

Competitiveness and Innovation in the V4 Countries

Academic educational program
and digital educational material
for students, Ph.D. students and
researchers

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„Innovation is as essential to sustainable growth and jobs as water is to life. Economies that do not innovate will wither away.“

Máire Geoghegan-Quinn
European Commissioner for
Research, Innovation and
Science



Content

1. Global Competitiveness Report 2012-2013

- Goals, Global Competitiveness Index, framework, pillars, GCI rankings -TOP 10, V4 comparison, Pillar 12: innovation

2. Innovation Union Scoreboard 2013

- Goals, measurement framework, indicators, performance groups, growth in innovation performance, V4 comparison
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1.

Global Competitiveness Report 2012-2013

Global Competitiveness Reports

- World Economic Forum - for more than three decades
 - Goal
 - to study and benchmark the factors underpinning national competitiveness
 - to provide insight
 - to stimulate the discussion among all stakeholders
 - to help countries to overcome the obstacles to improving competitiveness
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Global Competitiveness Index

- Since 2005 competitiveness analysis has been based on the Global Competitiveness Index (GCI)
 - GCI
 - a comprehensive tool
 - measures the microeconomic and macroeconomic foundations of national competitiveness
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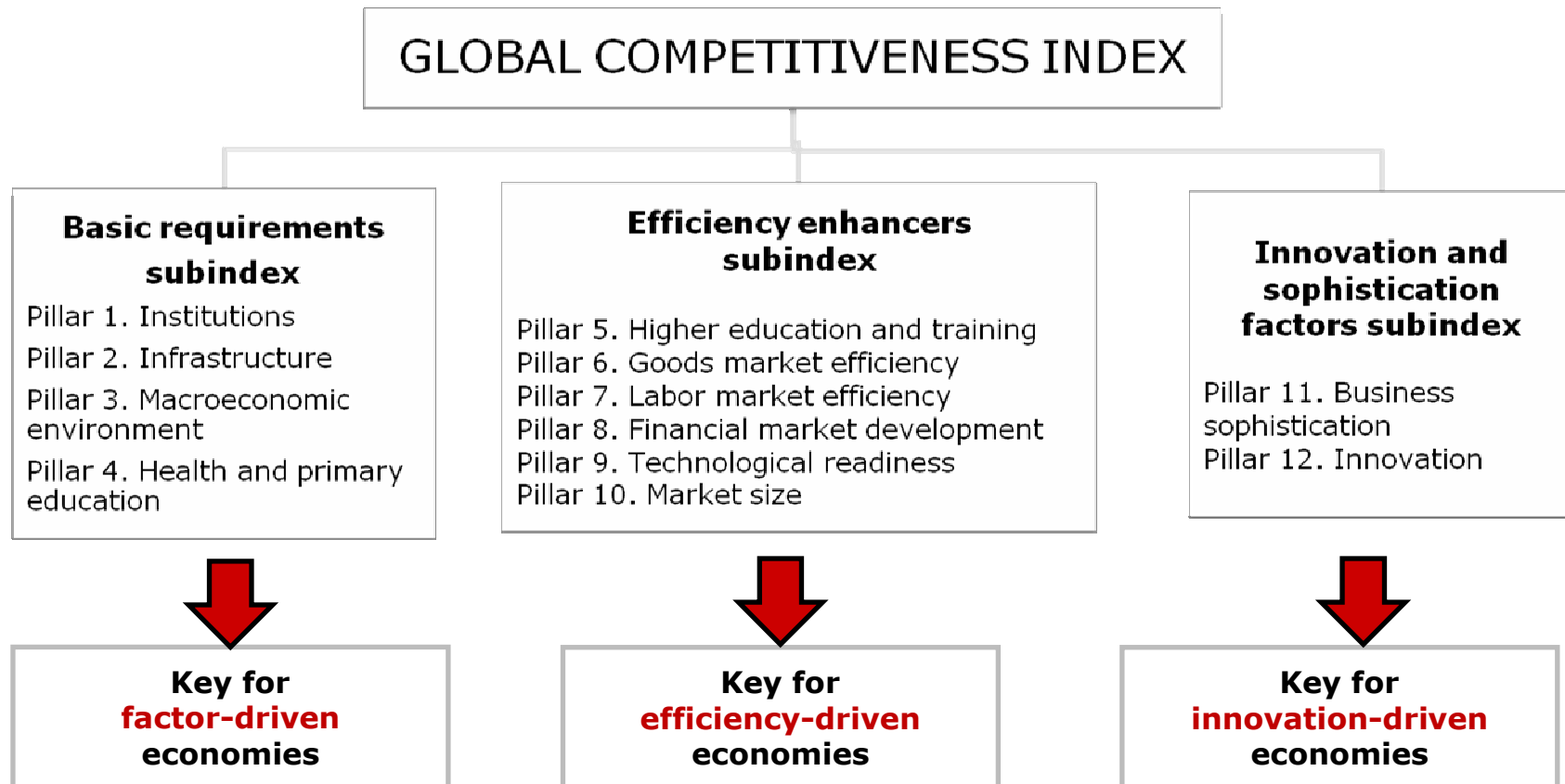
Competitiveness

Set of institutions,
policies, and factors that
determine the level of
productivity of a country

Pillars of Competitiveness

1. Institutions
 2. Infrastructure
 3. Macroeconomic environment
 4. Health and primary education
 5. Higher education and training
 6. Goods market efficiency
 7. Labor market efficiency
 8. Financial market development
 9. Technological readiness
 10. Market size
 11. Business sophistication
 12. Innovation
-

The Global Competitiveness Index framework

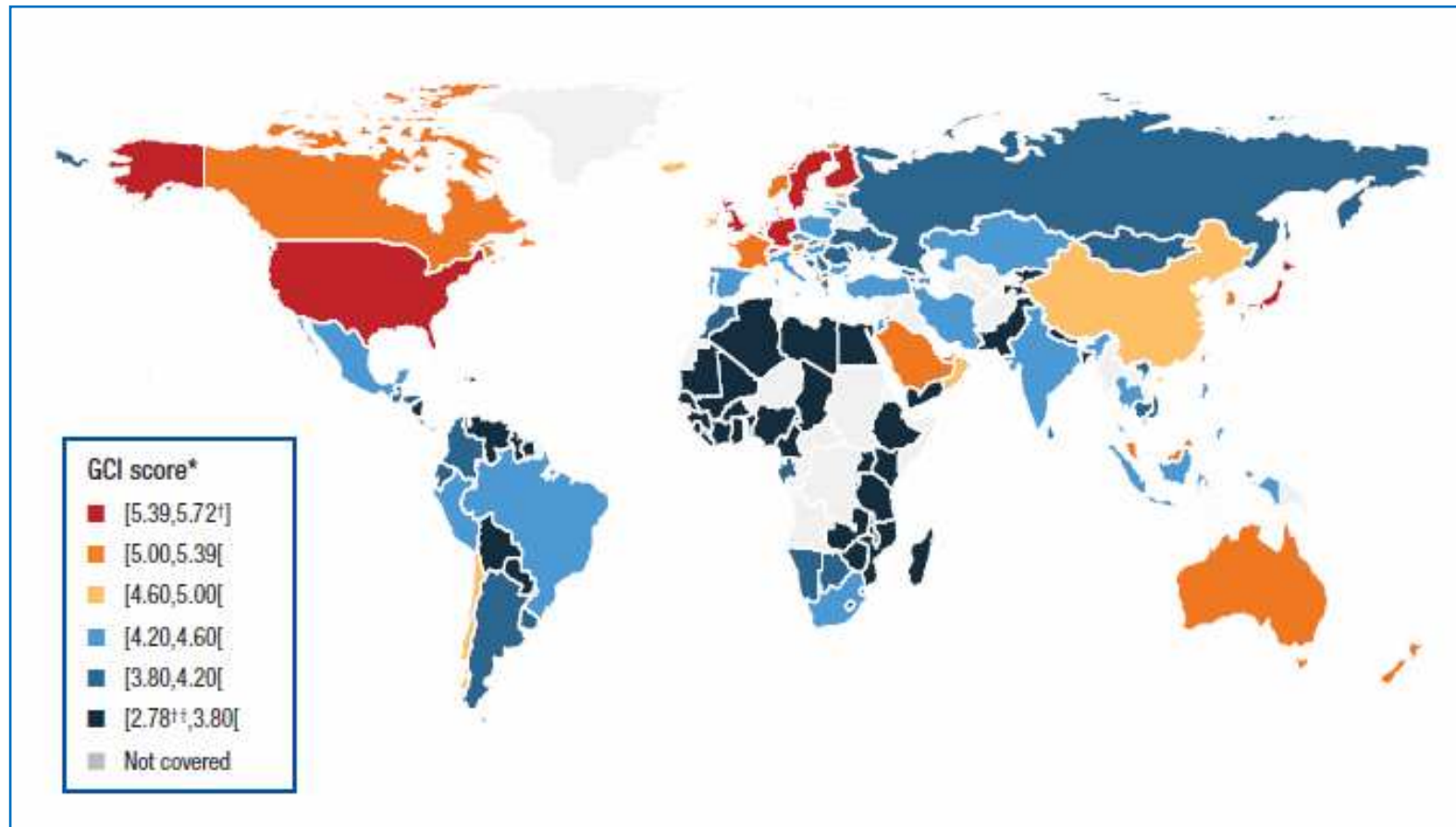


Global Competitiveness Index

TOP 10

1. Switzerland
 2. Singapore
 3. Finland
 4. Sweden
 5. Netherlands
 6. Germany
 7. United States
 8. United Kingdom
 9. Hong Kong SAR
 10. Japan
-

The Global Competitiveness Index heat map



V4: the GCI 2012–2013 rankings and 2011–2012 comparisons

Country/ Economy	Rank/144	Score (1-7)	2011–2012 rank
Czech Republic	39	4.51	38
Poland	41	4.46	41
Slovakia	71	4.14	69
Hungary	60	4.30	48

Czech Republic



The most problematic factors for doing business

1. Corruption
2. Inefficient government bureaucracy
3. Tax regulations
4. Tax rates
5. Access to financing
6. Restrictive labor regulations
7. Policy instability
8. Crime and theft
9. Poor work ethic in national labor force
10. Inadequately educated workforce
11. Insufficient capacity to innovate
12. Government instability/coups
13. Inadequate supply of infrastructure
14. Inflation
15. Poor public health
16. Foreign currency regulations

Poland



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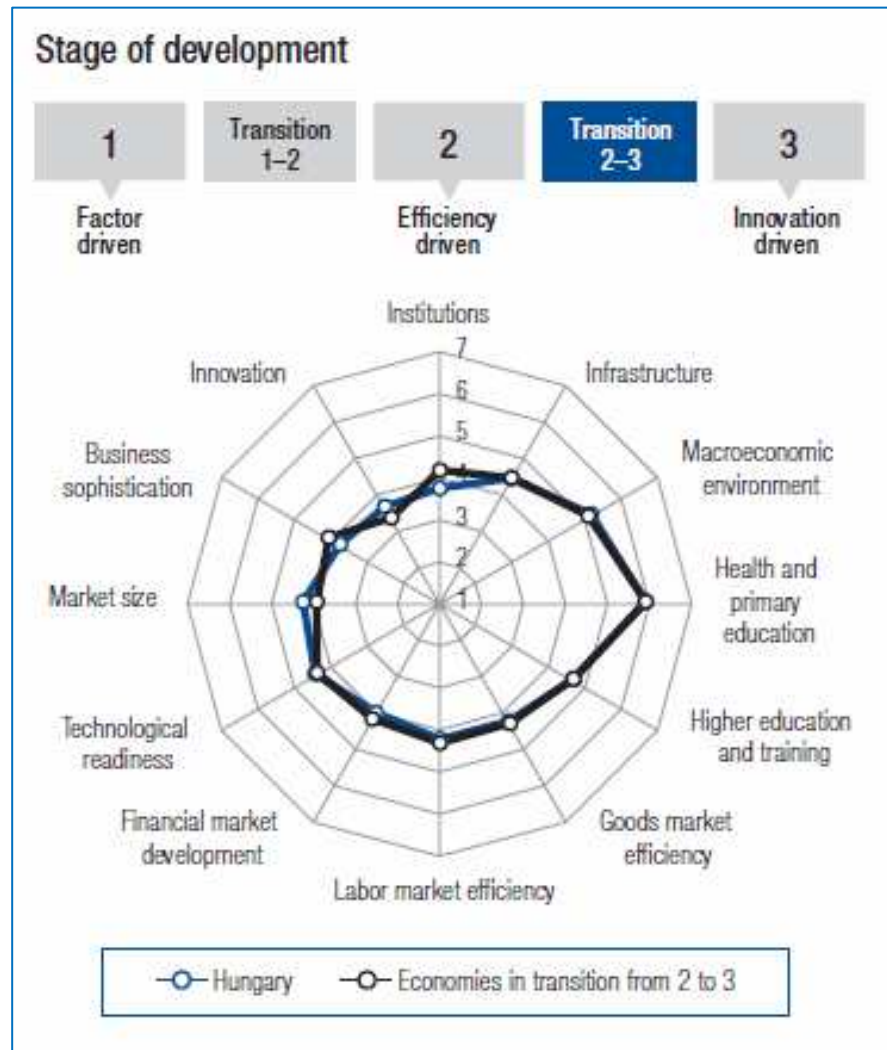
Slovakia



The most problematic factors for doing business

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16. Crime and theft

Pillar 12: Innovation

1. Capacity for innovation
 2. Quality of scientific research institutions
 3. Company spending on R&D
 4. University-industry collaboration in R&D
 5. Government procurement of advanced technology products
 6. Availability of scientists and engineers
 7. PCT patent applications
-

Pillar 12: Innovation – TOP 10

1. Switzerland
 2. Finland
 3. Israel
 4. Sweden
 5. Japan
 6. United States
 7. Germany
 8. Singapore
 9. Netherlands
 10. United Kingdom
-

V4: the Innovation 2012-2013 rankings

Country/ Economy	Rank/144	Score (1-7)
Czech Republic	34	3.81
Poland	63	3.25
Slovakia	89	2.98
Hungary	37	3.61

V4: the Innovation 2012-2013 rankings

	Czech Republic	Poland	Slovakia	Hungary
Capacity for innovation	22	54	88	45
Quality of scientific research institutions	26	45	90	20
Company spending on R&D	28	88	85	103
University-industry collaboration in R&D	28	67	100	37
Government procurement of advanced technology products	122	101	127	110
Availability of scientists and engineers	43	58	79	50
PCT patent applications	28	43	40	27

2.

Innovation Union Scoreboard 2013

Innovation Union Scoreboard 2013

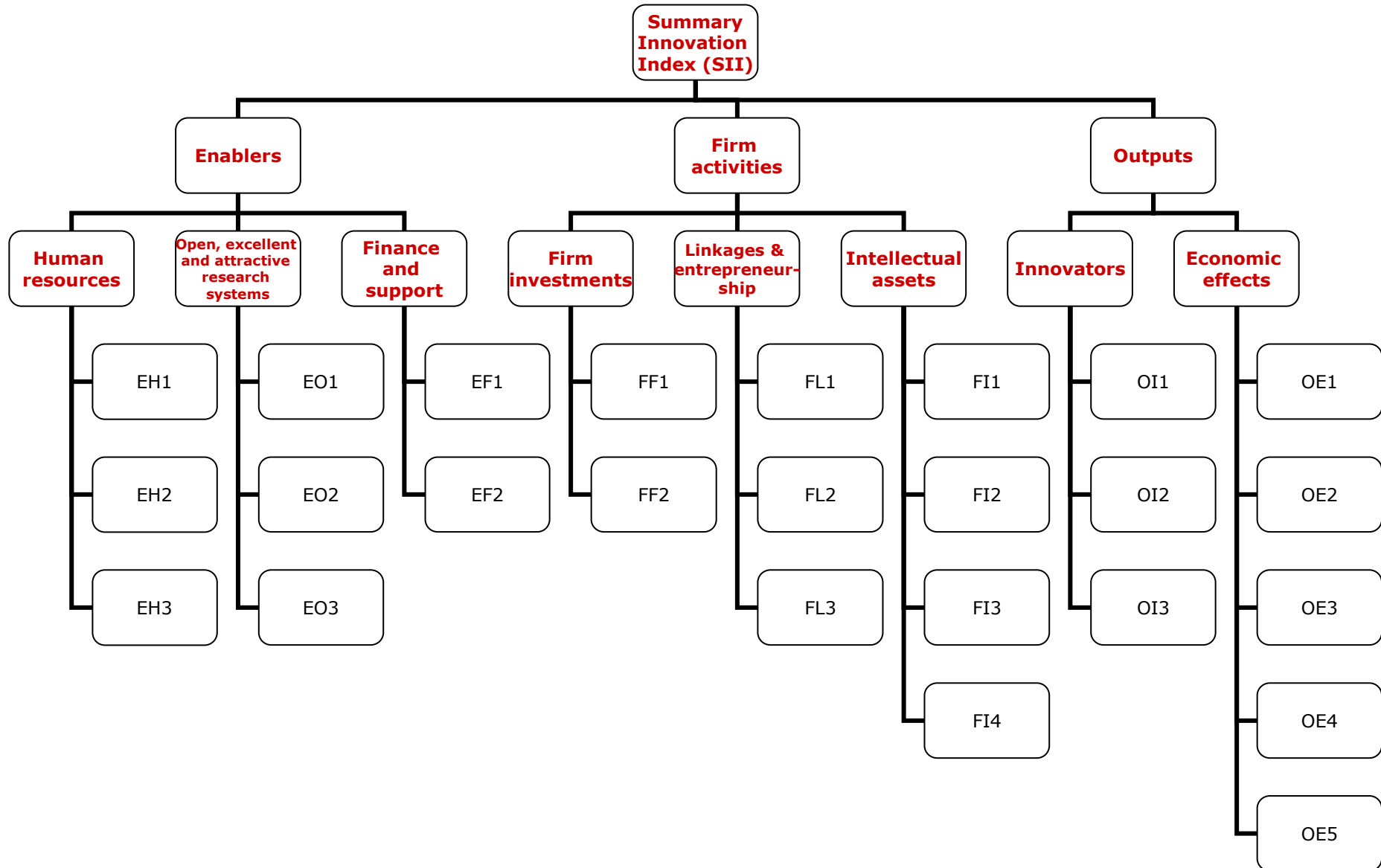
- ❑ Measures the first effects of the economic crisis on the research and innovation landscape in Europe
 - ❑ Gives a comparative assessment of the innovation performance of the EU27 Member States
 - ❑ Shows relative strengths and weaknesses of research and innovation systems of the EU 27 MS
 - ❑ Monitors innovation trends across the EU and other European countries
 - ❑ Includes comparisons between the EU27 and 10 global competitors
-

Member States analysed by 8 innovation dimensions and 25 indicators

Data referring to

- 2011 for 12 indicators
 - 2010 for 9 indicators
 - less recent years for 3 indicators.
 - six indicators are derived from the recently published Community Innovation Survey 2010
-

Measurement framework of the IUS



Enablers (E)

capture the main drivers of
innovation performance external to
the firm

- Human resources (EH)
 - Open, excellent and attractive research systems (EO)
 - Finance and support (EF)
-

Human resources (EH)

- New doctorate graduates per 1000 population aged 25-34 (EH1)
 - Percentage population aged 30-34 having completed tertiary education (EH2)
 - Percentage youth aged 20-24 having attained at least upper secondary level education (EH3)
-

Open, excellent and attractive research systems (EO)

- ❑ International scientific co-publications per million population (EO1)
 - ❑ Scientific publications among the top 10% most cited publications worldwide as % of total scientific publications of the country (EO2)
 - ❑ Non-EU doctorate students as a % of all doctorate students (EO3)
-

Finance and support (EF)

- R&D expenditure in the public sector as % of GDP (EF1)
 - Venture capital investment as % of GDP (EF2)
-

Firm activities (F)

- Firm investments (FF)
 - Linkages & entrepreneurship (FL)
 - Intellectual assets (FI)
-

Firm investments (FF)

- R&D expenditure in the business sector as % of GDP (FF1)
 - Non-R&D innovation expenditures as % of turnover (FF2)
-

Linkages & entrepreneurship (FL)

- SMEs innovating in-house as % of SMEs (FL1)
 - Innovative SMEs collaborating with others as % of SMEs (FL2)
 - Public-private co-publications per million population (FL3)
-

Intellectual assets (FI)

- ❑ PCT patents applications per billion GDP (in PPSE€) (FI1)
 - ❑ PCT patent applications in societal challenges per billion GDP (in PPSE€) (environment-related technologies; health) (FI2)
 - ❑ Community trademarks per billion GDP (in PPSE€) (FI3)
 - ❑ Community designs per billion GDP (in PPSE€) (FI4)
-

Outputs (O)

□ Innovators (OI)

□ Economic effects (OE)

Innovators (OI)

- SMEs introducing product or process innovations as % of SMEs (OI1)
 - SMEs introducing marketing or organisational innovations as % of SMEs (OI2)
 - High-growth innovative firms (OI3)
-

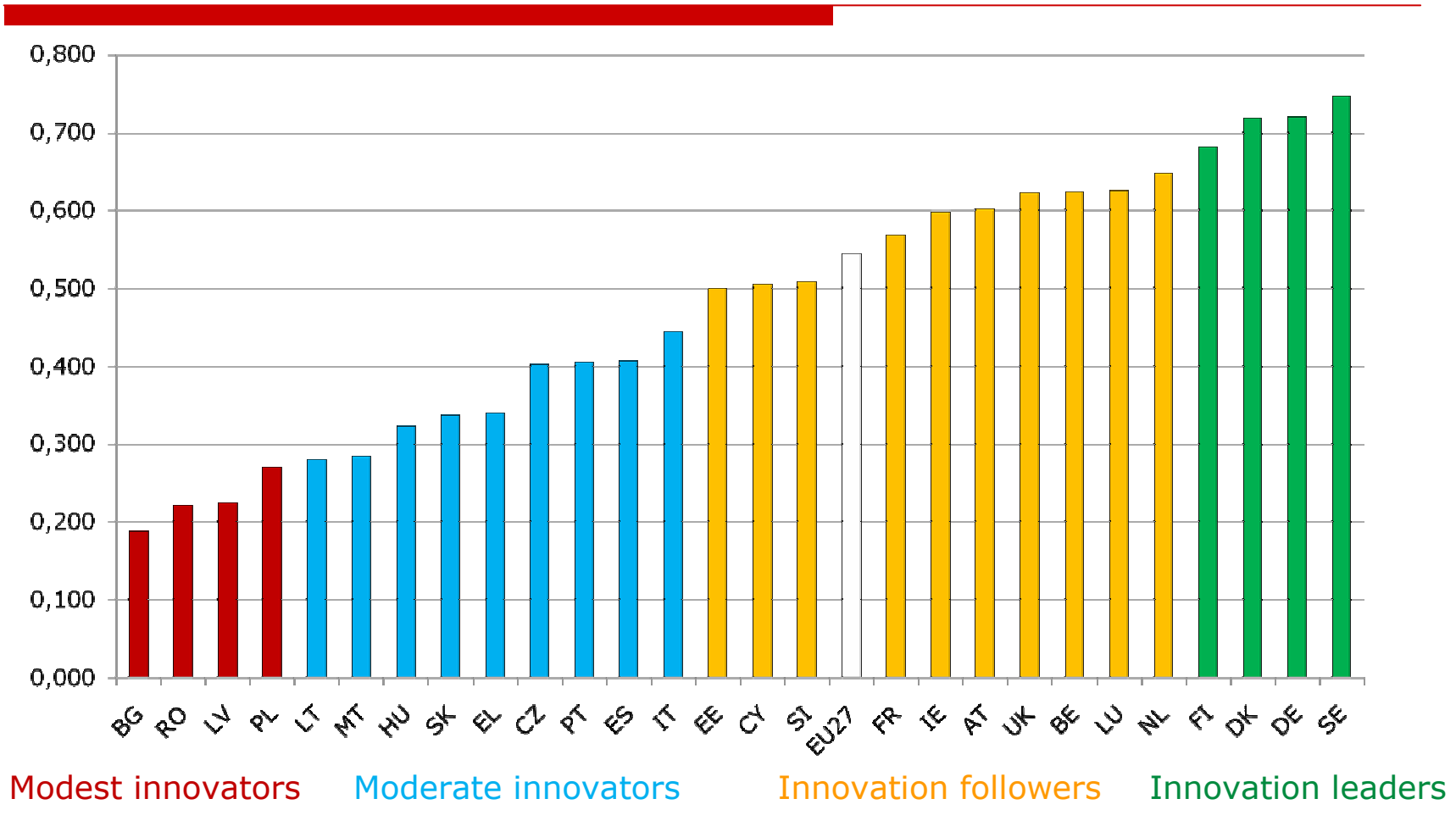
Economic effects (OE)

- ❑ Employment in knowledge-intensive activities (manufacturing and services) as % of total employment (OE1)
 - ❑ Contribution of medium and high-tech product exports to the trade balance (OE2)
 - ❑ Knowledge-intensive services exports as % total service exports (OE3)
 - ❑ Sales of new to market and new to firm innovations as % of turnover (OE4)
 - ❑ License and patent revenues from abroad as % of GDP (OE5)
-

Four performance groups

<p>Innovation leaders</p> <p>Denmark, Finland, Germany, Sweden</p>	<p>Innovation followers</p> <p>Austria, Belgium, Cyprus, Estonia, France, Ireland, Luxembourg, Netherlands, Slovenia, United Kingdom</p>
<p>Moderate innovators</p> <p>Czech Republic, Greece, Hungary, Italy, Lithuania, Malta, Portugal, Slovakia, Spain</p>	<p>Modest innovators</p> <p>Bulgaria, Latvia, Poland, Romania</p>

EU Member States' innovation performance



The performance

- ❑ of **Innovation leaders** is 20% or more above;
 - ❑ of **Innovation followers** is less than 20% above but more than 10% below;
 - ❑ of **Moderate innovators** is less than 10% below but more than 50% below;
 - ❑ of **Modest innovators** is below 50%
that of the EU27
-

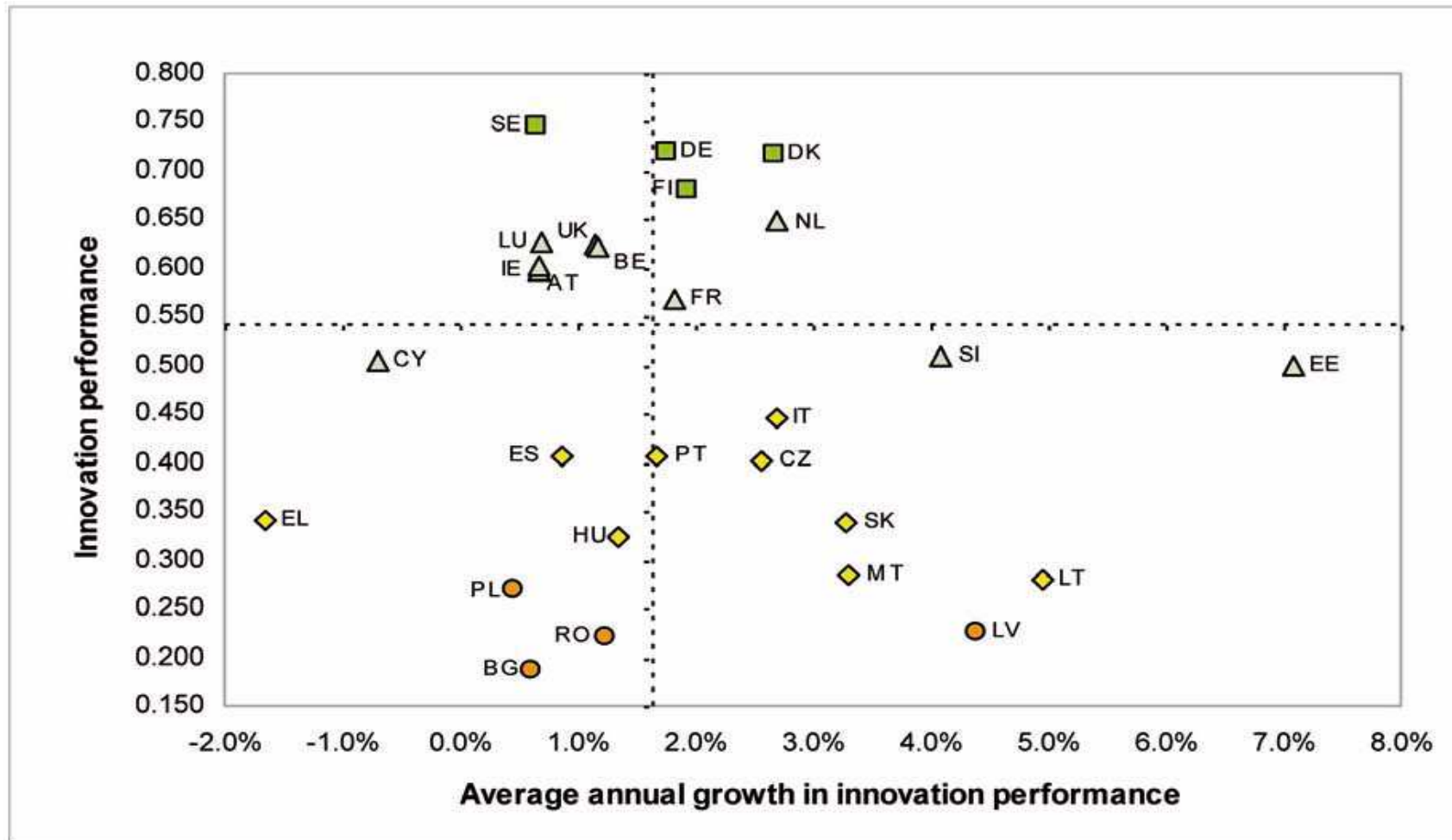
Growth in innovation performance 2008-2012

- Changes in innovation performance are monitored over a five-year period
 - All countries except **Cyprus** (-0,7%) and **Greece** (-1,7%) show an improvement in their innovation performance
 - **Estonia** has experienced the fastest annual average growth in performance (7.1%) of all Member States
-

Growth in innovation performance 2008-2012

Group	Growth rate 2008-2012	Growth leaders	Moderate growers	Slow growers
Innovation leaders	1.8%	Denmark (2.7%)	Finland (1.9%) Germany (1.8%)	Sweden (0.6%)
Innovation followers	1.9%	Estonia (7.1%) Slovenia (4.1%)	Netherlands (2.7%) France (1.8%) United Kingdom (1.2%) Belgium (1.1%) Luxembourg (0.7%) Austria (0.7%) Ireland (0.7%)	Cyprus (-0.7%)
Moderate innovators	2.1%	Lithuania (5.0%)	Malta (3.3%) Slovakia (3.3%) Italy (2.7%) Czech Republic (2.6%) Portugal (1.7%) Hungary (1.4%) Spain (0.9%)	Greece (-1.7%)
Modest innovators	1.7%	Latvia (4.4%)	Romania (1.2%) Bulgaria (0.6%)	Poland (0.4%)

Growth in innovation performance 2008-2012



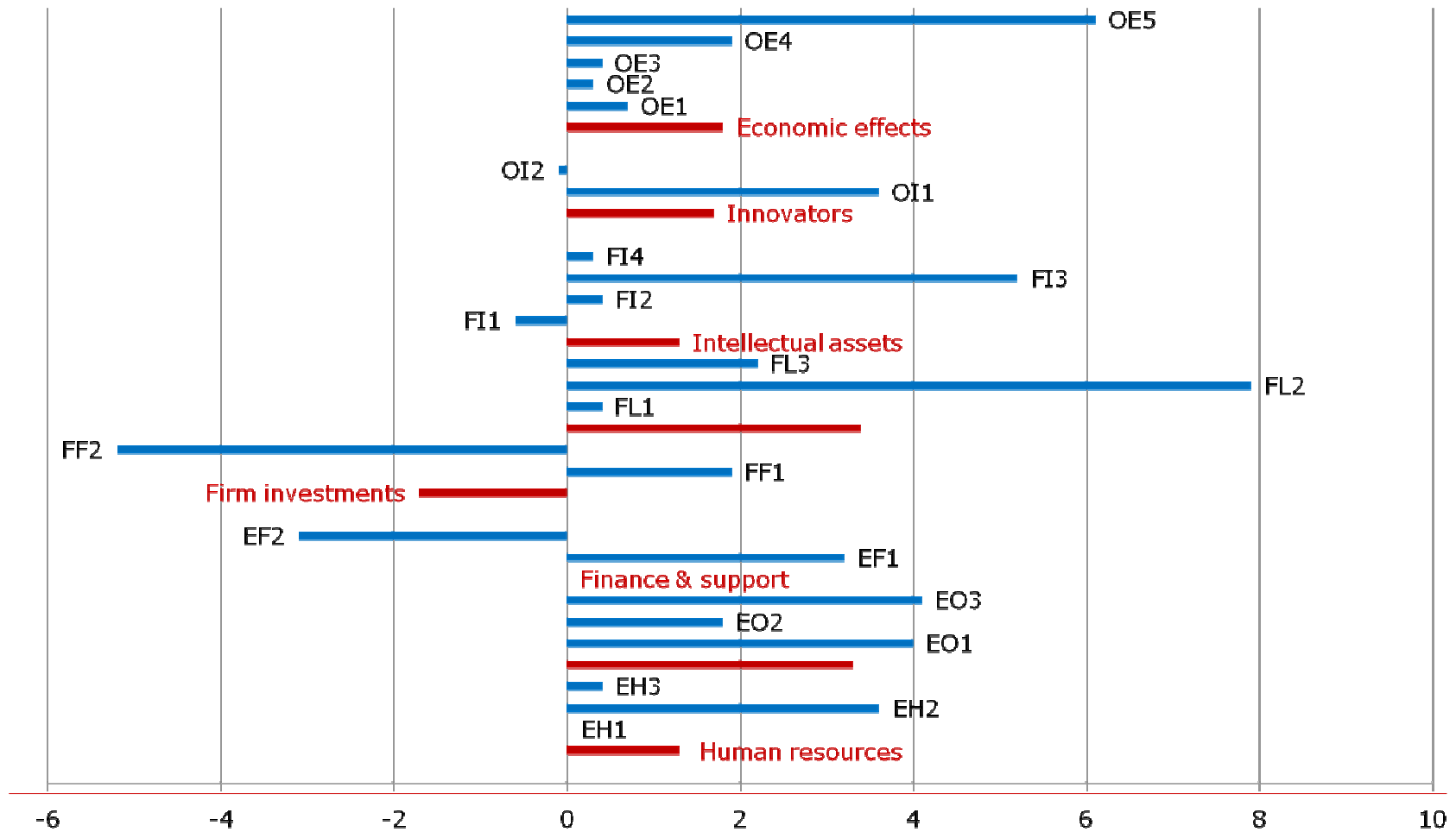
EU27 Growth performance

Enablers (E)	%
Human resources (EH)	1.3
EH1	0.0
EH2	3.6
EH3	0.4
Open, excellent and attractive research systems (EO)	3.3
EO1	4.0
EO2	1.8
EO3	4,1
Finance and support (EF)	0,0
EF1	3.2
EF2	-3.1

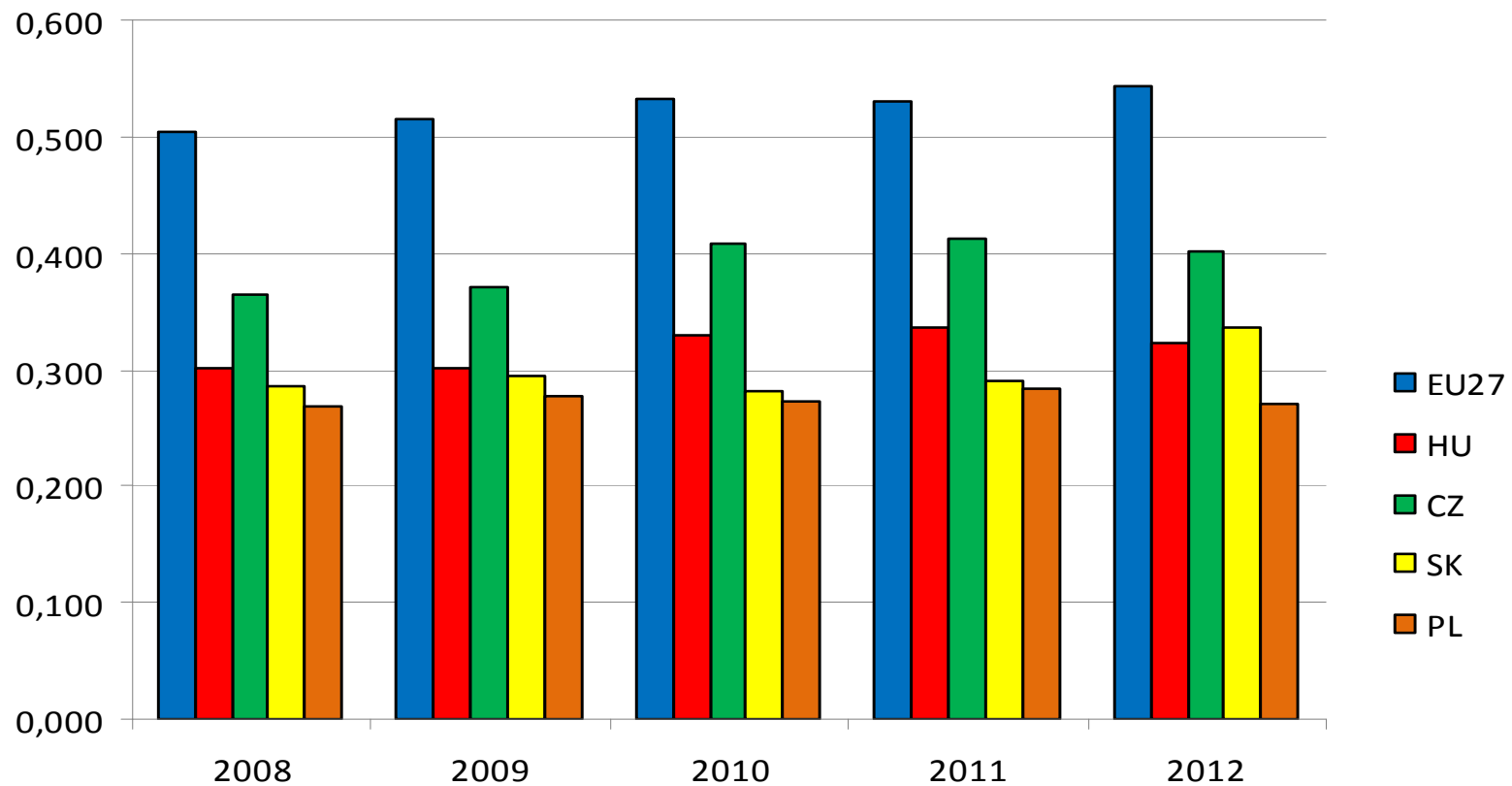
Firm activities (F)	%
Firm investments (FF)	-1.7
FF1	1.9
FF2	-5.2
Linkages & entrepreneurship (FL)	3,4
FL1	0.4
FL2	7.9
FL3	2.2
Intellectual assets (FI)	1.3
FI1	-0.6
FI2	0.4
FI3	5.2
FI4	0.3

Outputs (O)	%
Innovators (OI)	1.7
OI1	3.6
OI2	-0.1
OI3	
Economic effects (OE)	1.8
OE1	0.7
OE2	0.3
OE3	0.4
OE4	1.9
OE5	6.1

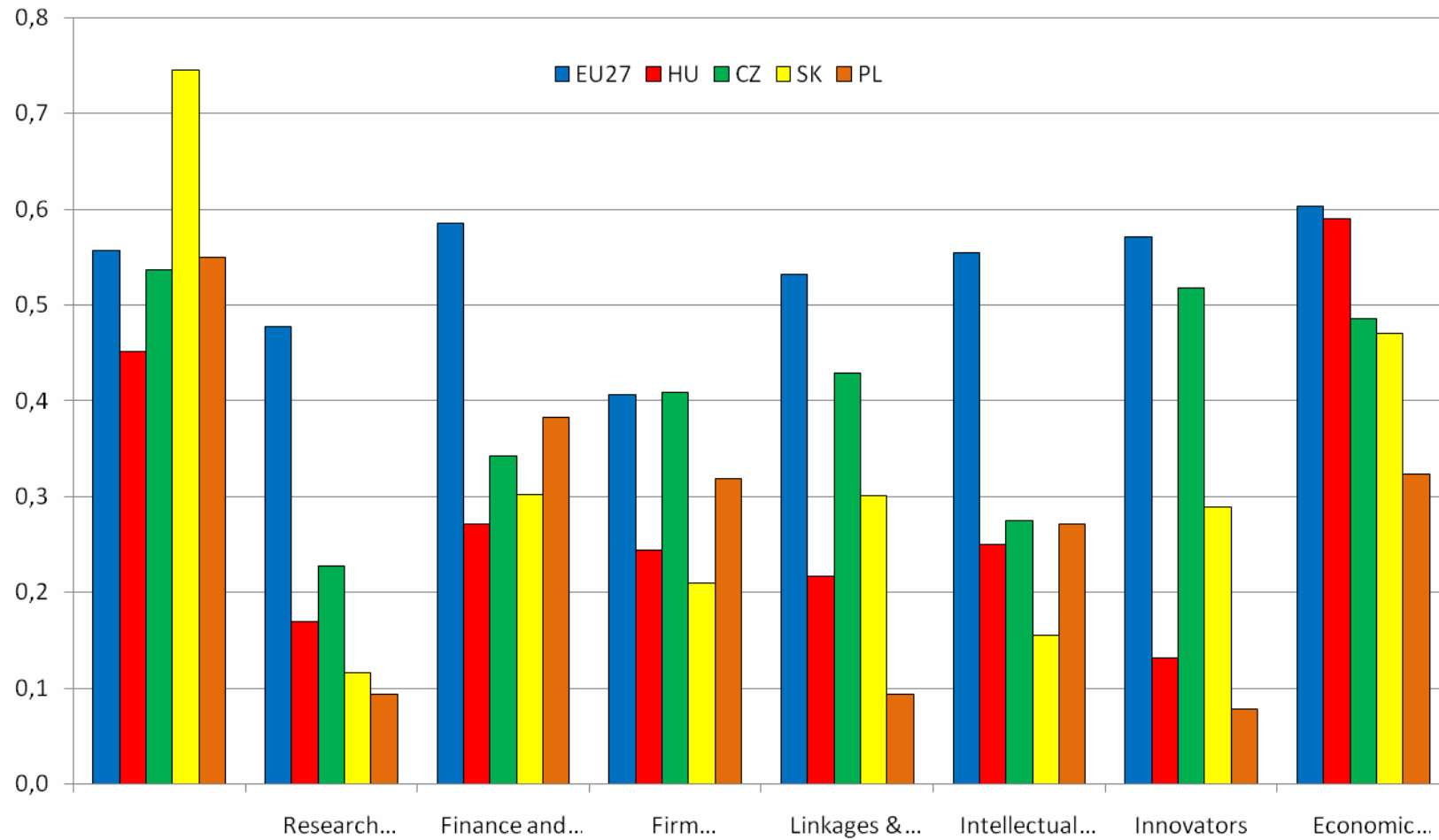
EU27 Growth performance



Summary Innovation Index time series in V4 countries



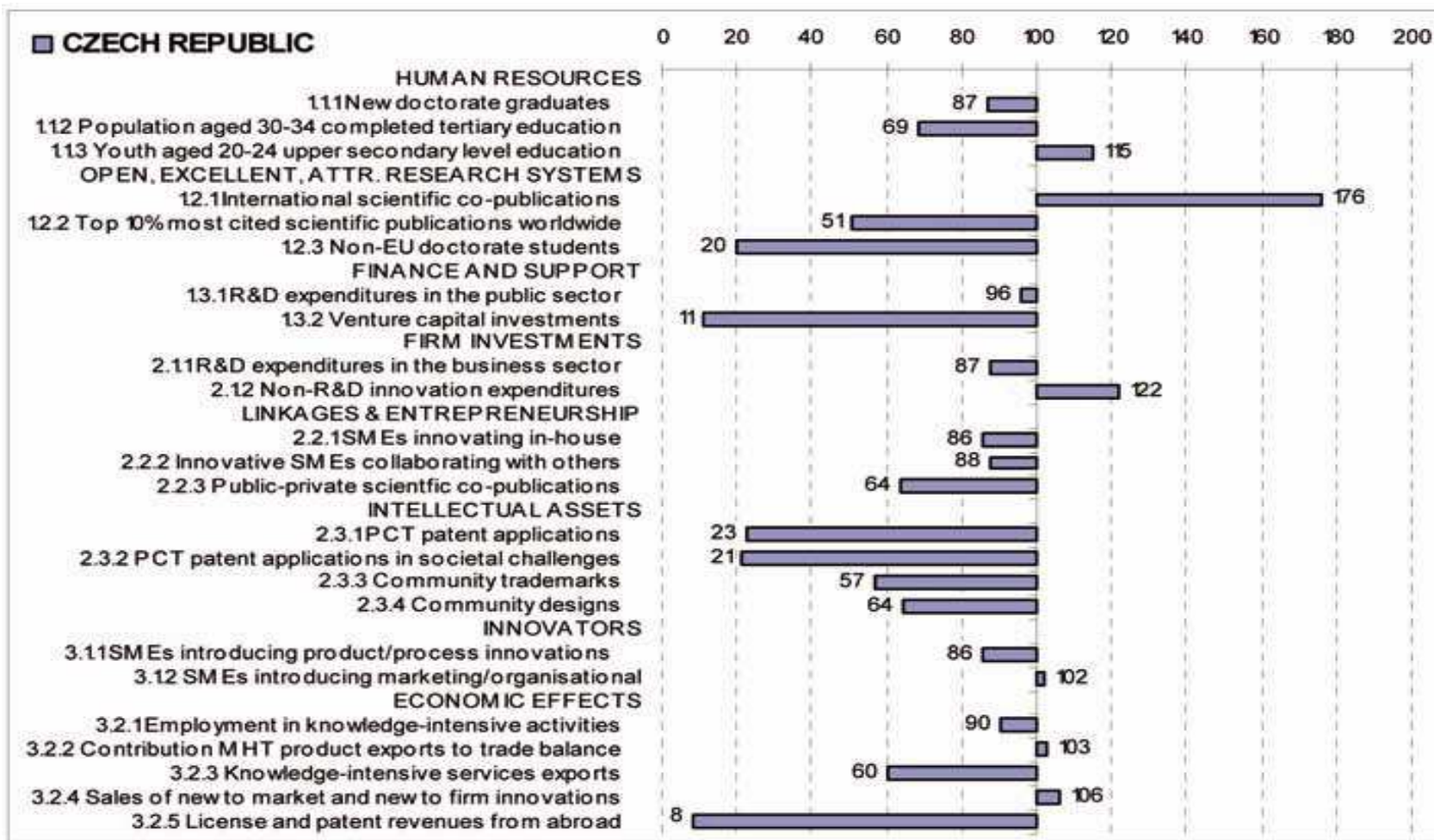
Growth performance scores per dimension



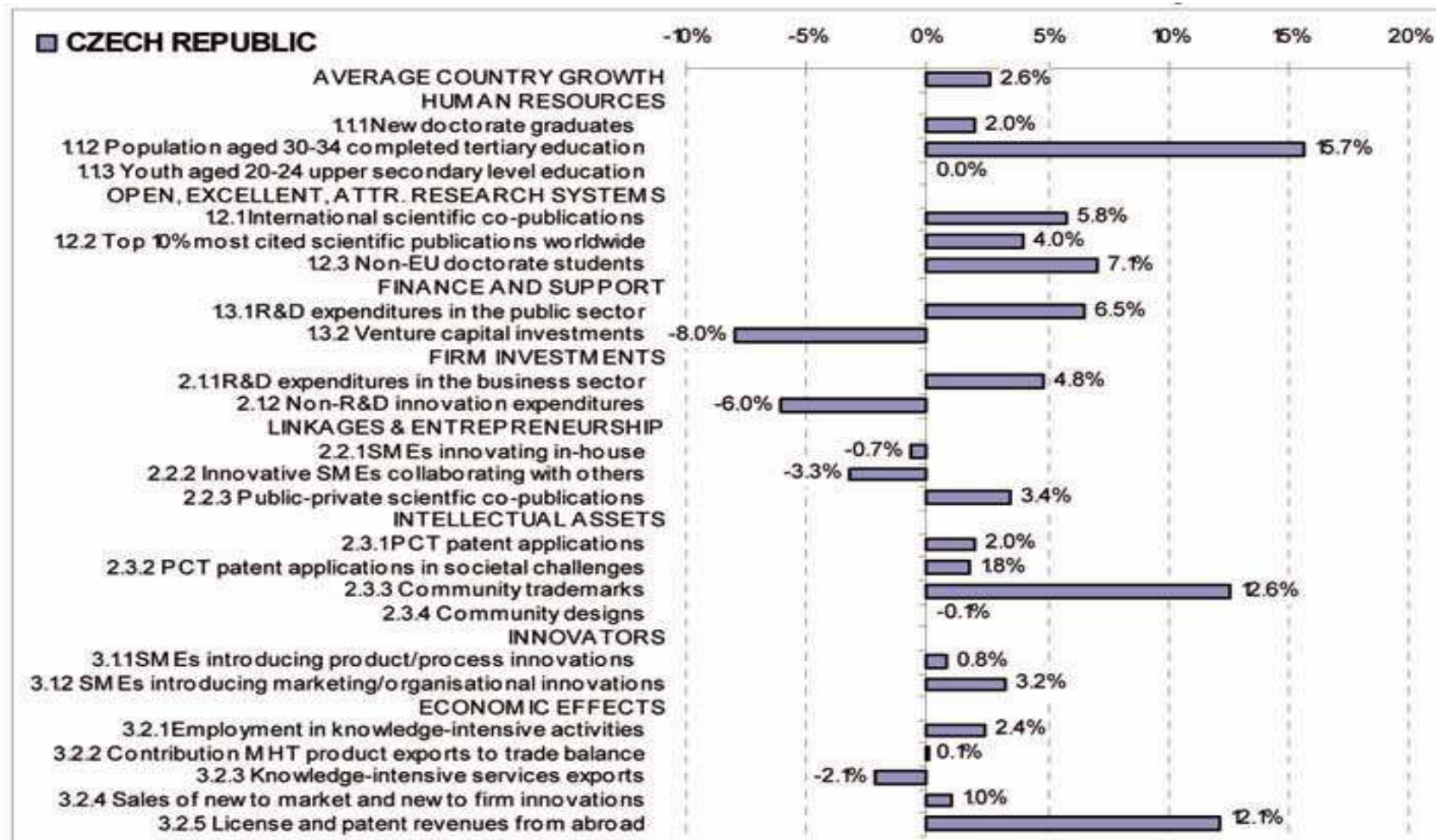
Czech Republic

- ❑ One of the moderate innovators
 - ❑ **Relative strengths:** Human resources, Innovators and Economic effects
 - ❑ **Relative weaknesses:** Open, excellent and attractive research systems and Intellectual assets
 - ❑ **High growth:** Population with a tertiary degree (the highest of all Member States) and Community trademarks.
 - ❑ **Strong decline:** Venture capital investments and Non-R&D innovation expenditure
 - ❑ **Growth performance** in
 - Human resources, Open, excellent and attractive research systems and Intellectual assets: above average
 - Firm investments: well below average
-

Czech Republic: Indicator values relative to the EU27 (EU27=100)



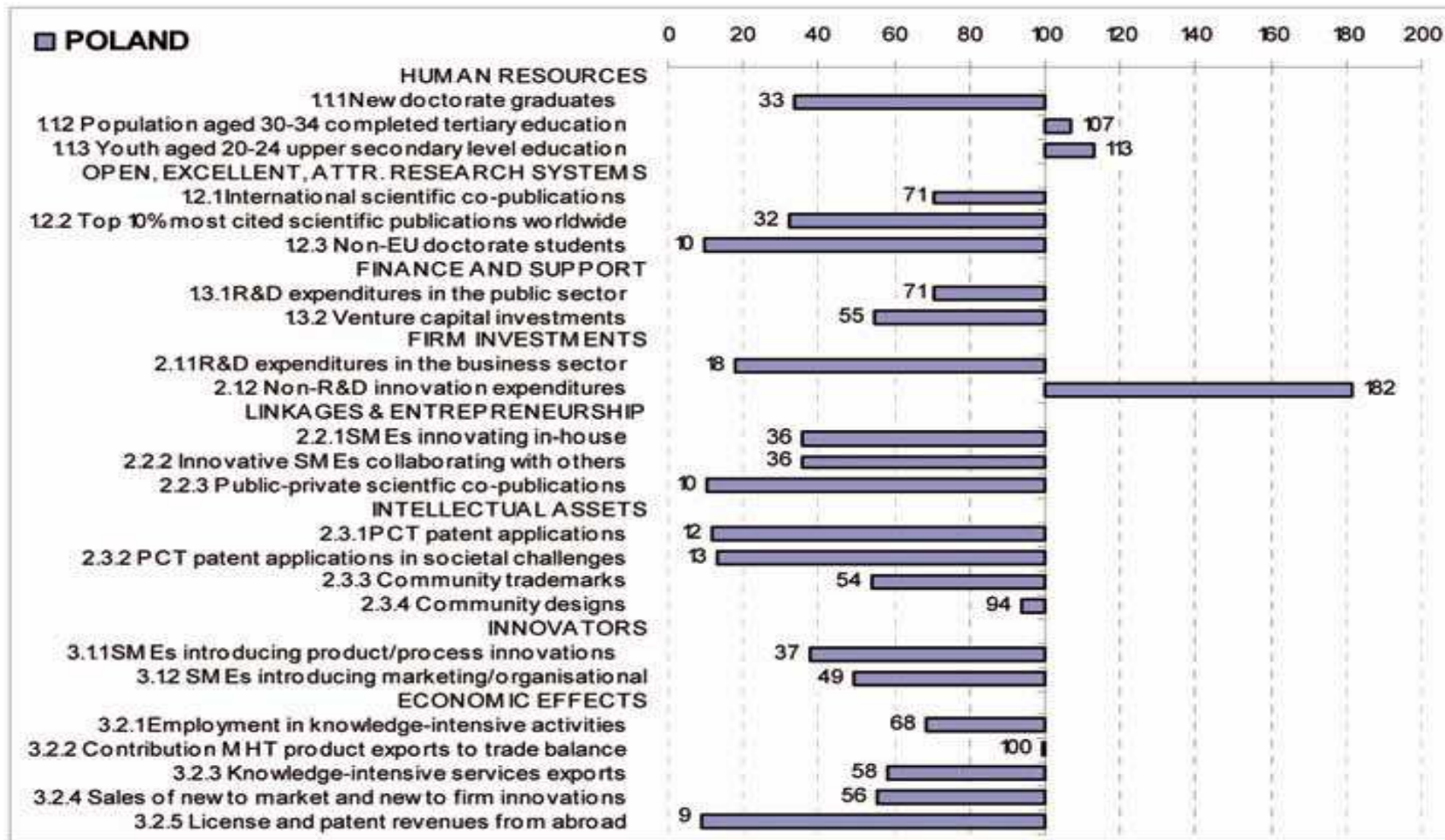
Czech Republic: Annual average growth per indicator & average country growth



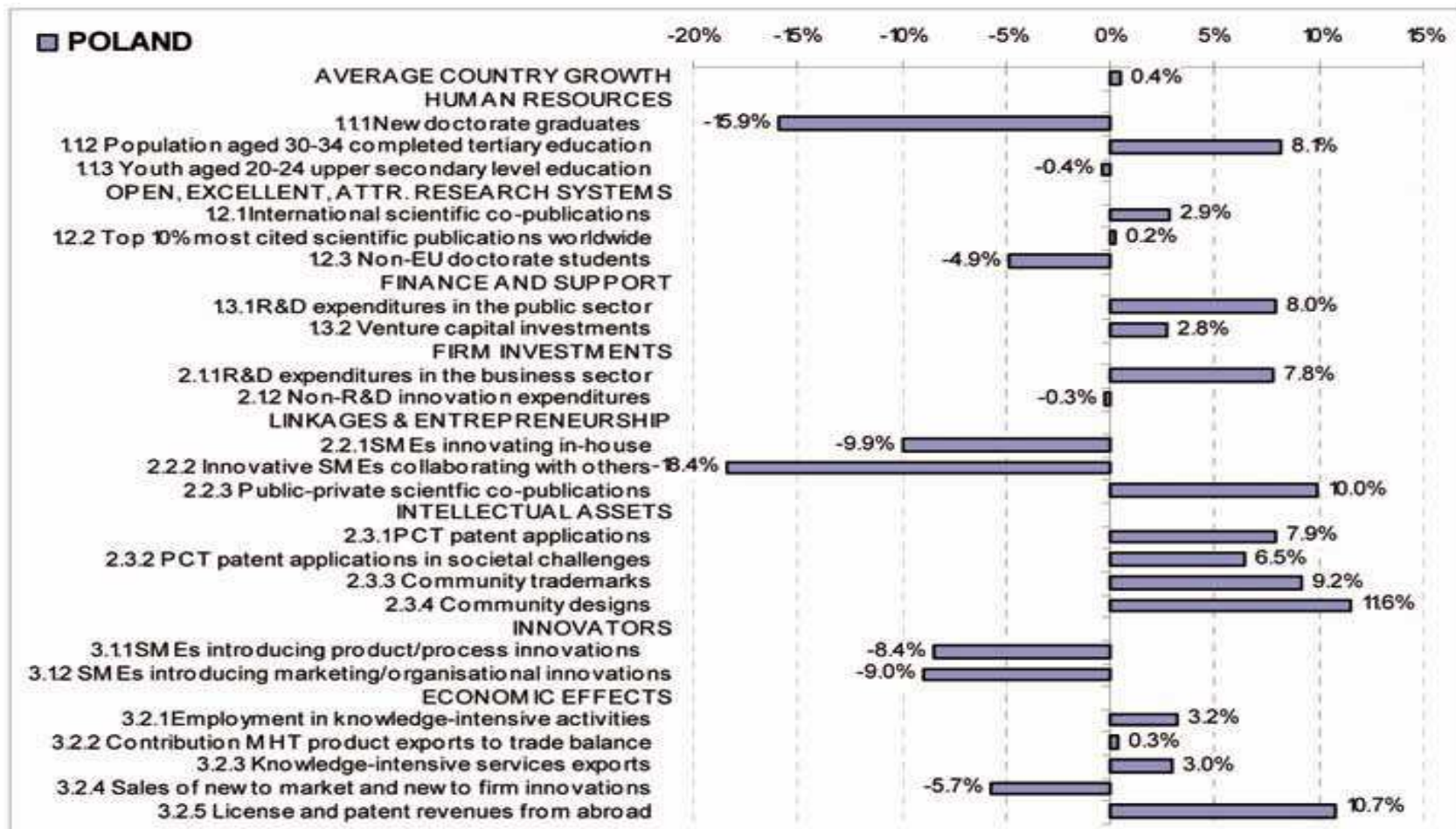
Poland

- ❑ One of the moderate innovators
 - ❑ **Relative strengths:** Human resources
 - ❑ **Relative weaknesses:** Linkages & entrepreneurship and Innovators
 - ❑ **High growth:** Public-private co-publications, Community designs and License and patent revenues from abroad
 - ❑ **Relatively strong decline:** New doctorate graduates and Innovative SMEs collaborating with others
 - ❑ **Growth performance** in:
 - Finance and support, Intellectual assets and Economic effects: above average
 - Human resources, Linkages & entrepreneurship and Innovators: well below average
-

Poland: Indicator values relative to the EU27 (EU27=100)



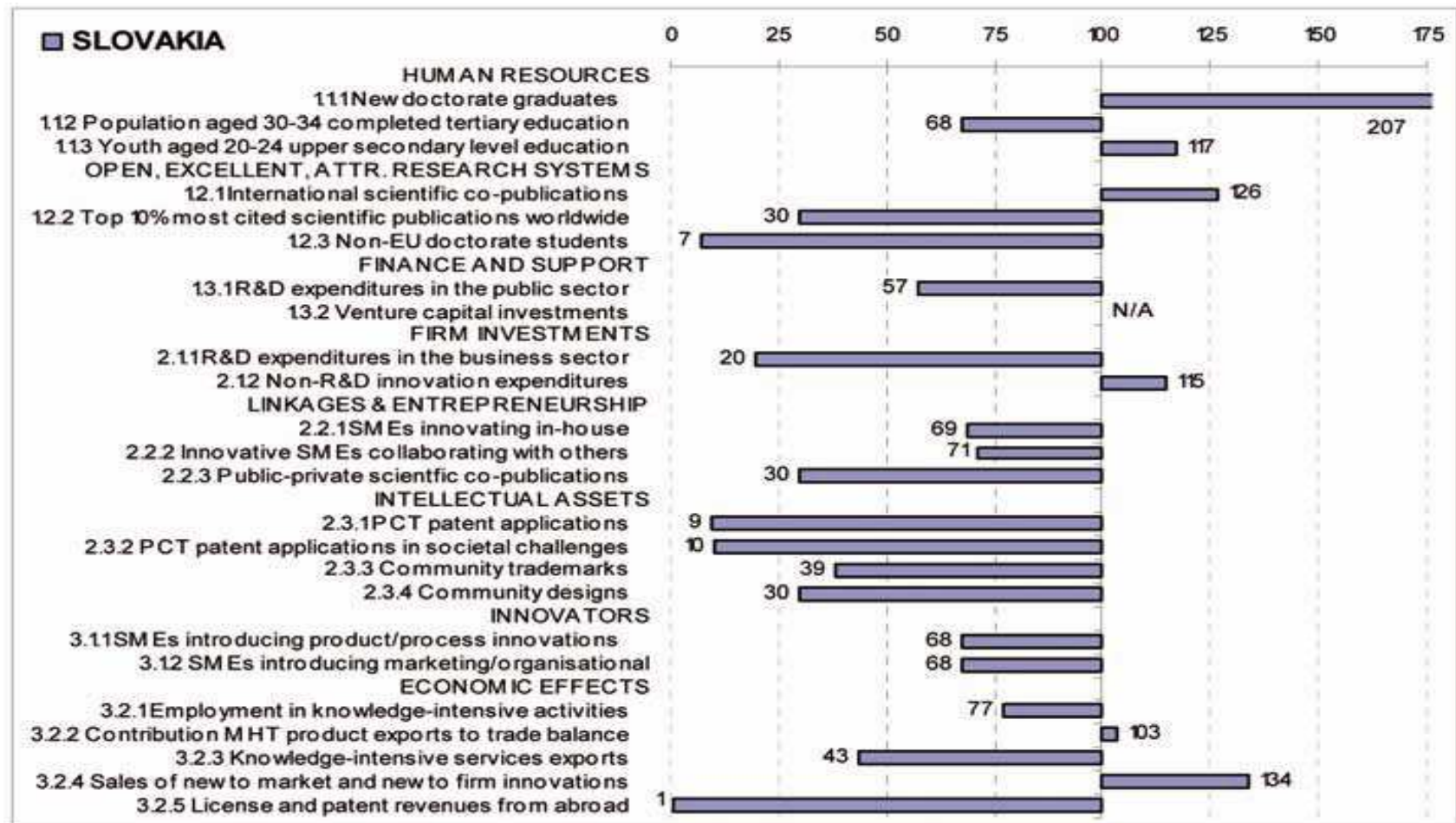
Poland: Annual average growth per indicator & average country growth



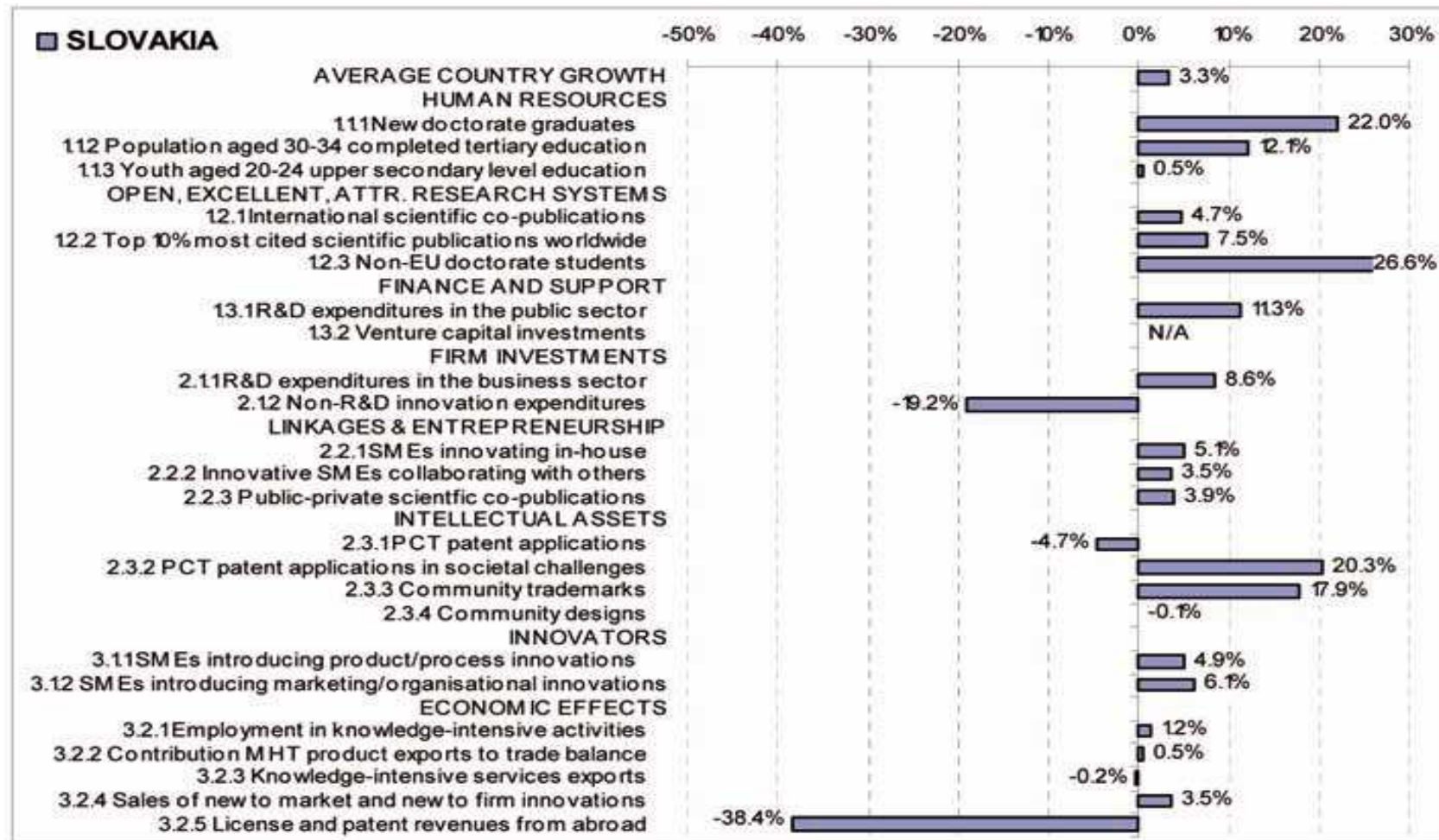
Slovakia

- ❑ One of the moderate innovators
 - ❑ **Relative strengths:** Human resources
 - ❑ **Relative weaknesses:** Open, excellent and attractive research systems and Intellectual assets
 - ❑ **High growth:** New doctorate graduates (the highest growth of all Member States), PCT patents in societal challenges and Community trademarks
 - ❑ **Strong decline:** Non-R&D innovation expenditure and License and patent revenues from abroad
 - ❑ **Growth performance** in:
 - Human resources, Finance and support and Intellectual assets: above average
 - Firm investments: well below average
-

Slovakia: Indicator values relative to the EU27 (EU27=100)



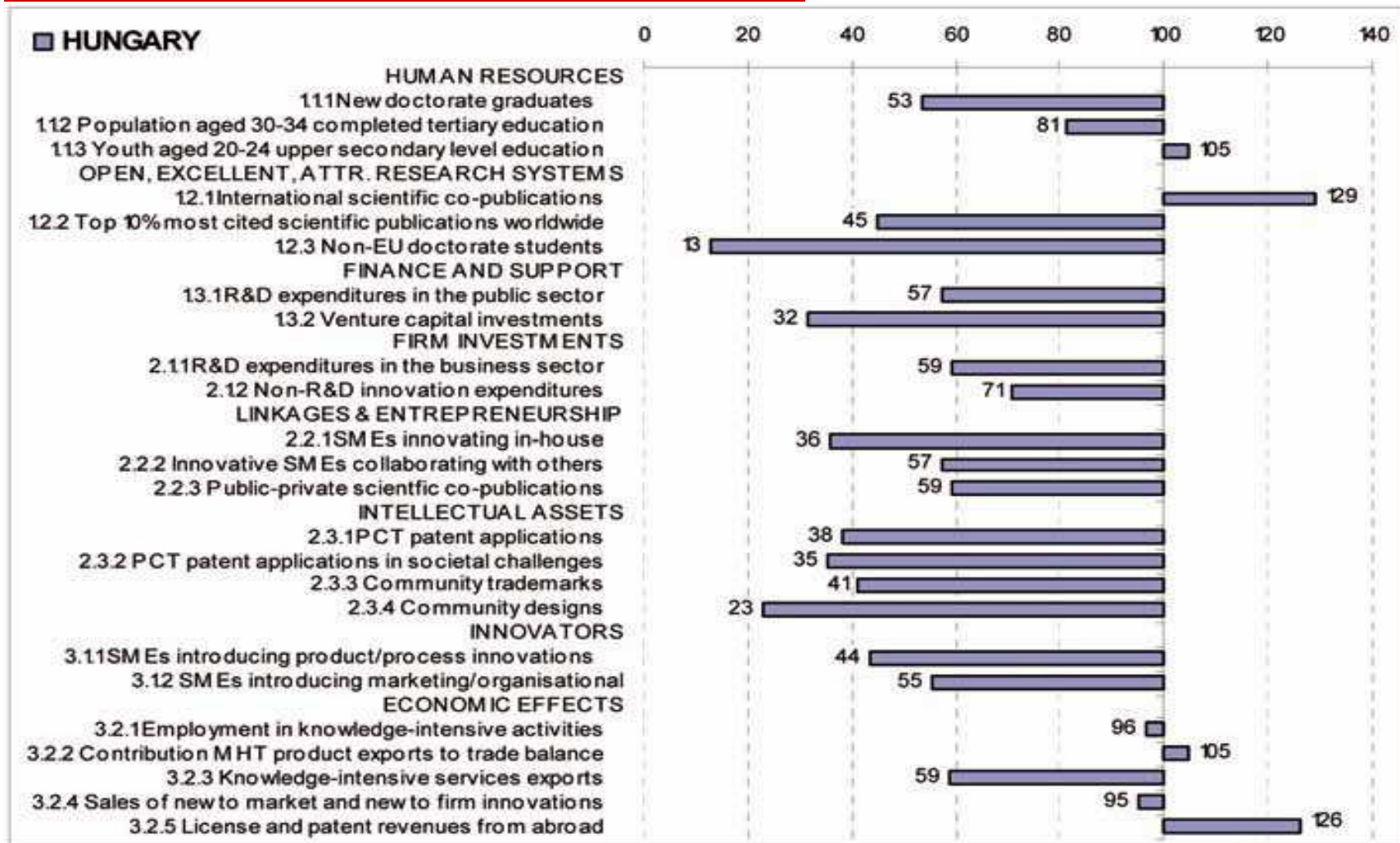
Slovakia: Annual average growth per indicator & average country growth



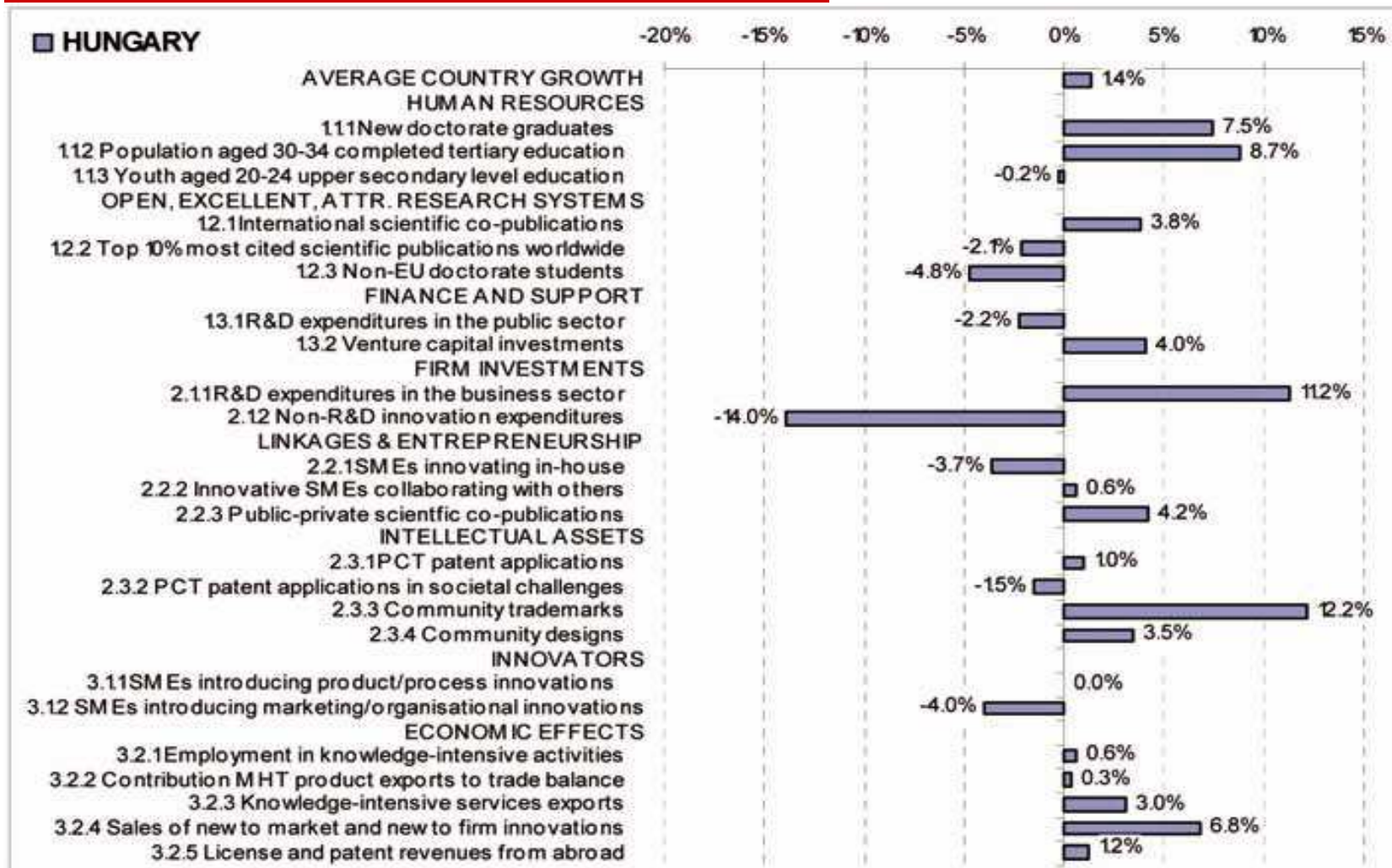
Hungary

- One of the moderate innovators
 - **Relative strengths:** Human resources and Economic effects
 - **Relative weaknesses:** Innovators
 - **High growth:** R&D expenditures in the business sector and Community trademarks (Venture capital investments: the highest of all Member States)
 - **Strong decline:** Non-R&D innovation expenditures
 - **Growth performance** in
 - Human resources, Intellectual assets and Economic effects: above average
 - Firm investments and Innovators well below average
-

Hungary: Indicator values relative to the EU27 (EU27=100)



Hungary: Annual average growth per indicator & average country growth



Sources

- The Global Competitiveness Report 2012–2013: Full Data Edition (2-17 slides)
 - Published by the World Economic Forum within the framework of The Global Benchmarking Network (GBN), Geneva. Copyright © 2012
 - Available at www.weforum.org/gcr
 - Professor Klaus Schwab Executive Chairman
 - Professor Xavier Sala-i-Martin Chief Advisor of The GBN
 - Børge Brende Managing Director, Government Relations and Constituents Engagement
 - Innovation Union Scoreboard 2013 (18-53 slides)
 - Prepared by: Hugo Hollanders and Nordine Es-Sadki from the Maastricht Economic and Social Research Institute on Innovation and Technology (UNU-MERIT) with inputs from:
 - Stefano Tarantola, DG JRC G3 - Econometrics and applied statistics, European Commission
 - Coordinated and guided by: Bonifacio Garcia Porras, Head of Unit, and Tomasz Jerzyniak Unit B3 – Innovation Policy for Growth; Directorate B – Sustainable Growth and EU 2020; Directorate-General for Enterprise and Industry; European Commission. Copyright © European Union,
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