Comparing Innovation across Countries

As a driver of economic growth, innovation is an important aspect of overall national competitiveness, with implications for productivity, living standards, and national security. Relevant comparisons of innovation may include overall scale, intensity, and the rate and direction of change. There are different composite ways to look at innovations and competitiveness but limited agreement on standard definitions or methods. For reliable international comparisons, indicators developed from data collected in different national jurisdictions need to be standardized and harmonized. The standardization of measurement concepts across national surveys strengthens international comparisons. However, subjective elements in respondent identification of something "new or significantly improved" appear to vary across countries. Although the innovation activity described here takes place within private-sector firms, the impact of innovation is influenced by interrelated drivers such as social infrastructure and political institutions, monetary and fiscal policy, and microeconomic environment (Delgado et al. 2012).

The 38-member Organisation for Economic Co-operation and Development (OECD) provides integrated and harmonized data sets for R&D, scientific publications, intellectual property rights, and economy and workforce indicators for member countries and selected nonmember countries (OECD 2025a). OECD data cover most OECD members and data from Brazil, China, India, South Africa, and several other rapidly growing middle-income economies, where data are available. The *Science and Engineering Indicators 2026* report "Discovery: R&D Activity and Research Publications" includes international data from OECD's Main Science and Technology Indicators and Analytical Business Enterprise Research and Development databases. Based on those data, R&D spending in 2022, adjusted for international prices, is highest in the United States, followed by China and then by Japan. However, the ratio of R&D to gross domestic product is highest for Israel, followed by South Korea, Taiwan, and the United States (NSB 2025).

The Community Innovation Survey is a business survey fielded since the early 1990s by members of the European Union and described in the *Oslo Manual.* This framework defines an innovation as a new or improved product or process (or combination thereof) that differs significantly from the unit's previous products or processes and that has been made available to potential users (product) or brought into use by the unit (process) (OECD/Eurostat 2018). The OECD reports innovation data from 42 economies using this framework, including from Canada, the United States, South Korea, Japan, Australia, and countries from South America, but not from China, where the survey is not fielded. The definitions and measurement framework of the *Oslo Manual* are used for the comparison of business innovation by U.S. industries described in this report. By this measure, businesses in Canada had the highest percentage of total firms introducing an innovation over the most recently available 3-year (2018–20) reporting window (83%), followed by Israel (74%) and then by Greece (72%) (OECD 2023). To allow for causal analysis with microdata, this survey framework also collects information on innovation activities, including "all developmental, financial and commercial activities undertaken by a firm that are intended to result in an innovation for the firm" (OECD/Eurostat 2018:20).

The World Intellectual Property Organization's (WIPO's) Global Innovation Index (GII) provides a more curated set of indicators for a larger set of countries or economies in its annual report (WIPO 2024). Indicators are combined into seven pillars; five are identified as inputs: institutions, human capital and research, infrastructure, market sophistication, and business sophistication. Two pillars are identified as outputs: knowledge and technology outputs and creative outputs. The index equally weights the input sub-index and the output sub-index to develop a global ranking. Each year, the index is reevaluated, and components are added or subtracted. Based on the weighting scheme and choice of indicators in the 2024 GII, Switzerland is the most innovative economy (a position it has held for 14 consecutive years), Sweden is second, and the United States is third (WIPO 2024).

Unlike OECD data, WIPO's GII covers low- and middle-income countries and compares across regions. For example, the 2024 GII identifies the top three innovation economies in central and southern Asia as India, Iran, and Kazakhstan (WIPO 2024). Although most of the indicators are the same ones used in *Indicators* reports, such as S&E graduates, research publications, patents, and R&D spending, the GII indicators include subjective measures as well, including government effectiveness, regulatory quality, and rule of law. The inclusion of these factors is a recognition of the importance of institutions and infrastructure on innovative capacity. Due to different choices of indicators, use of subjective measures, and the reevaluation of weights for each cycle, users should be cautious comparing across cycles and understand the methods that WIPO uses for the development of the GII for each cycle.

Multifactor productivity (MFP), described in the sidebar Measuring Short- and Long-Term Impacts of S&E Activity, provides an additional conceptually valid way of estimating the impact of innovation through its effect on productivity (Hall 2011). Practically, the effort involved in coordination of the data across countries means that updating the statistics takes place infrequently; the World Bank provides MFP data for over 160 countries, but the most recent data year available is 2018 (Dieppe, Celik, and Kindberg-Hanlon 2021). However, as a growth indicator, MFP is influenced by the size of the economic base; thus, low- and middle-income countries tend to display more rapid MFP growth compared with higher-income countries.