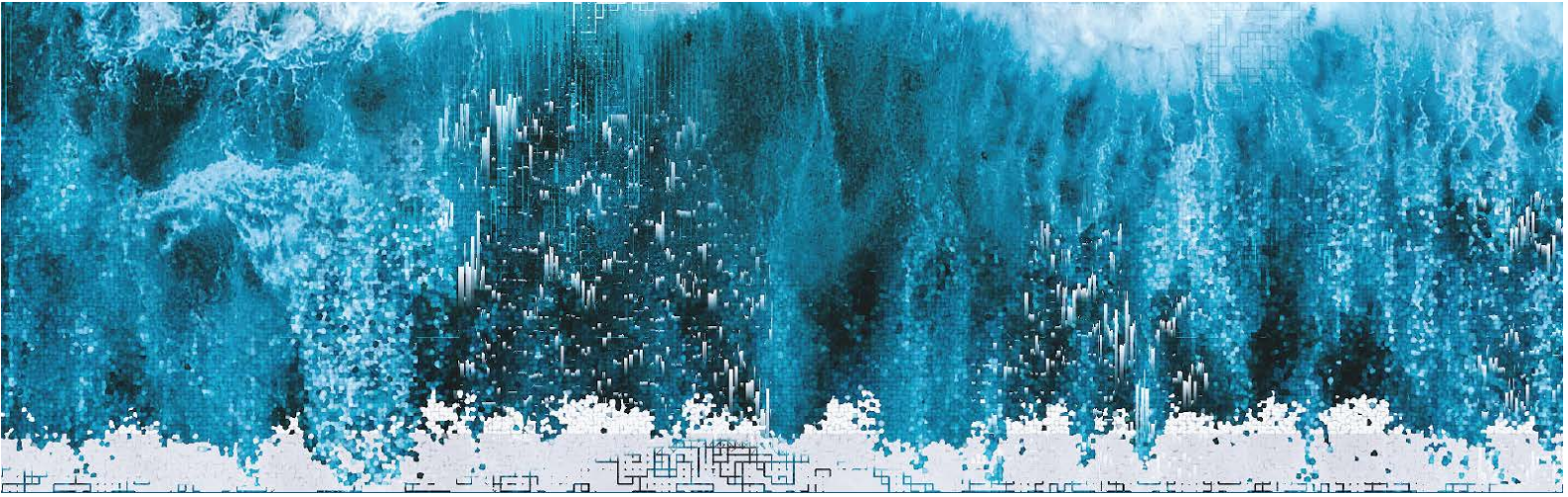


GLOBAL INNOVATION INDEX 2018

Sweden

3rd Sweden is ranked 3rd in the GII 2018, moving down 1 position from the previous year.

The GII indicators are grouped into innovation inputs and outputs. The following table reflects Sweden's rankings over time[1].

Sweden's rankings over time

	GII	Input	Output	Efficiency
2018	3	3	3	10
2017	2	2	3	12
2016	2	5	2	10

- Sweden performs equally well in innovation inputs and outputs.
- It presents a stable performance in innovation outputs, ranking 3rd for the second consecutive year, but down 1 spot from 2016.
- Sweden moves down 1 position in innovation inputs, ranking 3rd this year.
- Sweden is fairly efficient in translating its high-quality innovation inputs into outputs. It ranks 10th in the Innovation Efficiency Ratio, moving up 2 positions since last year. Despite this improvement, its ranking is lower than the other top-ranked economies, Switzerland (1st) and the Netherlands (4th).

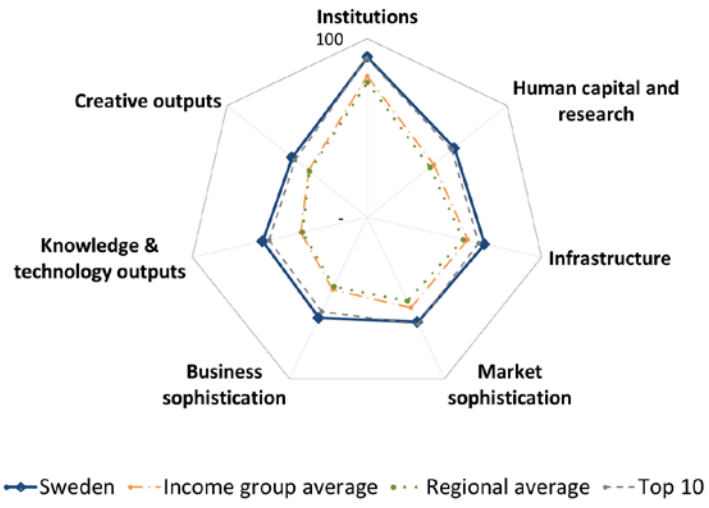
3rd Sweden is ranked 3rd among the 47 high-income countries in the GII 2018.

3rd Sweden is ranked 3rd among the 39 countries in Europe.

[1] Note that year-on-year comparisons of the GII ranks are imperfect and influenced by changes in the GII model and data availability.

Benchmarking Sweden to other high-income countries and the Europe region

Sweden's scores by area



High-income countries

Sweden has high scores in 6 out of the 7 GII areas – **Institutions, Human Capital & Research, Infrastructure, Business Sophistication, Knowledge & Technology Outputs,** and **Creative Outputs**, in which it scores above the average of the top 10 countries in the GII 2018.

Top scores in the areas *Regulatory environment, Research & Development (R&D), Information & Communication Technologies (ICTs), Knowledge workers, Knowledge creation*, and *Online creativity,* are behind these high rankings.

Europe region

Compared to other countries in the Europe region, Sweden performs above-average in all 7 GII areas.

Sweden's innovation profile

Strengths

- The most important strength for Sweden is the **Global Innovation Index** itself. Other major strengths are the **Innovation Input** and **Output Sub-Indices**, both positioned 3rd.
- Sweden presents strong ranks in two of the five areas that capture the input side of the innovation process in the GII: **Infrastructure** (3rd) and **Business Sophistication** (5th).
- In **Infrastructure**, the country performs strongly in the area *General infrastructure* (4th) as well as indicators *Logistics performance* (3rd) and *Environmental performance* (5th).
- In **Business Sophistication**, Sweden demonstrates strong performance in two of its three components: *Knowledge workers* (2nd) and *Innovation linkages* (4th). At the indicator level, strengths are found in *Firms offering formal training* (3rd) and *Joint venture–strategic alliance deals* (4th).
- Sweden exhibits strength also in **Human Capital & Research** (7th) in indicators *Expenditure on education* (4th), *Researchers* (3rd), and *R&D expenditures* (4th).
- In **Institutions** (9th), Sweden performs strongly in the indicator *Rule of law* where it ranks 1st in the world.

- On the **innovation output** side, Sweden achieves remarkable results in **Knowledge & Technology Outputs**, which is ranked 3rd and is marked a strength for the country. Here Sweden performs strongly in one of its three components – *Knowledge creation* (2nd) – and in indicators *PCT patents by origin* and *Intellectual property receipts* – both ranking 1st.

- In **Creative Outputs** (6th), Sweden shows strength in the area *Online creativity* and indicators *ICTs & organizational model creation* and *Wikipedia edits* – all ranking 3rd.

Weaknesses

- Sweden's weaknesses are scattered across the various areas of the GII.

- In **Institutions** (9th), only relative weakness is found in the indicator *Cost of redundancy dismissal* (55th).

- In **Human Capital & Research** (7th), the indicator *Pupil-teacher ratio* (52nd) is identified as a weakness.

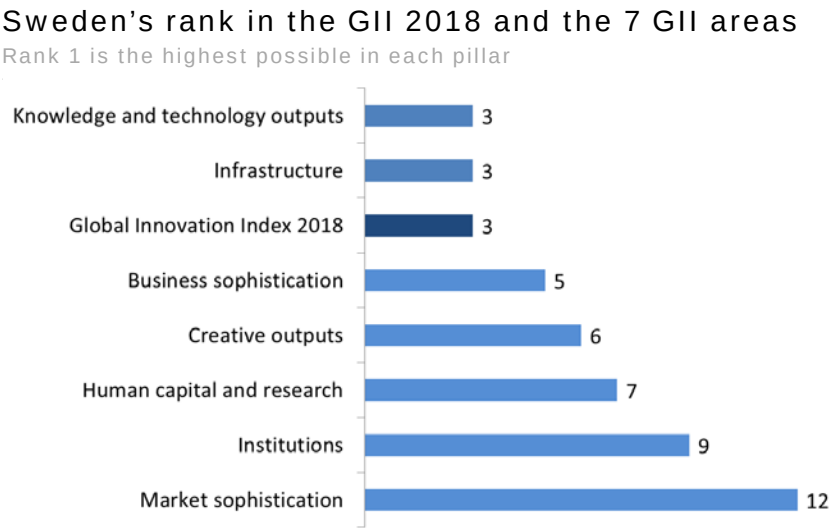
- In **Infrastructure** (3rd), the indicator *GDP per unit of energy use* (58th) presents a relatively weak performance.

- In **Market Sophistication** (12th), Sweden demonstrates relative weakness in indicators *Ease of getting credit* (70th) and *Applied tariff rate* (19th).

- In **Business Sophistication** (5th), Sweden has weak ranks in indicators *R&D financed by abroad* (55th), *High-tech imports* (53rd), and *FDI inflows* (104th).

- On the **innovation output** side, relative weaknesses are only found in two indicators: *Productivity growth* (45th) in **Knowledge & Technology Outputs** (3rd) and *Trademarks by origin* (44th) in **Creative Outputs** (6th).

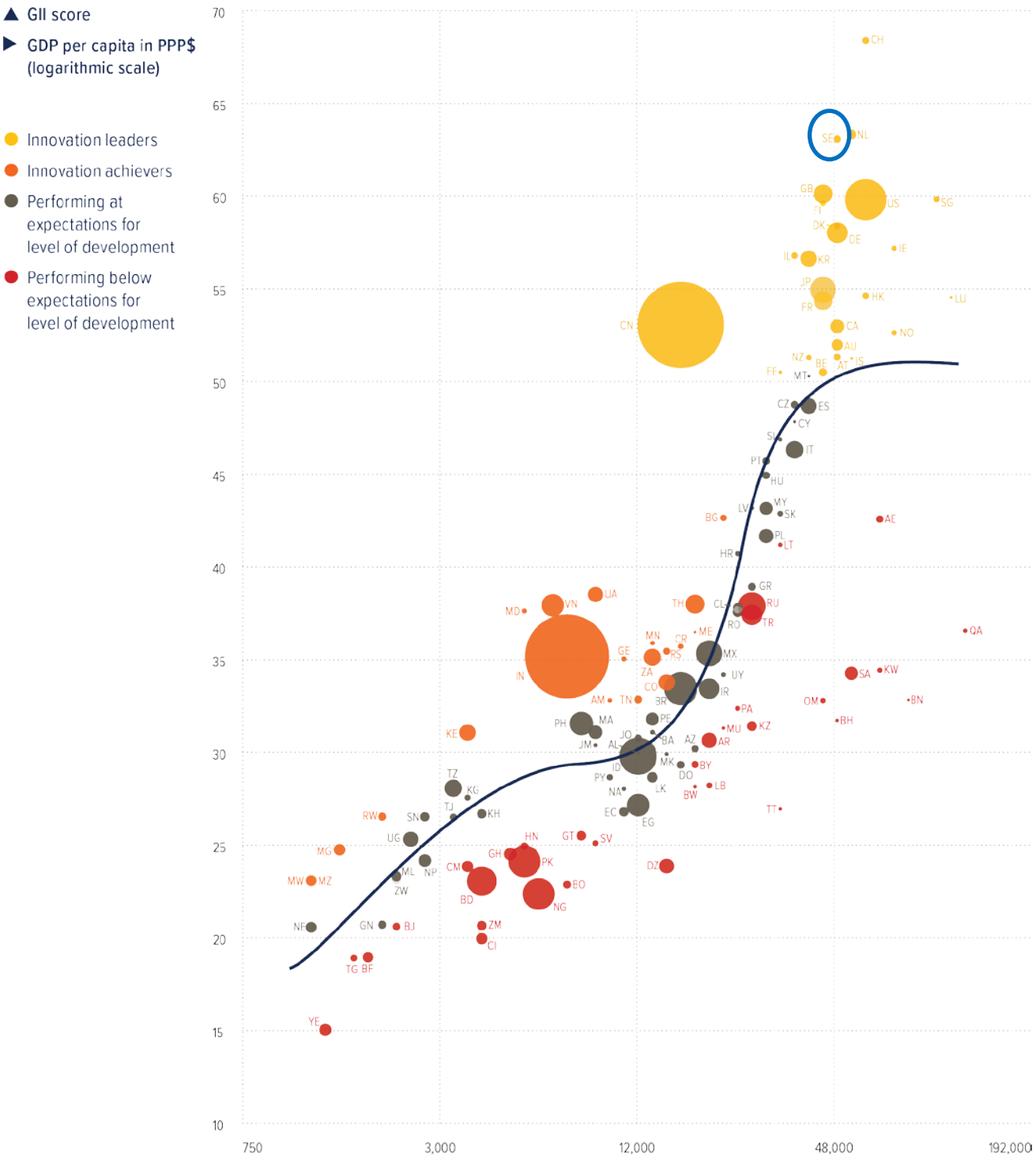
The following figure presents a summary of Sweden's ranks in the 7 GII areas, as well as the overall rank in the GII 2018.



Expected vs. Observed Innovation Performance

The GII bubble chart shows the relationship between income levels (GDP per capita) and innovation performance (GII score). The depicted trendline gives an indication of the expected innovation performance at different levels of income. Countries located above the trendline are performing better that what would be expected based on their income level. Countries below the line are Innovation Under-performers relative to GDP.

Relative to GDP, Sweden performs well above its expected level of development.



Missing and Outdated Data

More and better data improves the ability of a country to understand its strengths and weaknesses and give policymakers greater capacity to plan and adapt public policies accordingly. The GII 2018 covers 126 countries that complied with the minimum indicator coverage of 35 indicators in the Innovation Input Sub-Index (66%) and 18 indicators in the Innovation Output Sub-Index (66%).

The following tables show data for Sweden that is not available or that is outdated.

Missing Data

Code	Indicator	Country Year	Model Year	Source
4.1.3	Microfinance gross loans, % GDP	n/a	2016	Microfinance Information Exchange, Mix Market
4.2.2	Market capitalization, % GDP	n/a	2016	World Bank, World Development Indicators
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	2016	WIPO, Intellectual Property Statistics

Outdated Data

Code	Indicator	Country Year	Model Year	Source
2.1.3	School life expectancy, years	2015	2016	UNESCO Institute for Statistics
2.1.5	Pupil-teacher ratio, secondary	2015	2016	UNESCO Institute for Statistics
2.2.1	Tertiary enrolment, % gross	2015	2016	UNESCO Institute for Statistics
2.2.2	Graduates in science & engineering, %	2015	2016	UNESCO Institute for Statistics
2.2.3	Tertiary inbound mobility, %	2015	2016	UNESCO Institute for Statistics
5.2.3	GERD financed by abroad, %	2013	2015	UNESCO Institute for Statistics
7.2.1	Cultural & creative services exports, % total trade	2015	2016	WTO, Trade in Commercial Services

SWEDEN

GII 2018 rank: **3**

Output rank	Input rank	Income	Region	Efficiency ratio	Population (mn)	GDP, PPP$	GDP per capita, PPP$	GII 2017 rank
3 ●	3 ●	High	EUR	10	9.9	521.7	51,474.8	2

		Score/Value	Rank	
	Institutions	**89.6**	**9**	
1.1	Political environment	88.8	12	
1.1.1	Political stability & safety*	87.3	17	
1.1.2	Government effectiveness*	89.5	11	
1.2	Regulatory environment	93.0	13	
1.2.1	Regulatory quality*	91.6	7	
1.2.2	Rule of law*	100.0	1	●
1.2.3	Cost of redundancy dismissal, salary weeks	14.4	55	○
1.3	Business environment	87.1	14	
1.3.1	Ease of starting a business*	94.7	11	
1.3.2	Ease of resolving insolvency*	79.5	15	
	Human capital & research	**62.2**	**7**	
2.1	Education	65.8	11	
2.1.1	Expenditure on education, % GDP	7.7	4	● ◆
2.1.2	Government funding/pupil, secondary, % GDP/cap	24.8	25	
2.1.3	School life expectancy, years[d]	18.6	8	
2.1.4	PISA scales in reading, maths & science	495.8	23	
2.1.5	Pupil-teacher ratio, secondary[d]	12.9	52	○
2.2	Tertiary education	43.7	29	
2.2.1	Tertiary enrolment, % gross[d]	62.3	38	
2.2.2	Graduates in science & engineering, %[d]	26.0	25	
2.2.3	Tertiary inbound mobility, %[d]	6.2	32	
2.3	Research & development (R&D)	77.0	6	
2.3.1	Researchers, FTE/mn pop.	7,153.4	3	● ◆
2.3.2	Gross expenditure on R&D, % GDP	3.3	4	● ◆
2.3.3	Global R&D companies, top 3, mn US$	80.0	11	
2.3.4	QS university ranking, average score top 3*	64.9	14	
	Infrastructure	**67.1**	**3**	● ◆
3.1	Information & communication technologies (ICTs)	83.4	15	
3.1.1	ICT access*	85.5	13	
3.1.2	ICT use*	84.0	6	
3.1.3	Government's online service*	87.7	15	
3.1.4	E-participation*	76.3	27	
3.2	General infrastructure	64.4	4	● ◆
3.2.1	Electricity output, kWh/cap	15,608.8	7	
3.2.2	Logistics performance*	99.0	3	● ◆
3.2.3	Gross capital formation, % GDP	26.0	30	
3.3	Ecological sustainability	53.5	12	
3.3.1	GDP/unit of energy use	9.3	58	○
3.3.2	Environmental performance*	80.5	5	●
3.3.3	ISO 14001 environmental certificates/bn PPP$ GDP	6.9	13	◆
	Market sophistication	**64.7**	**12**	
4.1	Credit	55.3	21	
4.1.1	Ease of getting credit*	55.0	70	○
4.1.2	Domestic credit to private sector, % GDP	128.7	16	
4.1.3	Microfinance gross loans, % GDP	n/a	n/a	
4.2	Investment	66.7	12	
4.2.1	Ease of protecting minority investors*	68.3	28	
4.2.2	Market capitalization, % GDP	n/a	n/a	
4.2.3	Venture capital deals/bn PPP$ GDP	0.2	8	
4.3	Trade, competition, & market scale	72.2	24	
4.3.1	Applied tariff rate, weighted mean, %	1.6	19	○
4.3.2	Intensity of local competition†	75.1	24	
4.3.3	Domestic market scale, bn PPP$	521.7	36	

		Score/Value	Rank	
	Business sophistication	**62.5**	**5**	● ◆
5.1	Knowledge workers	81.3	2	● ◆
5.1.1	Knowledge-intensive employment, %	52.3	5	
5.1.2	Firms offering formal training, % firms	70.3	3	●
5.1.3	GERD performed by business, % GDP	2.3	5	
5.1.4	GERD financed by business, %	57.3	14	
5.1.5	Females employed w/advanced degrees, %	24.8	12	
5.2	Innovation linkages	56.8	4	●
5.2.1	University/industry research collaboration†	70.7	10	
5.2.2	State of cluster development†	67.4	15	
5.2.3	GERD financed by abroad, %[d]	6.7	55	○
5.2.4	JV–strategic alliance deals/bn PPP$ GDP	0.2	4	● ◆
5.2.5	Patent families 2+ offices/bn PPP$ GDP	6.2	5	◆
5.3	Knowledge absorption	49.4	14	
5.3.1	Intellectual property payments, % total trade	1.5	21	
5.3.2	High-tech net imports, % total trade	9.0	53	○
5.3.3	ICT services imports, % total trade	3.1	8	
5.3.4	FDI net inflows, % GDP	1.1	104	○
5.3.5	Research talent, % in business enterprise	67.0	5	
	Knowledge & technology outputs	**60.1**	**3**	● ◆
6.1	Knowledge creation	75.9	2	● ◆
6.1.1	Patents by origin/bn PPP$ GDP	11.2	9	
6.1.2	PCT patents by origin/bn PPP$ GDP	7.6	1	● ◆
6.1.3	Utility models by origin/bn PPP$ GDP	n/a	n/a	
6.1.4	Scientific & technical articles/bn PPP$ GDP	32.1	7	◆
6.1.5	Citable documents H index	59.5	11	
6.2	Knowledge impact	50.2	18	
6.2.1	Growth rate of PPP$ GDP/worker, %	1.5	45	○
6.2.2	New businesses/th pop. 15–64	8.1	19	
6.2.3	Computer software spending, % GDP	0.6	12	
6.2.4	ISO 9001 quality certificates/bn PPP$ GDP	8.1	43	
6.2.5	High- & medium-high-tech manufactures, %	0.4	13	
6.3	Knowledge diffusion	54.1	9	
6.3.1	Intellectual property receipts, % total trade	3.4	1	● ◆
6.3.2	High-tech net exports, % total trade	8.8	22	
6.3.3	ICT services exports, % total trade	6.6	7	
6.3.4	FDI net outflows, % GDP	2.0	30	◇
	Creative outputs	**53.8**	**6**	
7.1	Intangible assets	57.1	19	
7.1.1	Trademarks by origin/bn PPP$ GDP	52.8	44	○
7.1.2	Industrial designs by origin/bn PPP$ GDP	4.9	25	
7.1.3	ICTs & business model creation†	81.2	7	
7.1.4	ICTs & organizational model creation†	81.4	3	● ◆
7.2	Creative goods & services	39.8	18	
7.2.1	Cultural & creative services exports, % total trade[d]	0.9	16	
7.2.2	National feature films/mn pop. 15–69	7.4	20	
7.2.3	Entertainment & Media market/th pop. 15–69	72.4	5	
7.2.4	Printing & other media, % manufacturing	1.4	32	
7.2.5	Creative goods exports, % total trade	1.7	32	
7.3	Online creativity	61.3	3	● ◆
7.3.1	Generic top-level domains (TLDs)/th pop. 15–69	42.5	17	
7.3.2	Country-code TLDs/th pop. 15–69	80.6	6	◆
7.3.3	Wikipedia edits/mn pop. 15–69	106.6	3	● ◆
7.3.4	Mobile app creation/bn PPP$ GDP	50.2	6	

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;** * an index; † a survey question. [d] indicates that the country'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; see pagepage 75 of this appendix for details.