HUNGARY

35th  Hungary ranks 35th 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 Hungary 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 Hungary in the GII 2020 is between ranks 33 and 35.

<table>
<thead>
<tr>
<th></th>
<th>GII</th>
<th>Innovation inputs</th>
<th>Innovation outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020</td>
<td>35</td>
<td>37</td>
<td>32</td>
</tr>
<tr>
<td>2019</td>
<td>33</td>
<td>39</td>
<td>26</td>
</tr>
<tr>
<td>2018</td>
<td>33</td>
<td>41</td>
<td>25</td>
</tr>
</tbody>
</table>

- Hungary performs better in innovation outputs than innovation inputs in 2020.
- This year Hungary ranks 37th in innovation inputs, higher than last year and higher compared to 2018.
- As for innovation outputs, Hungary ranks 32nd. This position is lower than last year and lower compared to 2018.

33rd  Hungary ranks 33rd among the 49 high-income group economies.

22nd  Hungary ranks 22nd among the 39 economies in Europe.
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, Hungary’s performance matches expectations for its level of development.

The positive relationship between innovation and development

- ▲: GII score
- ▼: GDP per capita in PPP$
- \log$ scale
- ●: Bubbles sized by population

Innovation leaders: Performing above expectations for level of development
Performing at expectations for level of development
Performing below expectations for level of 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.

Hungary produces more innovation outputs relative to its level of innovation investments.

Innovation input to output performance, 2020
BENCHMARKING HUNGARY AGAINST OTHER HIGH-INCOME GROUP ECONOMIES AND EUROPE

Hungary’s scores in the seven GII pillars

High-income group economies

Hungary has high scores in one of the seven GII pillars: Knowledge & technology outputs, which are above average for the high-income group.

Conversely, Hungary scores below average for its income group in six of the seven GII pillars: Institutions, Human capital & research, Infrastructure, Market sophistication, Business sophistication and Creative outputs.

Europe

Compared to other economies in Europe, Hungary performs:

- above average in one of the seven GII pillars: Knowledge & technology outputs; and
- below average in six out of the seven GII pillars: Institutions, Human capital & research, Infrastructure, Market sophistication, Business sophistication and Creative outputs.
OVERVIEW OF HUNGARY RANKINGS IN THE SEVEN GII AREAS

Hungary performs best in Knowledge & technology outputs and its weakest performance is in Market sophistication.

INNOVATION STRENGTHS AND WEAKNESSES

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

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Code</th>
<th>Indicator name</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strengths</td>
<td>3.3</td>
<td>Ecological sustainability</td>
<td>19</td>
</tr>
<tr>
<td>Strengths</td>
<td>3.3.3</td>
<td>ISO 14001 environmental certificates/bn PPP$ GDP</td>
<td>10</td>
</tr>
<tr>
<td>Strengths</td>
<td>5.3.2</td>
<td>High-tech imports, % total trade</td>
<td>15</td>
</tr>
<tr>
<td>Strengths</td>
<td>5.3.5</td>
<td>Research talent, % in business enterprise</td>
<td>8</td>
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<tr>
<td>Strengths</td>
<td>6.2</td>
<td>Knowledge impact</td>
<td>8</td>
</tr>
<tr>
<td>Strengths</td>
<td>6.2.4</td>
<td>ISO 9001 quality certificates/bn PPP$ GDP</td>
<td>11</td>
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<tr>
<td>Strengths</td>
<td>6.3.1</td>
<td>Intellectual property receipts, % total trade</td>
<td>15</td>
</tr>
<tr>
<td>Strengths</td>
<td>6.3.2</td>
<td>High-tech net exports, % total trade</td>
<td>10</td>
</tr>
<tr>
<td>Strengths</td>
<td>7.2</td>
<td>Creative goods and services</td>
<td>15</td>
</tr>
<tr>
<td>Strengths</td>
<td>7.2.5</td>
<td>Creative goods exports, % total trade</td>
<td>9</td>
</tr>
<tr>
<td>Strengths</td>
<td>7.3.2</td>
<td>Country-code TLDs/th pop. 15–69</td>
<td>19</td>
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<tr>
<td>Strengths</td>
<td>7.3.3</td>
<td>Wikipedia edits/mn pop. 15–69</td>
<td>18</td>
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<table>
<thead>
<tr>
<th>Weaknesses</th>
<th>Code</th>
<th>Indicator name</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weaknesses</td>
<td>4.1.2</td>
<td>Domestic credit to private sector, % GDP</td>
<td>89</td>
</tr>
<tr>
<td>Weaknesses</td>
<td>4.2</td>
<td>Investment</td>
<td>125</td>
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<tr>
<td>Weaknesses</td>
<td>4.2.1</td>
<td>Ease of protecting minority investors*</td>
<td>88</td>
</tr>
<tr>
<td>Weaknesses</td>
<td>4.2.2</td>
<td>Market capitalization, % GDP</td>
<td>60</td>
</tr>
<tr>
<td>Weaknesses</td>
<td>4.2.3</td>
<td>Venture capital deals/bn PPP$ GDP</td>
<td>58</td>
</tr>
<tr>
<td>Weaknesses</td>
<td>4.3.2</td>
<td>Intensity of local competition†</td>
<td>110</td>
</tr>
<tr>
<td>Weaknesses</td>
<td>5.1.2</td>
<td>Firms offering formal training, %</td>
<td>86</td>
</tr>
<tr>
<td>Weaknesses</td>
<td>5.2.4</td>
<td>JV–strategic alliance deals/bn PPP$ GDP</td>
<td>86</td>
</tr>
<tr>
<td>Weaknesses</td>
<td>5.3.4</td>
<td>FDI net inflows, % GDP</td>
<td>96</td>
</tr>
<tr>
<td>Weaknesses</td>
<td>6.3.4</td>
<td>FDI net outflows, % GDP</td>
<td>124</td>
</tr>
<tr>
<td>Weaknesses</td>
<td>7.2.4</td>
<td>Printing &amp; other media, % manufacturing</td>
<td>71</td>
</tr>
</tbody>
</table>

*The highest possible ranking in each pillar is 1.
STRENGTHS

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

- Infrastructure (34): demonstrates strengths in the sub-pillar Ecological sustainability (19) and in the indicator ISO 14001 environmental certificates (10).
- Business sophistication (33): displays strengths in the indicators High-tech imports (15) and Research talent (8).
- Knowledge & technology outputs (22): reveals strengths in the sub-pillar Knowledge impact (8) and in the indicators ISO 9001 quality certificates (11), High- & medium-high-tech manufacturing (9), Intellectual property receipts (15) and High-tech net exports (10).
- Creative outputs (46): shows strengths in the sub-pillar Creative goods and services (15) and in the indicators Creative goods exports (9), Country-code TLDs (19) and Wikipedia edits (18).

WEAKNESSES

GII weaknesses for Hungary are found in four of the seven GII pillars.

- Market sophistication (89): shows weaknesses in the sub-pillar Investment (125) and in the indicators Domestic credit to private sector (89), Ease of protecting minority investors (88), Market capitalization (60), Venture capital deals (58) and Intensity of local competition (110).
- Business sophistication (33): demonstrates weaknesses in the indicators Firms offering formal training (86), JV–strategic alliance deals (86) and FDI net inflows (96).
- Knowledge & technology outputs (22): the indicator FDI net outflows (124) reveals a weakness.
- Creative outputs (46): displays weakness in the indicator Printing & other media (71).
### HUNGARY

#### Output rank | Input rank | Income | Region | Population (mm) | GDP, PPP$ | GDP per capita, PPP$ | Gill 2019 rank
--- | --- | --- | --- | --- | --- | --- | ---
32 | 37 | High | EUR | 9.7 | 332.2 | 29,723.4 | 33

#### INSTITUTIONS

| Rank | Score | Description | Value | Country
--- | --- | --- | --- | ---
1 | 71.3 | Political environment | 68.1 | HUNGARY
1.1 | | Political and operational stability | 62.1 | HUNGARY
1.1.1 | | Rule of law | 60.0 | HUNGARY
1.2 | 74.3 | Regulatory environment | 73.7 | HUNGARY
1.2.1 | | Regulatory quality | 57.7 | HUNGARY
1.2.2 | | Cost of redundancy dismissal, salary weeks | 13.4 | HUNGARY
1.3 | 71.6 | Business environment | 88.2 | HUNGARY
1.3.1 | | Ease of starting a business | 88.2 | HUNGARY
1.3.2 | | Ease of resolving insolvency | 55.0 | HUNGARY

#### HUMAN CAPITAL & RESEARCH

| Rank | Score | Description | Value | Country
--- | --- | --- | --- | ---
2 | 41.4 | Education | 51.2 | HUNGARY
2.1 | | Expenditure on education, % GDP | 4.7 | HUNGARY
2.1.1 | | Government fundings/pupil, secondary, % GDP | 23.1 | HUNGARY
2.1.2 | | School life expectancy, yrs | 15.2 | HUNGARY
2.1.4 | | PISA scales in reading, maths, & science | 479.3 | HUNGARY
2.1.5 | | Pupil-teacher ratio, secondary | 10.0 | HUNGARY
2.2 | 52.5 | Tertiary education | 48.5 | HUNGARY
2.2.1 | | Tertiary enrolment, % gross | 23.3 | HUNGARY
2.2.2 | | Graduates in science & engineering, % | 50.6 | HUNGARY
2.2.4 | | Tertiary inbound mobility, % | 10.0 | HUNGARY
2.3 | 35.3 | Research & development (R&D) | 35.3 | HUNGARY
2.3.1 | | Researchers, FTE | 337.0 | HUNGARY
2.3.2 | | Gross expenditure on R&D, % GDP | 1.6 | HUNGARY
2.3.3 | | Global R&D companies, avg. exp. top 5, mn $US | 50.9 | HUNGARY
2.3.4 | | QS university ranking, average score top 500 | 20.4 | HUNGARY

#### INFRASTRUCTURE

| Rank | Score | Description | Value | Country
--- | --- | --- | --- | ---
3 | 52.4 | Information & communication technologies (ICTs) | 71.5 | HUNGARY
3.1 | | ICT access | 75.8 | HUNGARY
3.1.1 | | ICT use | 65.6 | HUNGARY
3.1.2 | | Government's online service | 73.6 | HUNGARY
3.1.4 | | E-participation | 70.8 | HUNGARY
3.2 | 34.3 | General infrastructure | 265.6 | HUNGARY
3.2.1 | | Electricity output, kWh/mn pop | 61.0 | HUNGARY
3.2.2 | | Logistics performance | 63.0 | HUNGARY
3.2.3 | | Gross capital formation, % GDP | 25.6 | HUNGARY
3.3 | 51.5 | Ecological sustainability | 51.5 | HUNGARY
3.3.1 | | Environmental performance | 63.7 | HUNGARY
3.3.2 | | ISO 14001 environmental certificates/1bn PPP$ | 7.7 | HUNGARY

#### MARKET S Phósification

| Rank | Score | Description | Value | Country
--- | --- | --- | --- | ---
4 | 43.3 | Credit | 44.0 | HUNGARY
4.1 | | Ease of getting credit | 75.0 | HUNGARY
4.1.1 | | Domestic credit to private sector, % GDP | 33.4 | HUNGARY
4.1.3 | | Microfinance gross loans, % GDP | 19.5 | HUNGARY
4.2 | 216.8 | Investment | 216.8 | HUNGARY
4.2.1 | | Ease of protecting minority investors | 54.0 | HUNGARY
4.2.2 | | Market capitalization, % GDP | 19.4 | HUNGARY
4.2.3 | | Venture capital deals/1bn PPP$ | 0.0 | HUNGARY
4.3 | 64.2 | Trade, competition, and market scale | 64.2 | HUNGARY
4.3.1 | | Applied tariff rate, weighted avg, % | 17.1 | HUNGARY
4.3.2 | | Intensity of local competition | 59.3 | HUNGARY
4.3.3 | | Domestic market scale, bn PPP$ | 23.2 | HUNGARY

#### BUSINESS SOPHISTICATION

| Rank | Score | Description | Value | Country
--- | --- | --- | --- | ---
5 | 37.8 | Knowledge workers | 40.9 | HUNGARY
5.1 | | Knowledge workers | 40.9 | HUNGARY
5.1.1 | | Knowledge-intensive employment, % | 34.4 | HUNGARY
5.1.2 | | Firms offering formal training, % | 4.7 | HUNGARY
5.1.3 | | GERD performed by business, % GDP | 1.2 | HUNGARY
5.1.4 | | GERD financed by business, % | 52.7 | HUNGARY
5.1.5 | | Females employed in advanced degrees, % | 15.1 | HUNGARY
5.2 | 24.5 | Innovation linkages | 24.5 | HUNGARY
5.2.1 | | University-industry research collaboration | 42.4 | HUNGARY
5.2.2 | | State of cluster development | 47.2 | HUNGARY
5.2.3 | | GERD financed by abroad, % GDP | 0.2 | HUNGARY
5.2.4 | | JV-strategic alliance deals/1bn PPP$ | 0.0 | HUNGARY
5.2.5 | | Patent families 24x of 1bn PPP$ GDP | 0.0 | HUNGARY
5.3 | 48.1 | Knowledge absorption | 48.1 | HUNGARY
5.3.1 | | Intellectual property payments, % total trade | 1.3 | HUNGARY
5.3.2 | | High-tech imports, % total trade | 15.9 | HUNGARY
5.3.3 | | ICT services imports, % total trade | 15.9 | HUNGARY
5.3.4 | | FDI net inflows, % GDP | 16.9 | HUNGARY
5.3.5 | | Research talent, % in business enterprise | 63.7 | HUNGARY

#### KNOWLEDGE & TECHNOLOGY OUTPUTS

| Rank | Score | Description | Value | Country
--- | --- | --- | --- | ---
6 | 38.2 | Knowledge creation | 23.2 | HUNGARY
6.1 | | Knowledge creation | 23.2 | HUNGARY
6.1.1 | | Patents by origin/1bn PPP$ GDP | 1.7 | HUNGARY
6.1.2 | | PCT patents by origin/1bn PPP$ GDP | 0.5 | HUNGARY
6.1.3 | | Utility models by origin/1bn PPP$ GDP | 0.7 | HUNGARY
6.1.4 | | Scientific & technical articles/1bn PPP$ GDP | 16.4 | HUNGARY
6.1.5 | | Citable documents H-index | 25.2 | HUNGARY
6.2 | 6.2 | Knowledge impact | 46.8 | HUNGARY
6.2.1 | | Growth rate of PPP$ GDP/worker | 2.7 | HUNGARY
6.2.2 | | New businesses/1bn pop. 15-64 | 3.7 | HUNGARY
6.2.3 | | Computer software spending, % GDP | 0.0 | HUNGARY
6.2.4 | | ISO 9001 quality certificates/1bn PPP$ GDP | 21.3 | HUNGARY
6.2.5 | | High- and medium-high-tech manufacturing, % | 54.7 | HUNGARY
6.3 | 44.6 | Knowledge diffusion | 44.6 | HUNGARY
6.3.1 | | Intellectual property receipts, % total trade | 15.1 | HUNGARY
6.3.2 | | High tech net exports, % total trade | 13.8 | HUNGARY
6.3.3 | | ICT services exports, % total trade | 19.5 | HUNGARY
6.3.4 | | FDI net outflows, % GDP | 0.5 | HUNGARY

#### CREATIVE OUTPUTS

| Rank | Score | Description | Value | Country
--- | --- | --- | --- | ---
7 | 29.4 | Intangible assets | 23.6 | HUNGARY
7.1 | | Trademarks by origin/1bn PPP$ GDP | 28.1 | HUNGARY
7.1.1 | | Copyrights | 10.5 | HUNGARY
7.1.2 | | Industrial designs by origin/1bn PPP$ GDP | 2.7 | HUNGARY
7.1.3 | | ICTs & organizational model creation | 60.3 | HUNGARY
7.2 | 37.6 | Creative goods and services | 37.6 | HUNGARY
7.2.1 | | Cultural & creative services exports, % total trade | 0.6 | HUNGARY
7.2.2 | | National feature films/1bn pop. 15-69 | 5.2 | HUNGARY
7.2.3 | | Entertainment & Media market/1bn pop. 15-69 | 14.5 | HUNGARY
7.2.4 | | Printing and other media, % manufacturing | 0.8 | HUNGARY
7.2.5 | | Creative goods exports, % total trade | 6.4 | HUNGARY
7.3 | 32.7 | Online creativity | 32.7 | HUNGARY
7.3.1 | | Generic top-level domains (TLDs/1bn pop. 15-69 | 10.2 | HUNGARY
7.3.2 | | Country-code TLDs/1bn pop. 15-69 | 33.2 | HUNGARY
7.3.3 | | Wikipedia articles/1bn pop. 15-69 | 82.9 | HUNGARY
7.3.4 | | Mobile app creation/1bn PPP$ GDP | 53.4 | HUNGARY

**NOTES:** ○ indicates a strength; □ a weakness; * an income group strength; ◊ an income group weakness; † an index; ‡ a survey question; ○ indicates that the economy’s data are older than the base year; see Appendix I 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 Hungary.

Missing data

<table>
<thead>
<tr>
<th>Code</th>
<th>Indicator name</th>
<th>Country year</th>
<th>Model year</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1.3</td>
<td>Microfinance gross loans, % GDP</td>
<td>n/a</td>
<td>2018</td>
<td>Microfinance Information Exchange</td>
</tr>
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</table>

Outdated data

<table>
<thead>
<tr>
<th>Code</th>
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<tbody>
<tr>
<td>2.1.1</td>
<td>Expenditure on education, % GDP</td>
<td>2016</td>
<td>2018</td>
<td>UNESCO Institute for Statistics</td>
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<tr>
<td>2.1.5</td>
<td>Pupil-teacher ratio, secondary</td>
<td>2016</td>
<td>2018</td>
<td>UNESCO Institute for Statistics</td>
</tr>
<tr>
<td>5.1.2</td>
<td>Firms offering formal training, %</td>
<td>2012</td>
<td>2018</td>
<td>World Bank</td>
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</table>
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.

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.