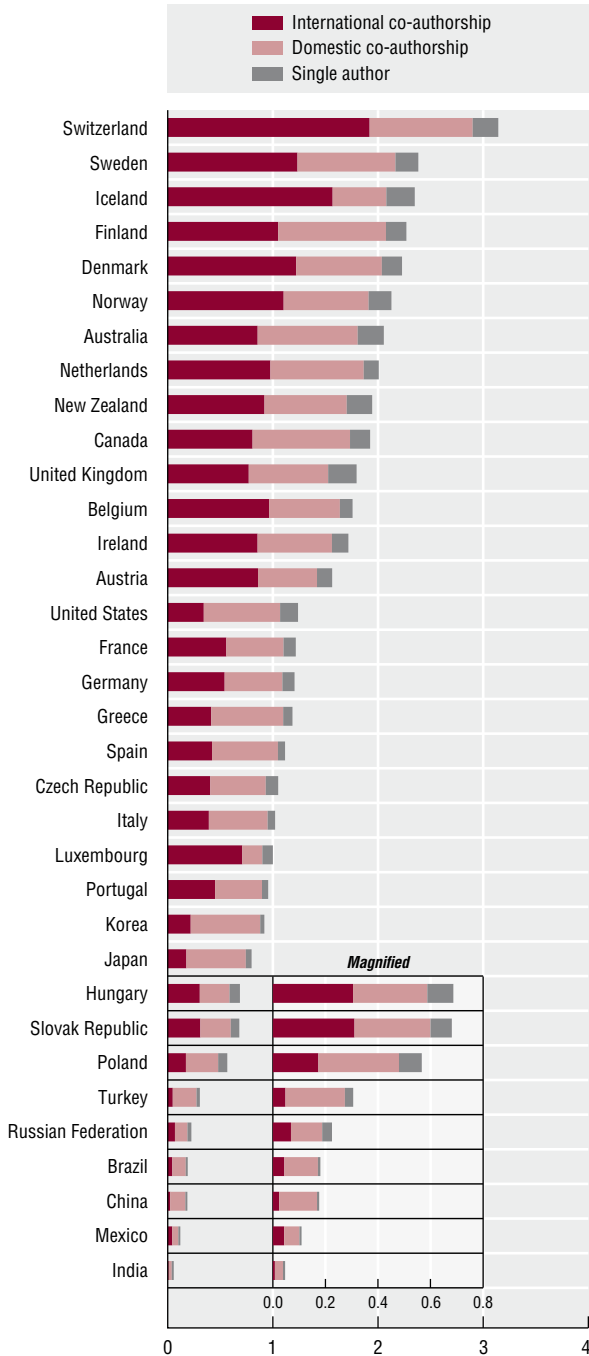


Collaboration is important for innovation at all stages of knowledge production. The increasing specialisation of scientific disciplines and the increasing complexity of research encourage scientists to engage in collaborative research.

Scientific articles, by type of collaboration, 2008

Per capita



DID YOU KNOW?

37% of all scientific articles published in the last decade have not been cited.

(Scopus, Elsevier, 2009.)

Co-authorship of scientific articles provides a direct measure of collaboration in science. National and international co-authorship is far more prevalent than single authorship for all countries.

International collaboration varies with country size. Small countries are generally more likely to engage in international collaboration than larger ones. However, when the number of scientific articles is taken into account, Germany, the United Kingdom and the United States attract the most international collaborations.

Top-cited articles provide a measure of “quality-adjusted” scientific output. This indicator reveals countries’ relative contribution to the pool of the top 1% of cited scientific knowledge. It clearly shows the premium from international scientific collaboration. For almost all countries, internationally co-authored articles are the most frequently included in the world’s most-cited publications. The exceptions are China, India and the United States, which have a large pool of national researchers.

Definitions

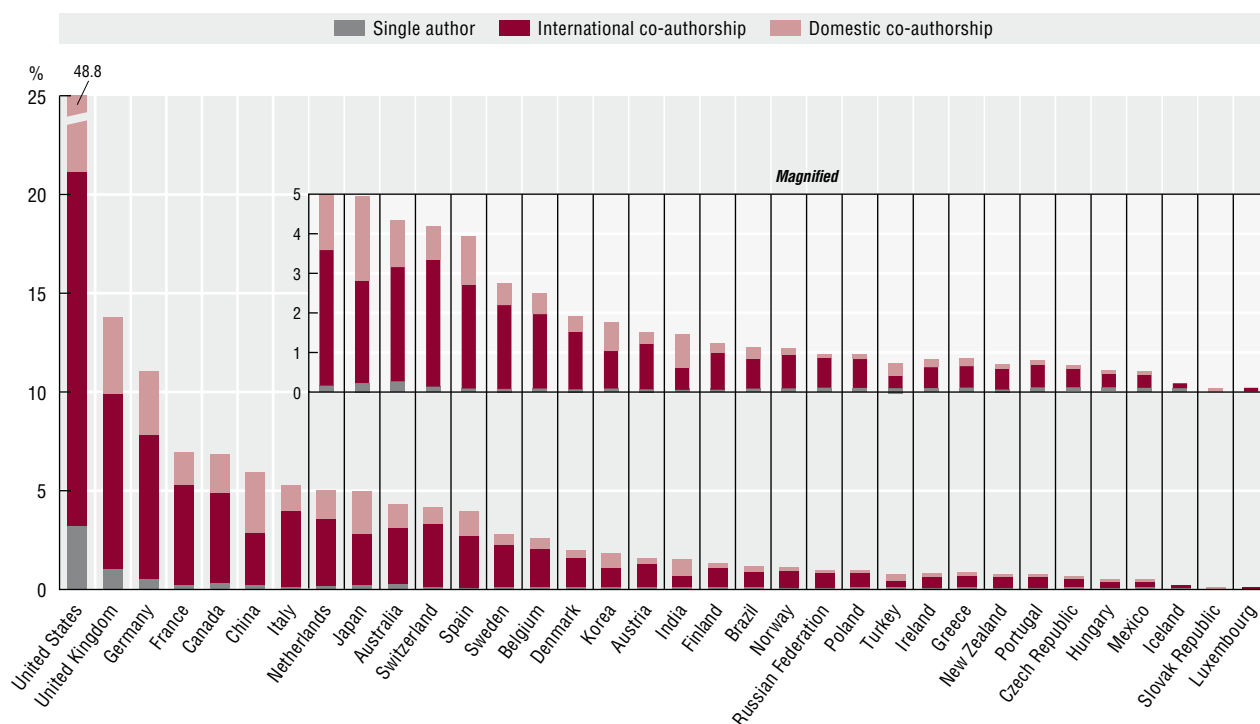
Single authorship refers to scientific papers with a single author. *Domestic co-authorship* refers to scientific articles with two or more authors in the same country. *International co-authorship* refers to scientific articles with two or more authors from different countries. The classification is based on the number of addresses listed in each article. *Top-cited articles* are the 1% of scientific articles receiving the most citations for 2006-08.

Source: OECD calculations, based on Scopus Custom Data, Elsevier, December 2009; and OECD (2009), OECD Factbook 2009: Economic, Environmental and Social Statistics, OECD, Paris.

StatLink <http://dx.doi.org/10.1787/836087047406>

Highly cited (top 1%) scientific articles, by type of collaboration, 2006-08

As a percentage of highly cited scientific articles worldwide



Source: OECD calculations, based on Scopus Custom Data, Elsevier, December 2009.

 StatLink <http://dx.doi.org/10.1787/836087047406>

Measurability

The volume of scientific articles published worldwide is a key indicator as publication is the main means of disseminating and validating research results. Publication counts are based on science and engineering articles, notes and reviews published in a set of the world's most influential scientific and technical journals. It excludes all documents for which the central purpose is not the presentation or discussion of scientific data, theory, methods, apparatus or experiments. Fields are determined by the classification of each journal. Publications are attributed to countries by the author's institutional affiliation at the time of publication.

Indicators of co-authorship are affected by language barriers and geographical factors. However, these obstacles have lessened as English has become the language most commonly used internationally by researchers. Physical distance between researchers is likely to have some correlation with the ratio of co-authorship, although the effect of information and communication technologies on knowledge flows has undoubtedly lessened its effect.

Because the incentive to publish raises a question of quality, articles can be weighted by the frequency of citations. Citations attest to the productivity and influence of scientific literature. A total of 35 594 highly cited articles, i.e. the top 1% of cited articles in the database for 2006-08, were identified and distributed by country and type of collaboration.

Science and engineering include life science (clinical medicine, biomedical research and biology); physical science (chemistry, physics and Earth and space sciences); mathematics, social and behavioural sciences (social sciences, psychology, health sciences and professional fields). Finally engineering includes computer sciences and engineering and technology).