

CZECH REPUBLIC

24th

The Czech Republic ranks 24th among the 131 economies featured in the GII 2020.

The Global Innovation Index (GII) ranks world economies according to their innovation capabilities. Consisting of roughly 80 indicators, grouped into innovation inputs and outputs, the GII aims to capture the multi-dimensional facets of innovation.

The following table shows the rankings of the Czech Republic over the past three years, noting that data availability and changes to the GII model framework influence year-on-year comparisons of the GII rankings.

The statistical confidence interval for the ranking of the Czech Republic in the GII 2020 is between ranks 20 and 26.

Rankings of the Czech Republic (2018–2020)

	GII	Innovation inputs	Innovation outputs
2020	24	28	17
2019	26	29	21
2018	27	30	20

- The Czech Republic performs better in innovation outputs than innovation inputs in 2020.
- This year the Czech Republic ranks 28th in innovation inputs, higher than last year and higher compared to 2018.
- As for innovation outputs, the Czech Republic ranks 17th. This position is higher than last year and higher compared to 2018.

23rd

The Czech Republic ranks 23rd among the 49 high-income group economies.

15th

The Czech Republic ranks 15th among the 39 economies in Europe.

The Czech Republic re-joins the group of innovation leaders this year, ranking 24th. It scores above average for the high-income group in both output pillars, producing more innovation outputs relative to its level of innovation investments. Its Infrastructure and Business sophistication are also above average for its income group.

The Czech Republic continues to excel in areas related to its manufacturing industries, registering strengths in Knowledge absorption, Knowledge impact and Knowledge diffusion. It ranks among the top 10 in High-technology imports (8), High-technology exports (7) and High-technology manufacturing (5). It has also improved in the area of Creative goods and services (4), where it retains its global top position in Creative goods exports (1).

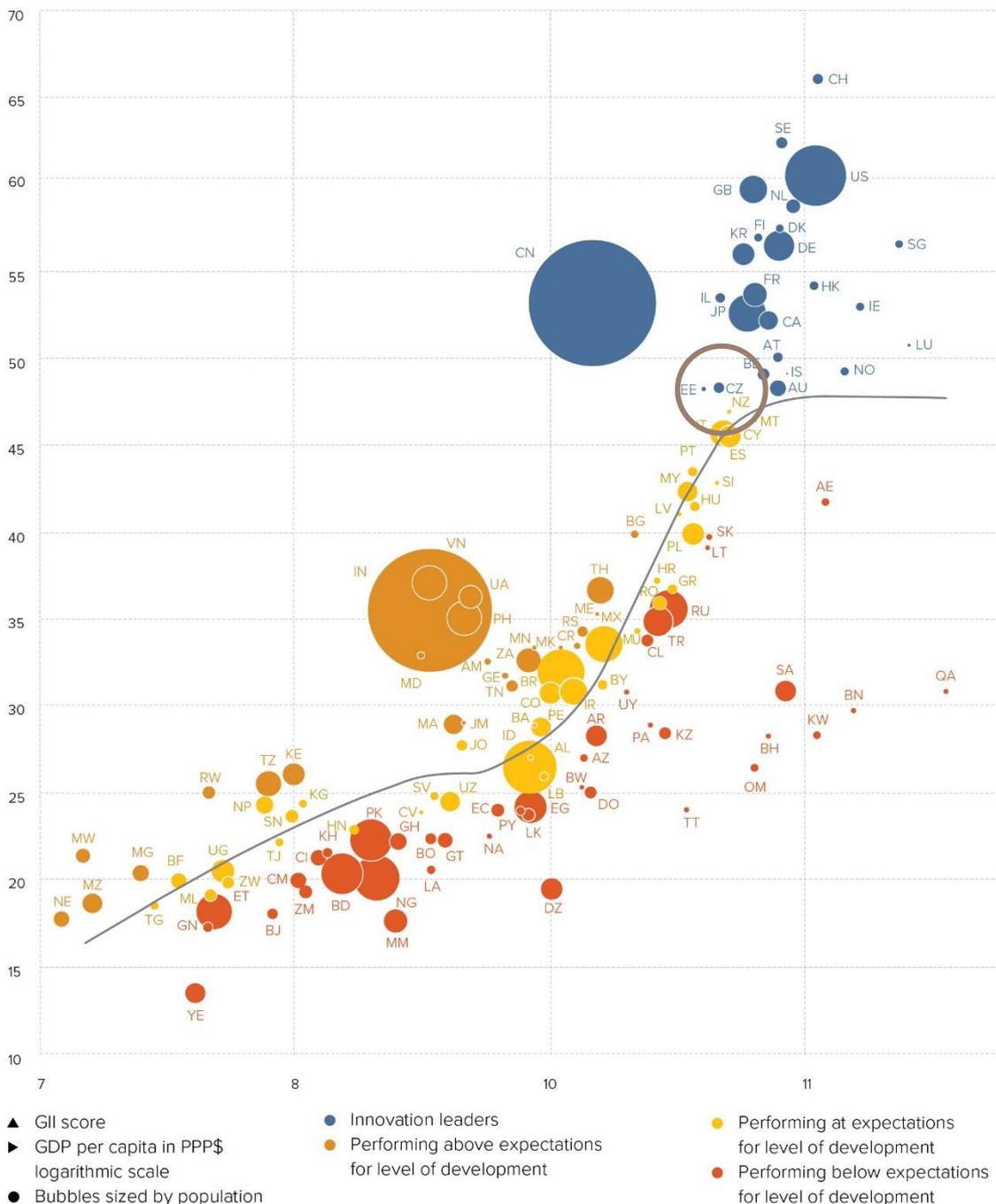
The Czech Republic continues to rank among the top 10 in the indicators environmental certificates (3), Utility models (6) and quality certificates (3). In the area of Innovation linkages, it ranks 1st in R&D financed by abroad.

EXPECTED VS. OBSERVED INNOVATION PERFORMANCE

The bubble chart below shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The trend line gives an indication of the expected innovation performance according to income level. Economies appearing above the trend line are performing better than expected and those below are performing below expectations.

Relative to GDP, the Czech Republic's performance is above expectations for its level of development.

The positive relationship between innovation and development

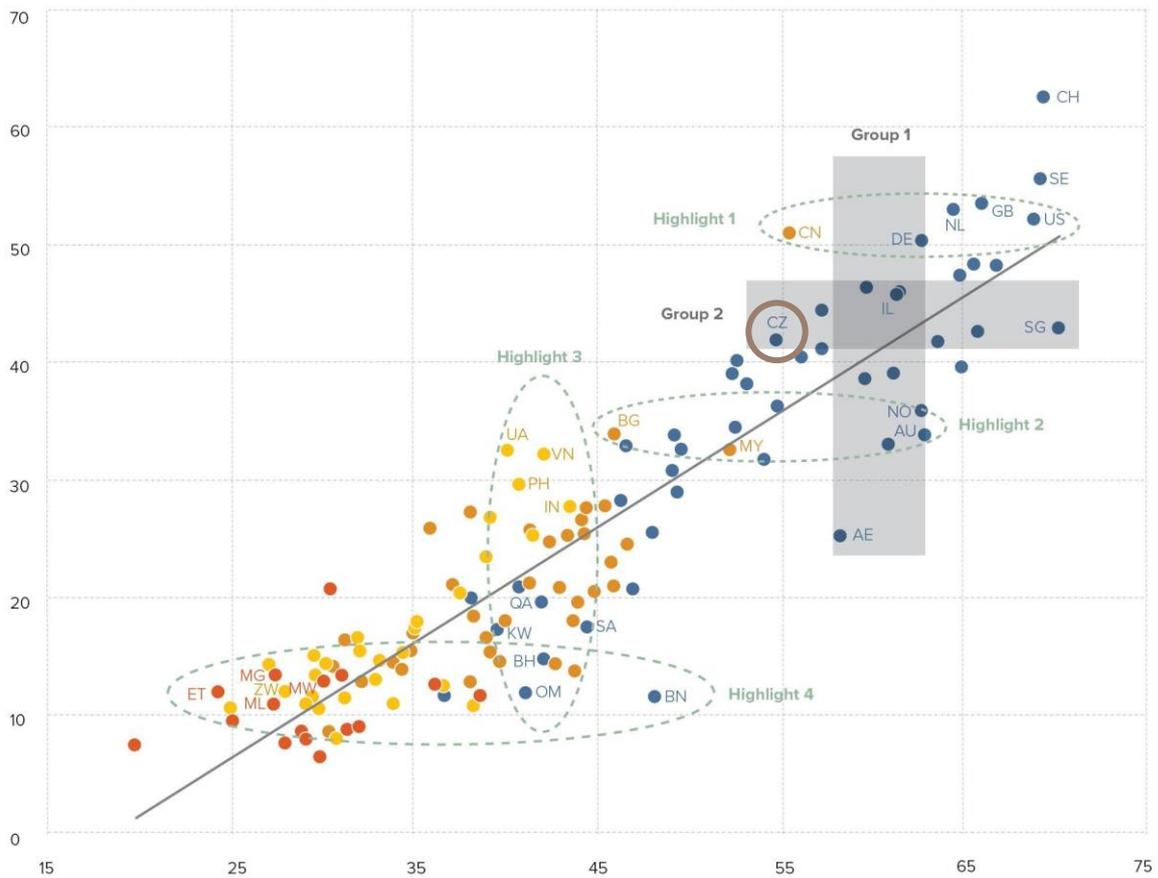


EFFECTIVELY TRANSLATING INNOVATION INVESTMENTS INTO INNOVATION OUTPUTS

The chart below shows the relationship between innovation inputs and innovation outputs. Economies above the line are effectively translating costly innovation investments into more and higher-quality outputs.

The Czech Republic produces more innovation outputs relative to its level of innovation investments.

Innovation input to output performance, 2020

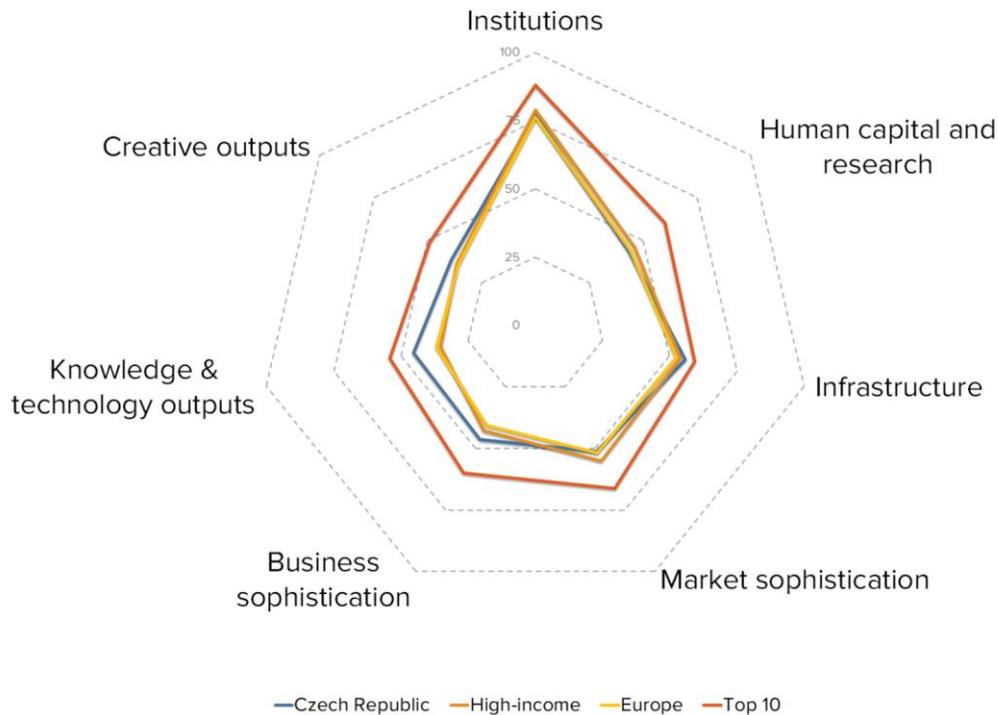


- ▲ Output score
- ▶ Input score
- High income group
- Upper middle-income group
- Lower middle-income group
- Low income group
- Fitted values

AU	Australia	IN	India	NL	Netherlands	CH	Switzerland
BH	Bahrain	IL	Israel	NO	Norway	UA	Ukraine
BN	Brunei Darussalam	KW	Kuwait	OM	Oman	AE	United Arab Emirates
BG	Bulgaria	MG	Madagascar	PH	Philippines	GB	United Kingdom
CN	China	MW	Malawi	QA	Qatar	US	United States of America
CZ	Czech Republic	ML	Mali	SA	Saudi Arabia	VN	Viet Nam
ET	Ethiopia	MY	Malaysia	SG	Singapore	ZW	Zimbabwe
DE	Germany			SE	Sweden		

BENCHMARKING THE CZECH REPUBLIC AGAINST OTHER HIGH-INCOME ECONOMIES AND EUROPE

The Czech Republic's scores in the seven GII pillars



High-income group

The Czech Republic has high scores in four out of the seven GII pillars: Infrastructure, Business sophistication, Knowledge & technology outputs and Creative outputs, which are above average for the high-income group.

Conversely, the Czech Republic scores below the average for its income group average in three pillars: Institutions, Human capital & research and Market sophistication.

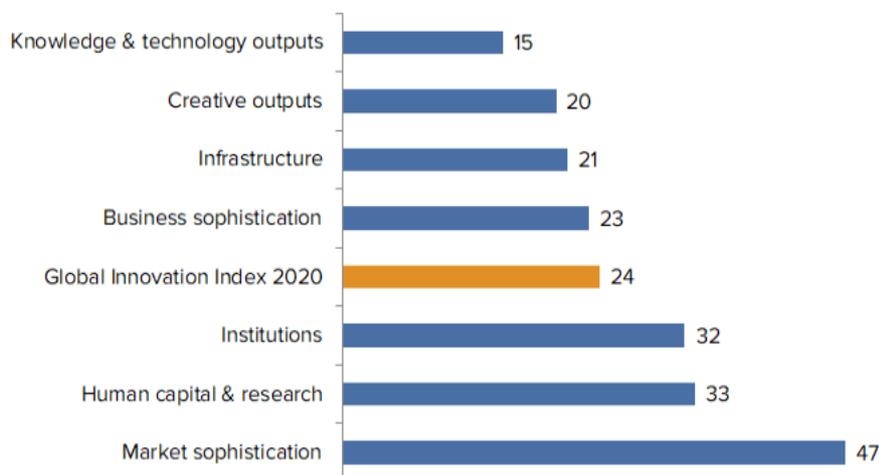
Europe

Compared to other economies in Europe, the Czech Republic performs:

- above average in five out of the seven GII pillars: Institutions, Infrastructure, Business sophistication, Knowledge & technology outputs and Creative outputs; and
- below average in two out of the 7 GII pillars: Human capital & research and Market sophistication.

OVERVIEW OF THE CZECH REPUBLIC RANKINGS IN THE SEVEN GII AREAS

The Czech Republic performs best in Knowledge & technology outputs and its weakest performance is in Market sophistication.



*The highest possible ranking in each pillar is 1.

INNOVATION STRENGTHS AND WEAKNESSES

The table below gives an overview of the strengths and weaknesses of the Czech Republic in the GII 2020.

Strengths			Weaknesses		
Code	Indicator name	Rank	Code	Indicator name	Rank
3.3	Ecological sustainability	4	1.2.3	Cost of redundancy dismissal, salary weeks	84
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP	3	1.3.1	Ease of starting a business*	103
5.1.2	Firms offering formal training, %	10	2.3.3	Global R&D companies, top 3, mn US\$	42
5.2.3	GERD financed by abroad, % GDP	1	3.1.3	Government's online service*	83
5.3.2	High-tech imports, % total trade	8	3.1.4	E-participation*	89
6.1.3	Utility models by origin/bn PPP\$ GDP	6	3.3.1	GDP/unit of energy use	78
6.2	Knowledge impact	4	4.2	Investment	76
6.2.4	ISO 9001 quality certificates/bn PPP\$ GDP	3	4.2.1	Ease of protecting minority investors*	60
6.2.5	High- & medium-high-tech manufacturing, %	5	5.2.2	State of cluster development†	66
6.3.2	High-tech net exports, % total trade	7	5.2.4	JV–strategic alliance deals/bn PPP\$ GDP	74
7.2	Creative goods and services	4	7.2.4	Printing & other media, % manufacturing	58
7.2.5	Creative goods exports, % total trade	1			
7.3.3	Wikipedia edits/mn pop. 15–69	13			

NOTES: * indicates an index; † indicates a survey question. Strengths and weaknesses are listed for pillars and/or sub-pillars where the data minimum coverage (DMC) requirements were not met. For the sake of caution, these ranks are shown in square brackets [] in the country profile. This is to ensure that incomplete data coverage does not lead to erroneous conclusions being made about strengths or weaknesses, in particular about strong or weak sub-pillar rankings.

STRENGTHS

GII strengths for Czech Republic are found in four of the seven GII pillars.

- Infrastructure (21): demonstrates strengths in the sub-pillar Ecological sustainability (4) and in the indicator ISO 14001 environmental certificates (3).
- Business sophistication (23): shows strengths in the indicators Firms offering formal training (10), GERD financed by abroad (1) and High-tech imports (8).
- Knowledge & technology outputs (15): reveals strengths in the sub-pillar Knowledge impact (4) and in the indicators Utility models (6), ISO 9001 quality certificates (3), High- and medium-high-tech manufacturing (5) and High-tech net exports (7).
- Creative outputs (20): has strengths in the sub-pillar Creative goods and services (4) and in the indicators Creative goods exports (1) and Wikipedia edits (13).

WEAKNESSES

GII weaknesses for Czech Republic are found in six of the seven GII pillars.

- Institutions (32): exhibits weaknesses in the indicators Cost of redundancy dismissal (84) and Ease of starting a business (103).
- Human capital & research (33): the indicator Global R&D companies (42) is a weakness.
- Infrastructure (21): displays weaknesses in the indicators Government's online service (83), E-participation (89) and GDP per unit of energy use (78).
- Market sophistication (47): shows weaknesses in the sub-pillar Investment (76) and in the indicator Ease of protecting minority investors (60).
- Business sophistication (23): demonstrates weaknesses in the indicators State of cluster development (66) and JV—strategic alliance deals (74).
- Creative outputs (20): the indicator Printing and other media (58) is a weakness.

Output rank	Input rank	Income	Region	Population (mn)	GDP, PPP\$	GDP per capita, PPP\$	GII 2019 rank		
17	28	High	EUR	10.7	413.1	33,903.0	26		
		Score/Value	Rank			Score/Value	Rank		
INSTITUTIONS				77.1	32	BUSINESS SOPHISTICATION			
1.1	Political environment	75.1	35	5.1	Knowledge workers	48.2	29		
1.1.1	Political and operational stability*.....	83.9	21	5.1.1	Knowledge-intensive employment, %.....	38.0	31		
1.1.2	Government effectiveness*.....	70.7	35	5.1.2	Firms offering formal training, %.....	55.1	10 ● ◆		
1.2	Regulatory environment	75.2	36	5.1.3	GERD performed by business, % GDP.....	1.2	17		
1.2.1	Regulatory quality*.....	75.1	23	5.1.4	GERD financed by business, %.....	33.0	52		
1.2.2	Rule of law*.....	74.0	28	5.1.5	Females employed w/advanced degrees, %.....	12.5	57 ◇		
1.2.3	Cost of redundancy dismissal, salary weeks.....	20.2	84 ○	5.2	Innovation linkages	42.1	23		
1.3	Business environment	81.1	29	5.2.1	University/industry research collaboration*.....	51.0	37		
1.3.1	Ease of starting a business*.....	82.1	103 ○ ◇	5.2.2	State of cluster development.....	46.8	66 ○		
1.3.2	Ease of resolving insolvency*.....	80.1	15	5.2.3	GERD financed by abroad, % GDP.....	0.6	1 ● ◆		
HUMAN CAPITAL & RESEARCH				43.4	33	KNOWLEDGE & TECHNOLOGY OUTPUTS			
2.1	Education	56.5	27	5.3	Knowledge absorption	48.4	17		
2.1.1	Expenditure on education, % GDP.....	5.6	19	5.3.1	Intellectual property payments, % total trade.....	0.8	50		
2.1.2	Government funding/pupil, secondary, % GDP/cap.....	22.3	34	5.3.2	High-tech imports, % total trade.....	19.9	8 ● ◆		
2.1.3	School life expectancy, years.....	16.8	20	5.3.3	ICT services imports, % total trade.....	1.3	53		
2.1.4	PISA scales in reading, maths, & science.....	495.5	23	5.3.4	FDI net inflows, % GDP.....	4.7	30		
2.1.5	Pupil-teacher ratio, secondary.....	11.5	52	5.3.5	Research talent, % in business enterprise.....	51.3	22		
2.2	Tertiary education	45.1	27	6.1 Knowledge creation					
2.2.1	Tertiary enrolment, % gross.....	64.1	39	6.1	Patents by origin/bn PPP\$ GDP.....	2.3	36		
2.2.2	Graduates in science & engineering, %.....	23.9	42	6.1.2	PCT patents by origin/bn PPP\$ GDP.....	0.5	35		
2.2.3	Tertiary inbound mobility, %.....	12.5	14	6.1.3	Utility models by origin/bn PPP\$ GDP.....	3.0	6 ● ◆		
2.3	Research & development (R&D)	28.8	38	6.1.4	Scientific & technical articles/bn PPP\$ GDP.....	25.2	14		
2.3.1	Researchers, FTE/mn pop.....	3,862.7	26	6.1.5	Citable documents H-index.....	29.8	31		
2.3.2	Gross expenditure on R&D, % GDP.....	1.9	19	6.2 Knowledge impact					
2.3.3	Global R&D companies, avg. exp. top 3, mn \$US.....	0.0	42 ○ ◇	6.2.1	Growth rate of PPP\$ GDP/worker, %.....	2.0	47		
2.3.4	QS university ranking, average score top 3*.....	29.9	40	6.2.2	New businesses/th pop. 15-64.....	4.4	34		
INFRASTRUCTURE				55.8	21	6.3 Knowledge diffusion			
3.1	Information & communication technologies (ICTs)	68.1	63 ◇	6.3.1	Intellectual property receipts, % total trade.....	0.3	31		
3.1.1	ICT access*.....	72.3	53 ◇	6.3.2	High-tech net exports, % total trade.....	19.7	7 ● ◆		
3.1.2	ICT use*.....	73.0	34	6.3.3	ICT services exports, % total trade.....	2.3	46		
3.1.3	Government's online service*.....	65.3	83 ○ ◇	6.3.4	FDI net outflows, % GDP.....	2.6	27		
3.1.4	E-participation*.....	61.8	89 ○ ◇	CREATIVE OUTPUTS					
3.2	General infrastructure	39.7	24	7.1	Intangible assets	32.7	43		
3.2.1	Electricity output, kWh/mn pop.....	8,171.8	20	7.1.1	Trademarks by origin/bn PPP\$ GDP.....	58.1	36		
3.2.2	Logistics performance*.....	75.6	22	7.1.2	Global brand value, top 5,000, % GDP.....	36.1	41		
3.2.3	Gross capital formation, % GDP.....	26.4	40	7.1.3	Industrial designs by origin/bn PPP\$ GDP.....	3.8	33		
3.3	Ecological sustainability	59.6	4 ● ◆	7.1.4	ICTs & organizational model creation*.....	66.3	26		
3.3.1	GDP/unit of energy use.....	8.0	78 ○	7.2 Creative goods and services					
3.3.2	Environmental performance*.....	71.0	20	7.2.1	Cultural & creative services exports, % total trade.....	0.5	47		
3.3.3	ISO 14001 environmental certificates/bn PPP\$ GDP.....	10.8	3 ● ◆	7.2.2	National feature films/mn pop. 15-69.....	7.0	29		
MARKET SOPHISTICATION				51.1	47	7.2.3	Entertainment & Media market/th pop. 15-69.....	25.5	26
4.1	Credit	45.9	49	7.2.4	Printing and other media, % manufacturing.....	1.0	58 ○		
4.1.1	Ease of getting credit*.....	70.0	44	7.2.5	Creative goods exports, % total trade.....	10.8	1 ● ◆		
4.1.2	Domestic credit to private sector, % GDP.....	52.1	66	7.3 Online creativity					
4.1.3	Microfinance gross loans, % GDP.....	n/a	n/a	7.3.1	Generic top-level domains (TLDs)/th pop. 15-69.....	16.5	30		
4.2	Investment	34.9	76 ○	7.3.2	Country-code TLDs/th pop. 15-69.....	53.7	15		
4.2.1	Ease of protecting minority investors*.....	62.0	60 ○	7.3.3	Wikipedia edits/mn pop. 15-69.....	85.9	13 ●		
4.2.2	Market capitalization, % GDP.....	n/a	n/a	7.3.4	Mobile app creation/bn PPP\$ GDP.....	15.9	30		
4.2.3	Venture capital deals/bn PPP\$ GDP.....	0.0	37	7.4 Online creativity					
4.3	Trade, competition, and market scale	72.6	29	7.4.1	Generic top-level domains (TLDs)/th pop. 15-69.....	16.5	30		
4.3.1	Applied tariff rate, weighted avg., %.....	1.7	22	7.4.2	Country-code TLDs/th pop. 15-69.....	53.7	15		
4.3.2	Intensity of local competition*.....	78.2	16	7.4.3	Wikipedia edits/mn pop. 15-69.....	85.9	13 ●		
4.3.3	Domestic market scale, bn PPP\$.....	413.1	45	7.4.4	Mobile app creation/bn PPP\$ GDP.....	15.9	30		

NOTES: ● indicates a strength; ○ a weakness; ◆ a strength relative to the other top 25-ranked GII economies; ◇ a weakness relative to the other top 25-ranked GII economies; * an index; + a survey question. Ⓞ indicates that the economy's data are older than the base year; see Appendix II for details, including the year of the data, at <http://globalinnovationindex.org>. Square brackets [] indicate that the data minimum coverage (DMC) requirements were not met at the sub-pillar or pillar level.

DATA AVAILABILITY

The following tables list data that are either missing or outdated for the Czech Republic.

Missing data

Code	Indicator name	Country year	Model year	Source
4.1.3	Microfinance gross loans, % GDP	n/a	2018	Microfinance Information Exchange
4.2.2	Market capitalization, % GDP	n/a	2018	World Federation of Exchanges

Outdated data

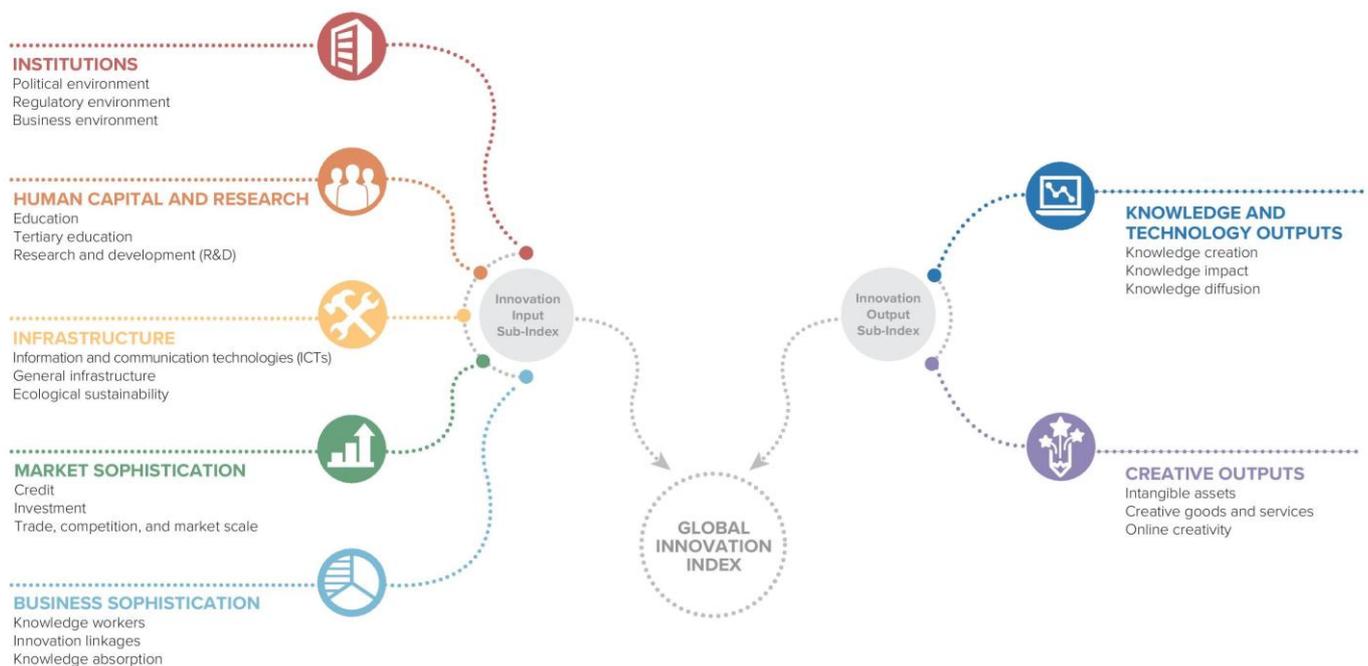
Code	Indicator name	Country year	Model year	Source
2.1.1	Expenditure on education, % GDP	2016	2018	UNESCO Institute for Statistics
2.1.5	Pupil-teacher ratio, secondary	2013	2018	UNESCO Institute for Statistics
5.1.2	Firms offering formal training, %	2012	2018	World Bank
7.2.4	Printing & other media, % manufacturing	2016	2017	United Nations Industrial Development Organization

ABOUT THE GLOBAL INNOVATION INDEX

The Global Innovation Index (GII) is co-published by Cornell University, INSEAD, and the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations. In 2020, the GII presents its 13th edition devoted to the theme *Who Will Finance Innovation?*

Recognizing that innovation is a key driver of economic development, the GII aims to provide an innovation ranking and rich analysis referencing around 130 economies. Over the last decade, the GII has established itself as both a leading reference on innovation and a “tool for action” for economies that incorporate the GII into their innovation agendas.

Framework of the Global Innovation Index 2020



The Index is a ranking of the innovation capabilities and results of world economies. It measures innovation based on criteria that include institutions, human capital and research, infrastructure, credit, investment, linkages; the creation, absorption and diffusion of knowledge; and creative outputs.

The GII has two sub-indices: the Innovation Input Sub-Index and the Innovation Output Sub-Index, and seven pillars, each consisting of three sub-pillars.



www.globalinnovationindex.org



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