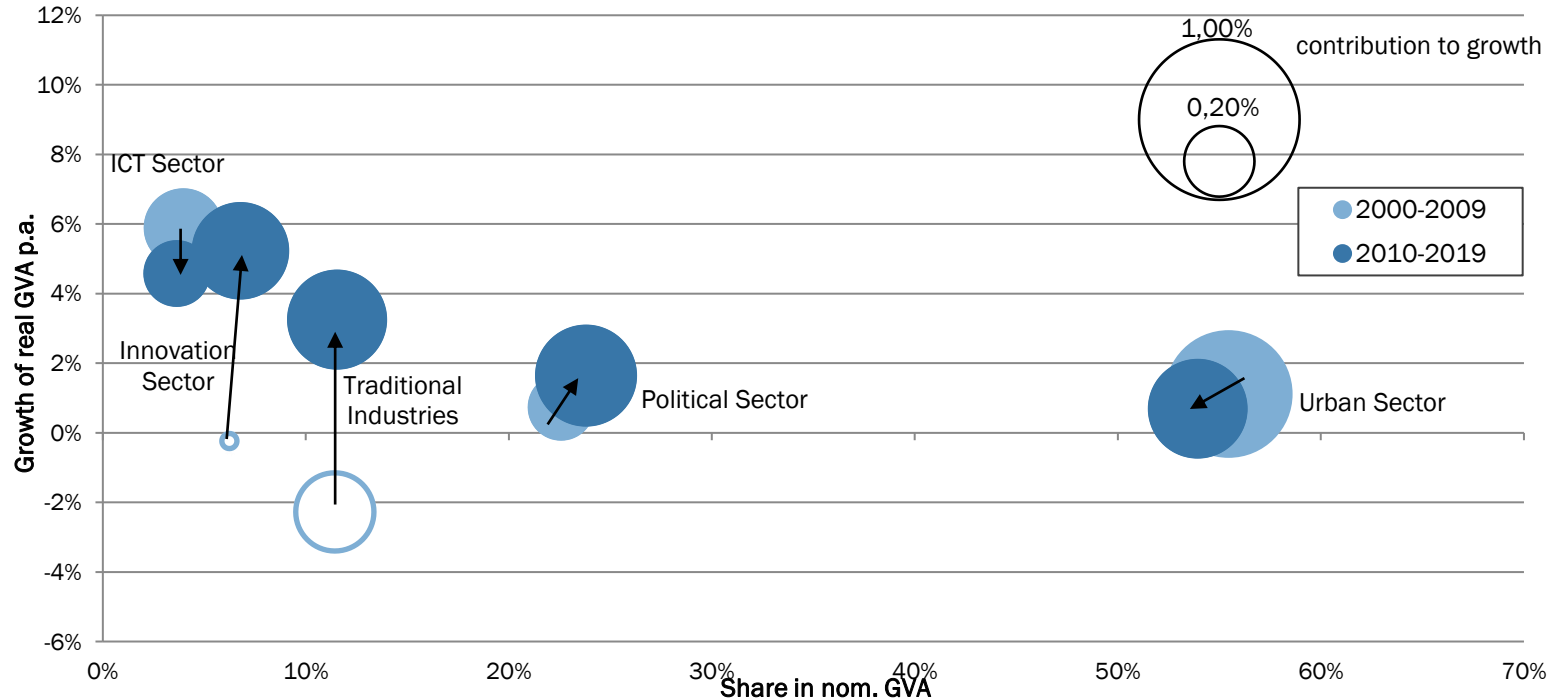

Note Total share of nominal gross value added and real gross value added growth 2010 – 2019

Source BAK Economics, OECD, National Statistical Offices, OEF
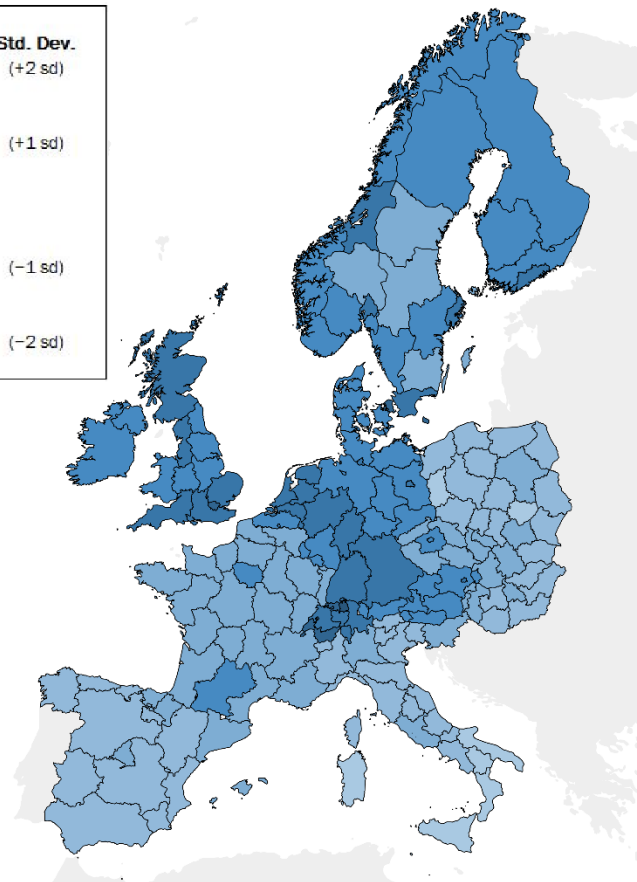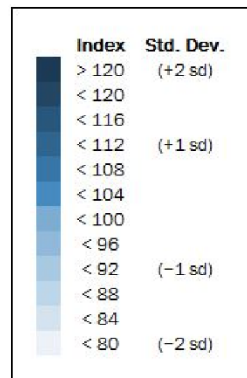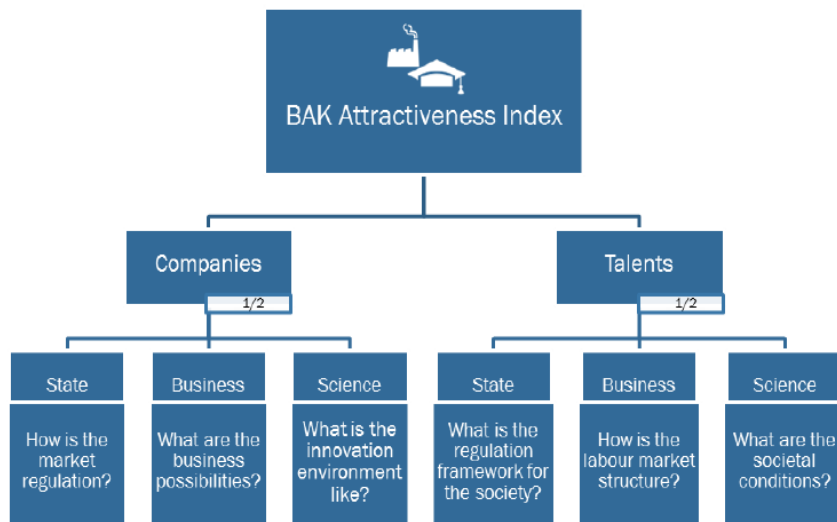
Driver Sectors Hamburg

Note: Total share of nominal gross value added and real gross value added growth, 2010 − 2019
Source: BAK Economics, OECD, National Statistical Offices, OEF

BAK Attractiveness Index 2019

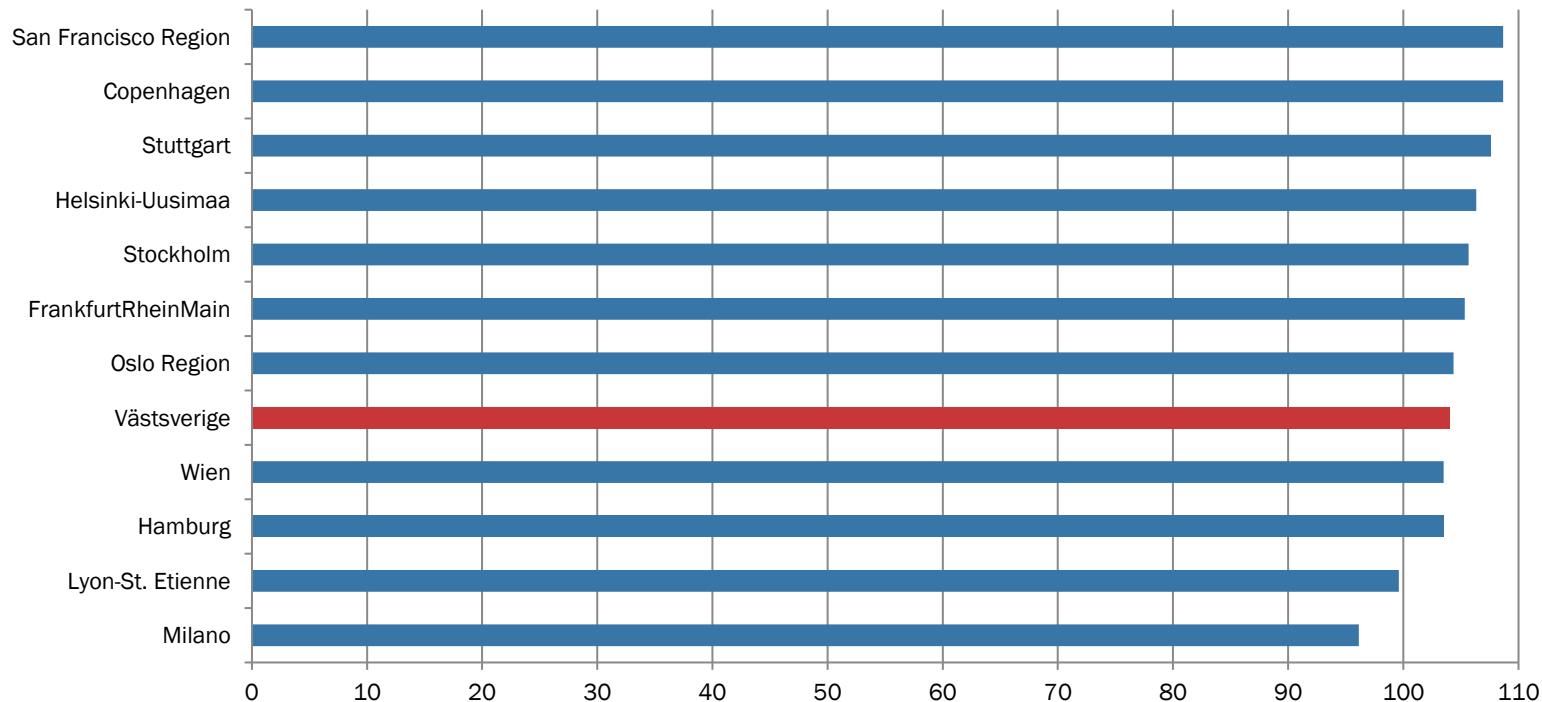**Monitoring regional economic potential:
A comparison of European regions**

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

Regional Attractiveness
BAK Attractiveness Index
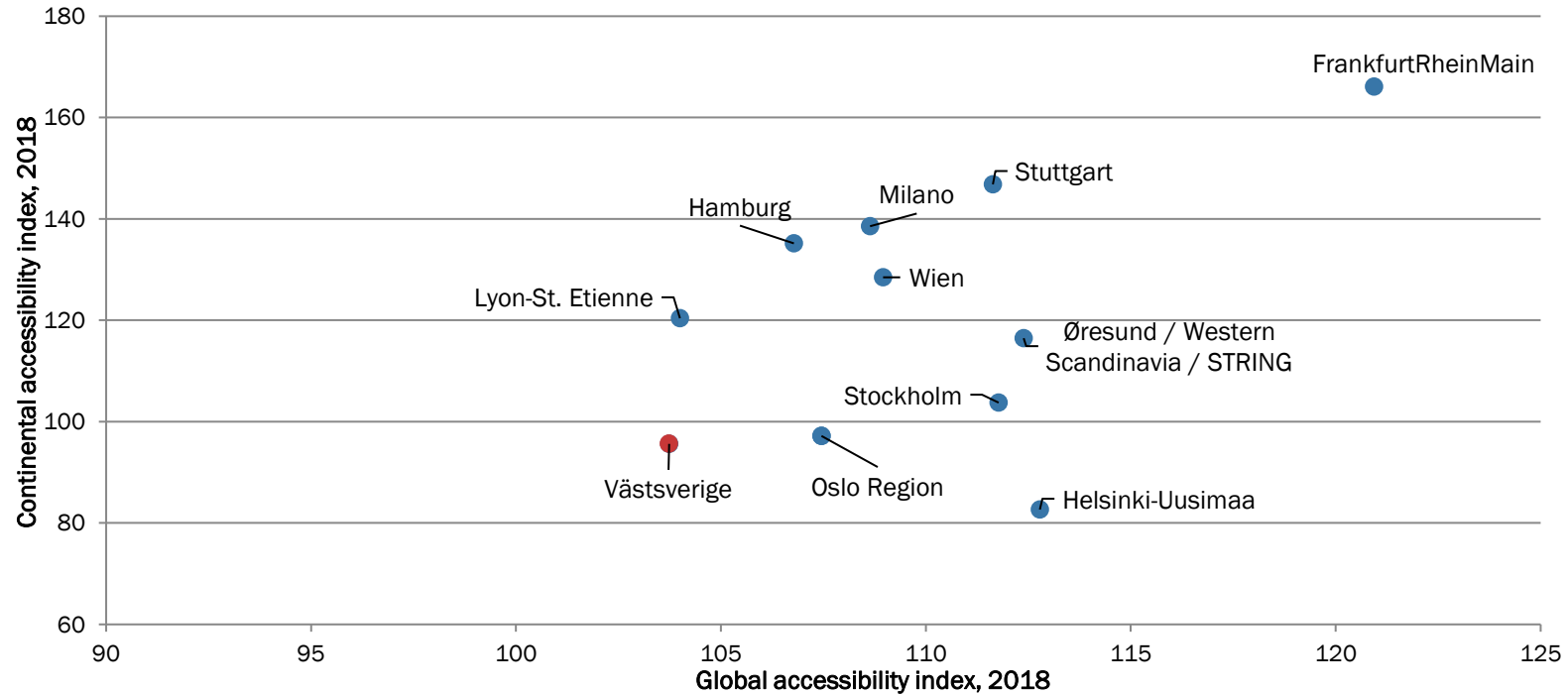

Note   Index, WE15 & US = 100, RED 2020
Source   BAK Economics

Global and Continental Accessibility

Note   Index (average accessibility of regions 2002 = 100)
Source   BAK Economics, IVT

Regional Attractiveness
Taxation of Companies and Highly Qualified Manpower

Note   Taxation of companies and highly qualified manpower, 2019
Source   BAK Economics, ZEW

Regulation of Product and Labor Markets

Product markets regulation index, 2017 (y-axis)

Labor market regulation index, 2017 (x-axis)

- Seoul
- Swedish Regions
- Oslo Region
- Lyon-St. Etienne
- San Francisco Region
- Copenhagen
- Milano
- Helsinki-Uusimaa
- German Regions
- Wien

Note	Index (0 = very liberal / 6 = very restrictive)
Source	OECD, Cato Institute, BAK Economics

Regional Attractiveness
Population Composition

| | Youth population, 2019 | Work force | Elderly population |

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

Source   BAK Economics, OECD

Regional Attractiveness
Unemployment Rate

Note   Unemployment in percent of the labour force. Frankfurt=Hesse, Stuttgart=Baden-Württemberg, Lyon-St. Etienne=Rhône-Alpes, Oslo Region=Oslo and Akershus, Øresund 2014; String Network, Western Scandinavia 2016; Milano 2017.

Source   BAK Economics, OECD

Regional Attractiveness
Patent Intensity

Region	Value
San Francisco Region	24.5
Seoul	13
Helsinki-Uusimaa	12
Stockholm	11.5
Øresund	11
Western Scandinavia	7
STRING	6
FrankfurtRheinMain	6
Stuttgart	6
Västsverige	5.5
Oslo Region	5
Lyon-St. Etienne	5
Wien	4.8
Hamburg	3.5
Western Europe	3.5
Milano	1.8

Note   Number of patent applications per 1'000 employees in secondary sector, 2015-2017

Source   BAK Economics, OECD Regpat March 2020

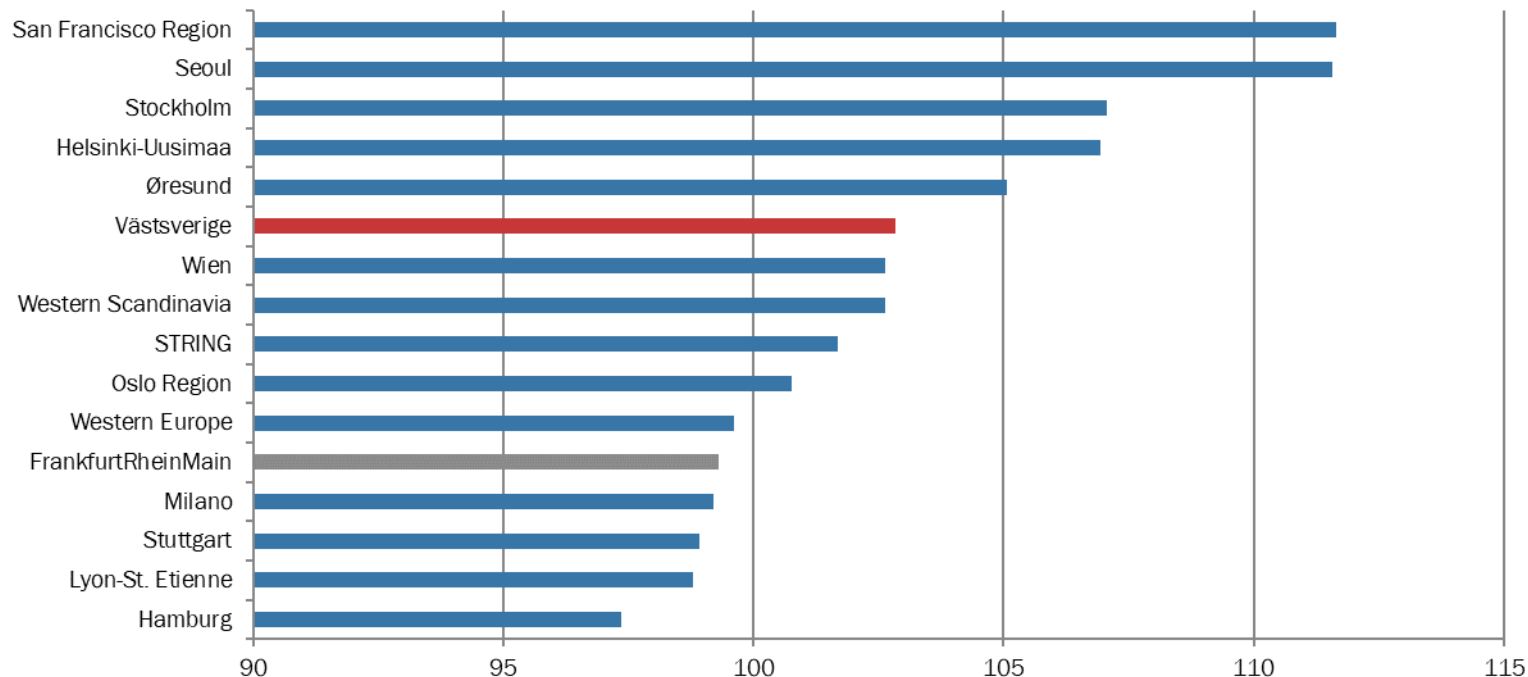# Quality of Universities

Note   Index quality of universities in all sciences, (100 = average of all TL2 in WE and US), 2019
Source   BAK Economics, CTWS Leiden 2020

Methodological Notes
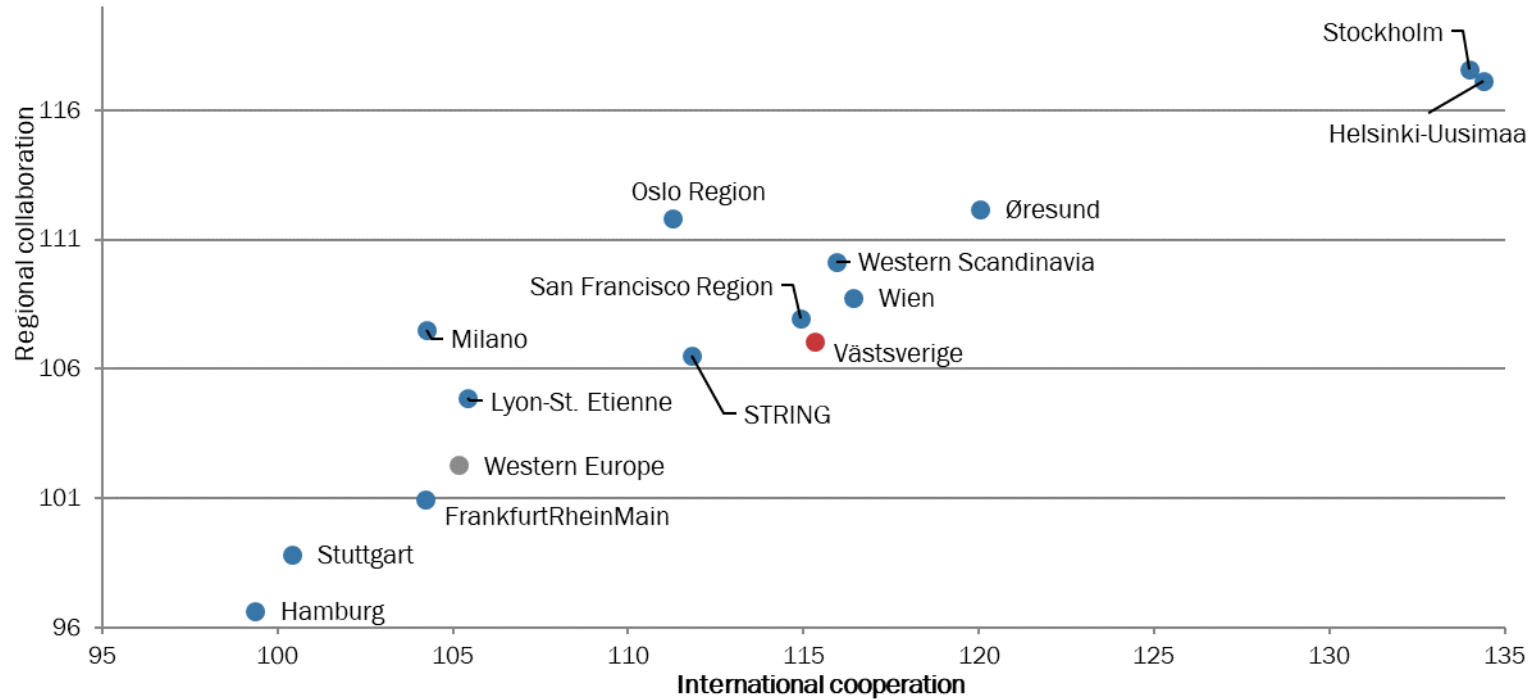## Quality of Universities

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.
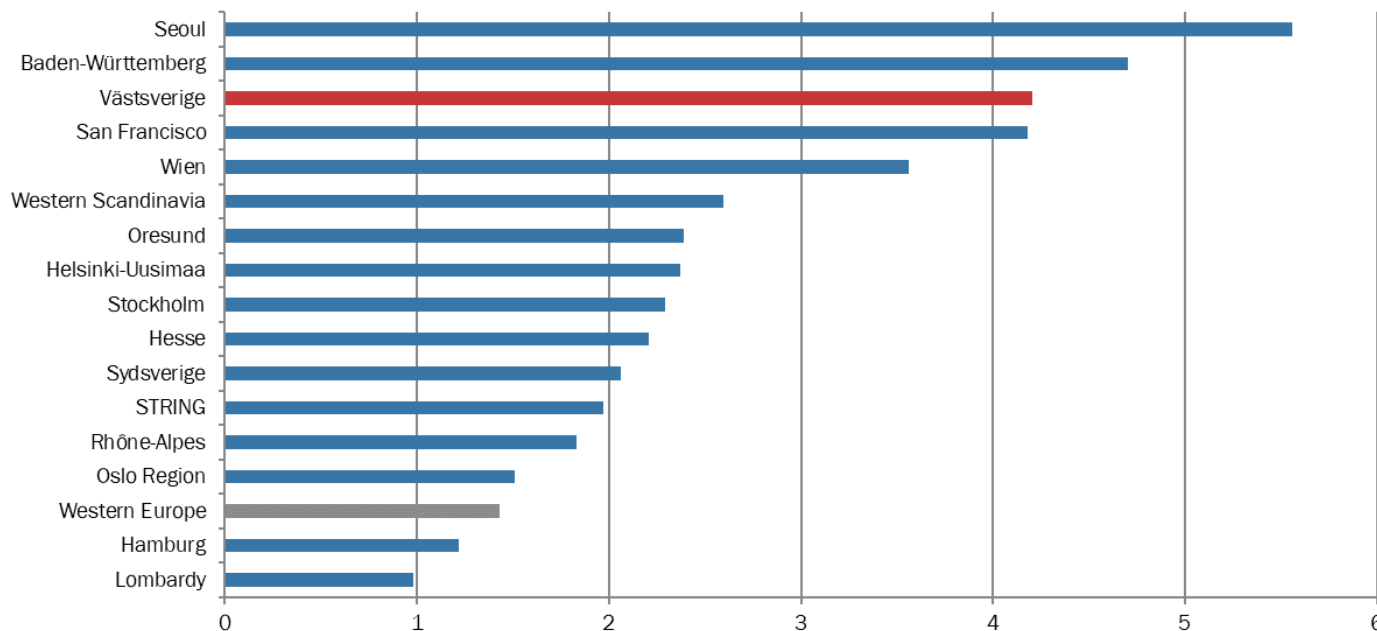
Regional and International Quality of Universities

Note   Indices international and regional collaboration (100 = average of all TL2 in WE and US), 2019
Source   BAK Economics, CTWS Leiden 2020

Expenditures on Research and Development in the Business Sector

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 2019), Statistik Austria, SCB

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 2019

**Monitoring regional economic potential:
A comparison of European regions**

Competitiveness of the region

Industry Structure Potential:
Combines regional economic structure with the
future growth potential of the various industries

Capacity to Compete:
Shows the competitiveness of industries exposed
to inter-regional and international competition

Index	Std. Dev.
> 120	(+2 sd)
< 120	
< 116	
< 112	(+1 sd)
< 108	
< 104	
< 100	
< 96	
< 92	(−1 sd)
< 88	
< 84	
< 80	(−2 sd)

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

Competitiveness
BAK Competitiveness Index

Region	Index
San Francisco Region	127
Stockholm	113
Helsinki-Uusimaa	112
Oslo Region	111
Øresund	111
FrankfurtRheinMain	109
Stuttgart	108
STRING	107
Lyon-St. Etienne	106
Hamburg	105
Western Scandinavia	105
Västsverige	105
Wien	105
Seoul	104
Milano	101
Western Europe	101

Note   Index, WE15 & US = 100, RED 2020

Source   BAK Economics

Oxford Stringency Index

**Monitoring regional impact
of the COVID-19 Pandemic:
A comparison of European regions**
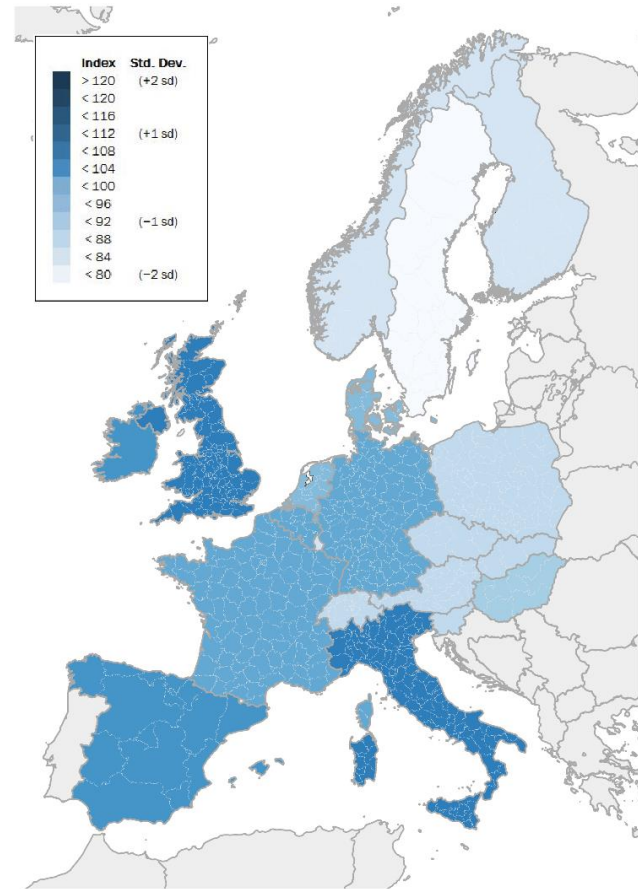
Definition:
Government measures to contain the spread of
the pandemic (school/workplace closing,
restriction on movement, gatherings and travel,
etc.)

Index	Std. Dev.
> 120	(+2 sd)
< 120	
< 116	
< 112	(+1 sd)
< 108	
< 104	
< 100	
< 96	
< 92	(−1 sd)
< 88	
< 84	
< 80	(−2 sd)

Average of Western European Countries = 100

Note   Gov. Response Stringency Index, March to October 2020
Source   BAK Economics, University of Oxford
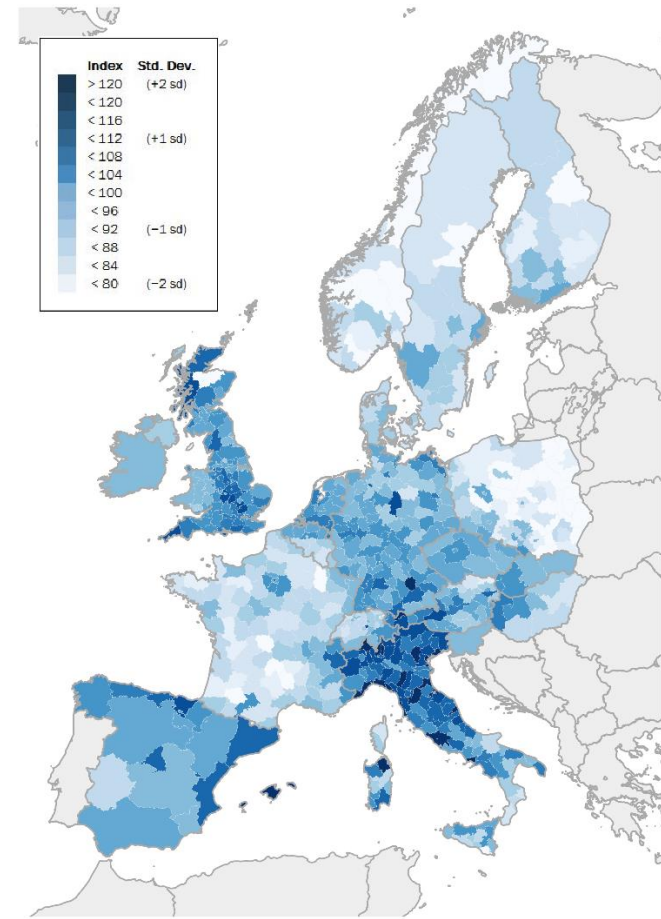
BAK Index of Covid-19 Economic Impact

**Monitoring regional economic impact
of the COVID-19 Pandemic:
A comparison of European regions**

Definition:
Difference of economic forecasts in 2020
compared to those of 2019 for 113 sectors
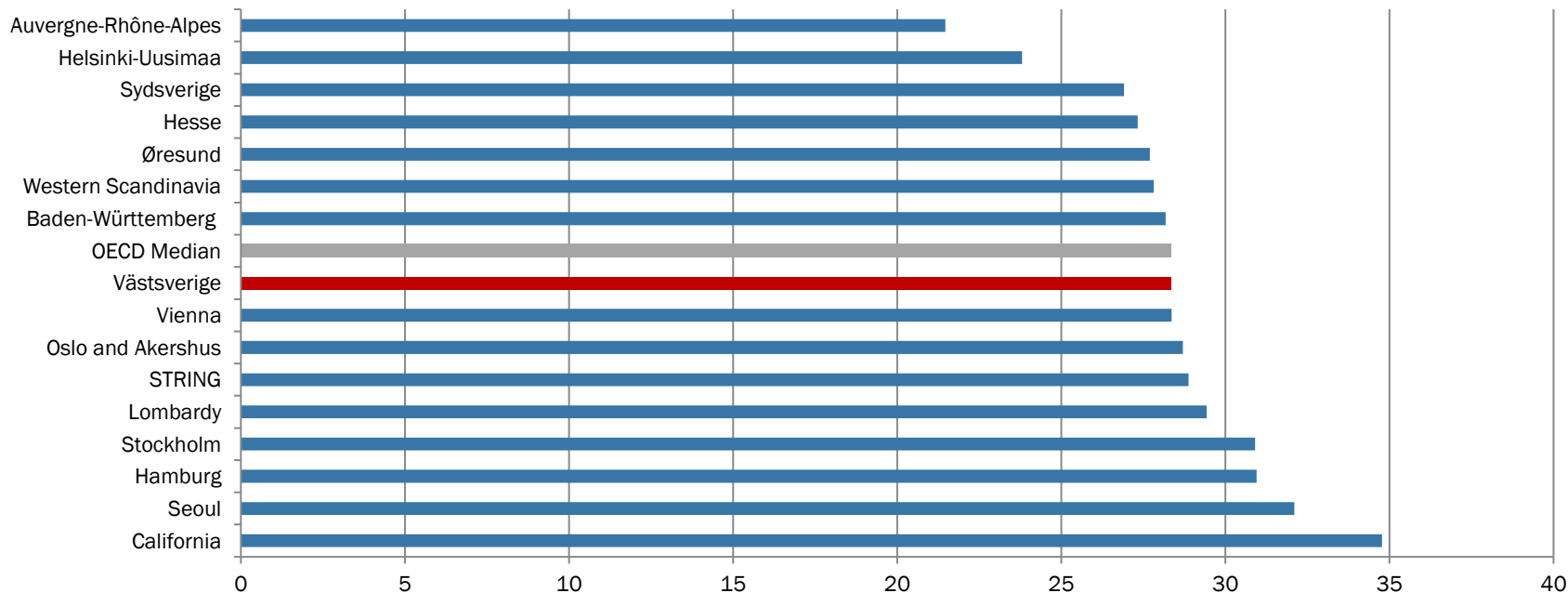multiplied with the employment structure of the
respective region

Index	Std. Dev.
> 120	(+2 sd)
< 120	
< 116	
< 112	(+1 sd)
< 108	
< 104	
< 100	
< 96	
< 92	(−1 sd)
< 88	
< 84	
< 80	(−2 sd)

Note	Change of forecasts 2019 to 2020 weighted with the structure of the respective regional economy
Source	BAK Economics, Oxford Economics

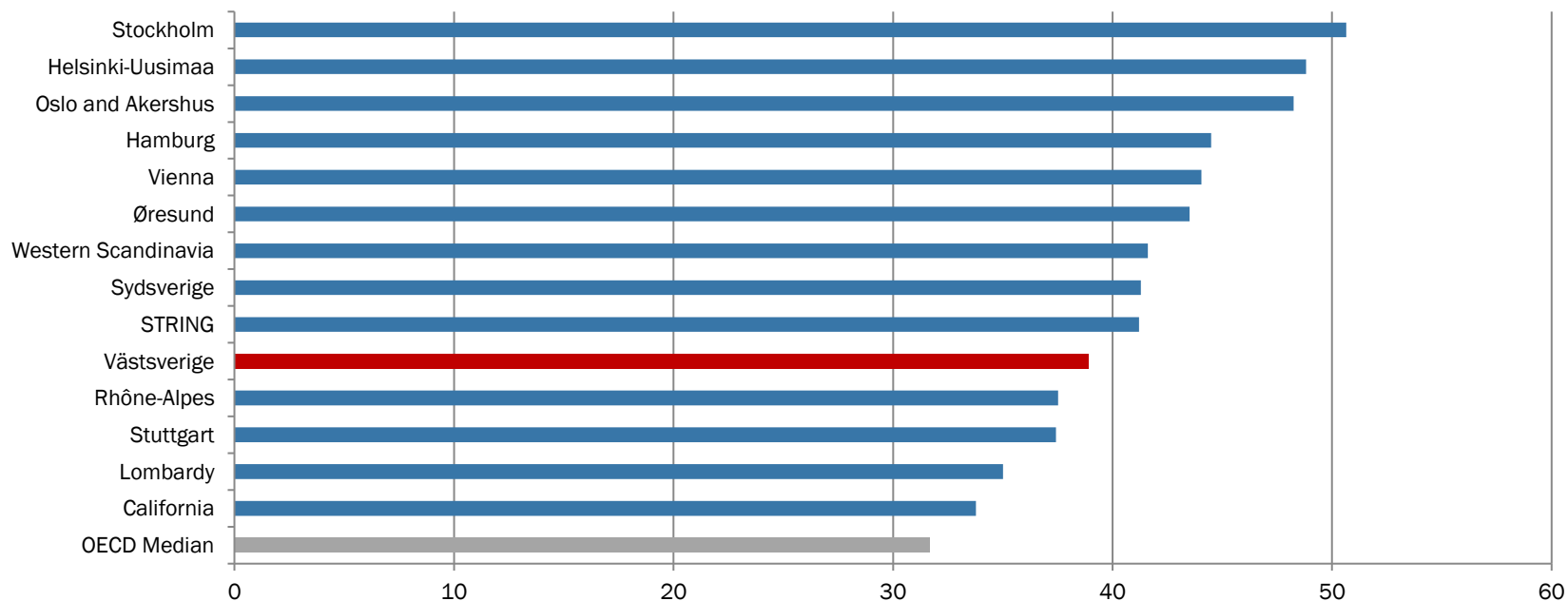Average TL2 in Western European Countries = 100

Share of jobs in sectors most at risk from COVID-19 containment measures

Note   Share (in percent) of jobs in sectors most at risk from COVID-19 containment measures: Frankfurt=Hesse, Milano=Lombardy, Stuttgart=Baden-Württemberg, San Francisco=California, Rhône-Alpes = Auvergne-Rhône-Alpes, String= Oslo and Akershus, South-Eastern Norway, Västsverige, Sydsverige, Denmark Capital Region, Denmark Zealand Region, Hamburg, Schleswig-Holstein, Western Scandinavia=Oslo and Akershus, South-Eastern Norway, Västsverige, Sydsverige, Øresund=Sydsverige, Denmark Capital Region, Denmark Zealand Region

Source   OECD, BAK Economics

Share of jobs amenable to remote working

Note	Share of jobs amenable to remote working in percent in 2018. Region Milano=Lombardy, Stuttgart=Baden-Württemberg, San Francisco=California, String= Oslo and Akershus, South-Eastern Norway, Västsverige, Sydsverige, Denmark Capital Region, Denmark Zealand Region, Hamburg, Schleswig-Holstein, Western Scandinavia=Oslo and Akershus, South-Eastern Norway, Västsverige, Sydsverige, Øresund=Sydsverige, Denmark Capital Region, Denmark Zealand Region, Data for Seoul and Frankfurt is not available.
Source	OECD, BAK Economics

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
Western Scandinavia	INT	OECD	BAK aggregate	INTxAxWSV
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 and Viken	NO	BAK	BAK aggregate	NOxAxOAV
Västsverige	SE	2	Riksområden	SE23x
Stockholm	SE	BAK	BAK aggregate	SExAxMSH
San Francisco Region	US	BAK	BAK aggregate	USxAxSSO