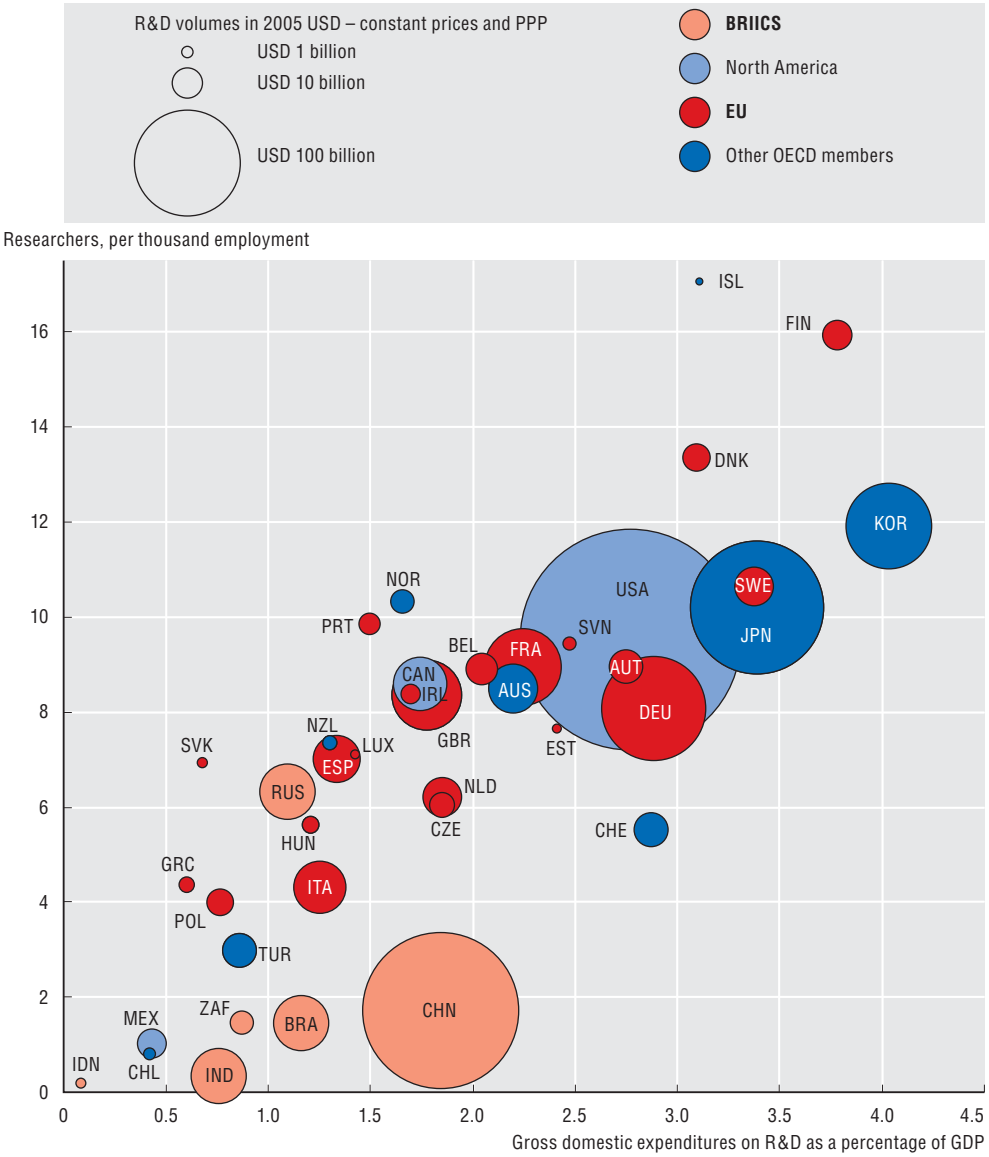
The changing landscape of innovation

R&D in the global landscape

The United States is the world's largest R&D performer, with nearly USD 415 billion of domestic R&D expenditures in 2011. This is about twice the amount of R&D performed in China, which is now the second largest performer, ahead of Japan, Germany and Korea. Korea has the highest ratio of R&D expenditures to GDP owing to rapid increases in recent years. Non-OECD economies account for a growing share of the world's R&D, measured in terms of total researchers and R&D expenditures. Personnel costs account in most economies for the bulk of R&D expenditures. This explains the close relationship between R&D as a percentage of GDP and the number of researchers as a percentage of total employment. Variations can be related to differences in the price of R&D inputs, such as researcher costs, the pattern of R&D specialisation and R&D capital expenditures, as some countries may be developing their research infrastructure for future use.

44. R&D in OECD and key partner countries, 2011



Note: Owing to methodological differences, data for some non-OECD economies may not be fully comparable with figures for other countries.
Source: OECD, Main Science and Technology Indicators Database, *www.oecd.org/sti/msti.htm*, Brazil's Ministry of Science, Technology and Innovation and UNESCO Institute for Statistics, June 2013. See chapter notes.

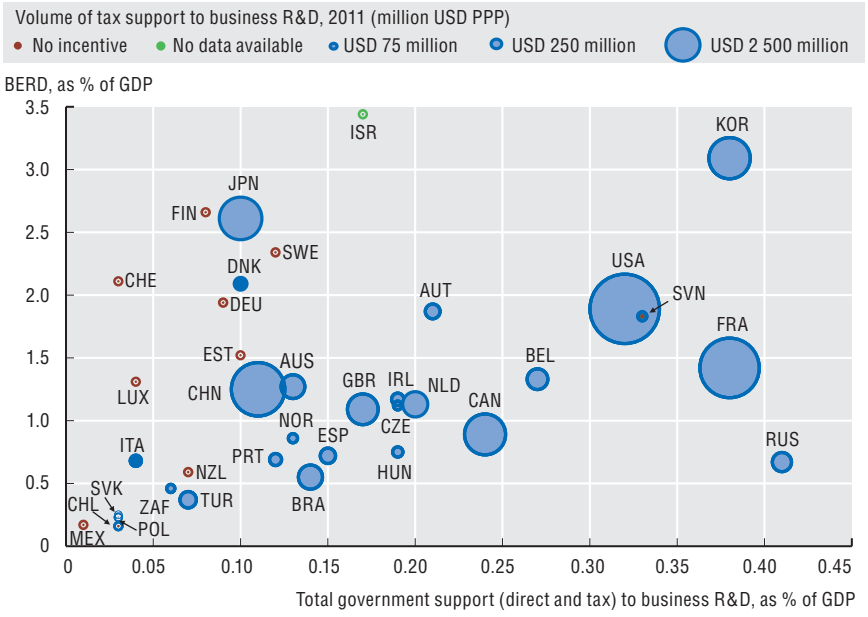
StatLink http://dx.doi.org/10.1787/888932890124

The policy mix for R&D

Governments can choose among various instruments to promote business R&D. In addition to giving grants or loans and procuring R&D, many also provide fiscal incentives. Today, 27 of the 34 OECD countries and a number of non-OECD economies give preferential tax treatment to R&D expenditures. New estimates of the cost of these incentives have been combined with data on direct R&D funding (R&D grants and purchases), as reported by firms, to provide a more complete picture of government efforts to promote business R&D. Across countries, R&D intensity in the business sector is significantly correlated with total government support for business R&D. This does not imply a causal relationship and there are notable exceptions. Germany and Korea have relatively high business R&D intensity compared to their degree of government support, while Canada, the Russian Federation and Turkey have high rates of support relative to countries with similar business R&D-to-GDP ratios. In 2011, Finland, Germany, Sweden and Switzerland did not offer tax incentives but had very R&D-intensive business sectors. In 2013, Finland introduced a new R&D tax allowance.

45. Business R&D intensity and government support to business R&D, 2011

As a percentage of GDP



Note: This is an experimental indicator. International comparability may be limited. For more information, see *www.oecd.org/sti/rd-tax-stats.htm*.
Source: OECD, based on OECD R&D tax incentives questionnaire, publicly available sources and OECD, Main Science and Technology Indicators Database, *www.oecd.org/sti/msti.htm*, June 2013. See chapter notes.

StatLink http://dx.doi.org/10.1787/888932890143

How to read this figure

Bubble sizes represent the total amount of tax incentive support for R&D expenditures in USD PPP. For example, in the Netherlands, tax support for R&D is just above USD 1 billion. Total government support for business R&D is just above 0.2% of GDP and business R&D is close to 1% of GDP. Across countries, the correlation between the two variables is 29%.

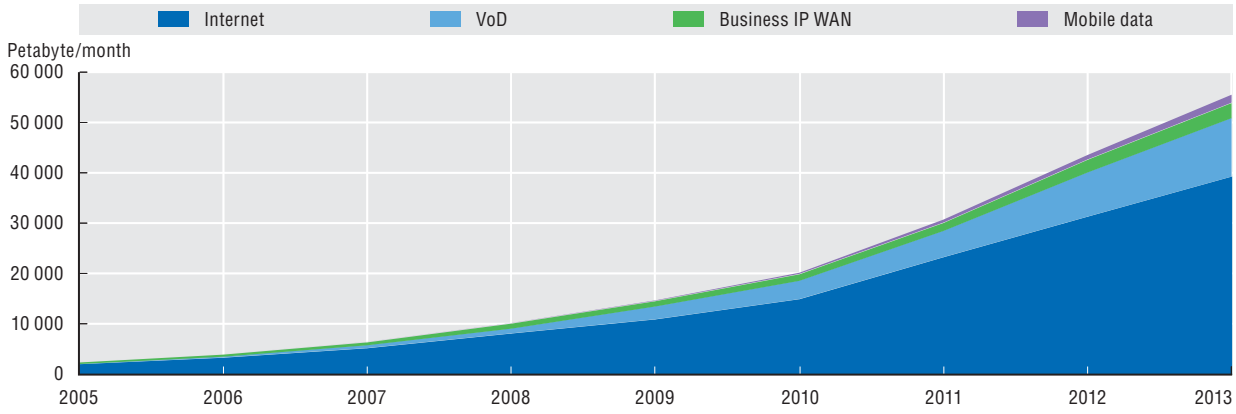
How to measure the cost of tax incentives

The OECD data collection on R&D tax incentives, now in its fourth edition, attempts to identify and address subtle differences in the tax treatment of R&D, the relevant tax benchmark and measurement approaches. National experts on science and technology indicators have collaborated with public finance and tax authorities to provide the most up-to-date and internationally comparable figures possible. The estimated cost of provisions for the treatment of R&D expenditures by firms is presented relative to a common benchmark whenever possible. Estimates reflect the sum of foregone tax revenues – on an accrual basis – and refunds where applicable. However, many authorities can only report the cost of government tax liabilities realised in a given period (cash basis).

Smart infrastructure

The Internet is a key infrastructure for businesses, individuals and the public sector alike and continues to expand rapidly. Global Internet Protocol (IP) traffic rose from 20 000 Petabytes a month in 2010 to 55 000 in 2013 and has increased 19-fold since 2005. Always-on and mobile connectivity are already reshaping people's daily behaviour and will continue to do so in coming years. Originally designed as a research network, the Internet's subsequent widespread commercialisation and expansion have meant that the Internet Protocol, IPv4, no longer meets today's needs. In fact, freely available IPv4 addresses ran out in early 2011. IPv6 was designed to succeed IPv4 and its deployment began in 1999. It provides significantly greater address space, but it is being implemented slowly. While it appears that over half of the equipment deployed on the wired Internet is capable of supporting IPv6 today, less than 1% of it connects to a service that provides IPv6. Only four countries – France, Luxembourg, Japan and the United States – are above the OECD average in this respect.

46. Global Internet Protocol (IP) traffic, 2005-13

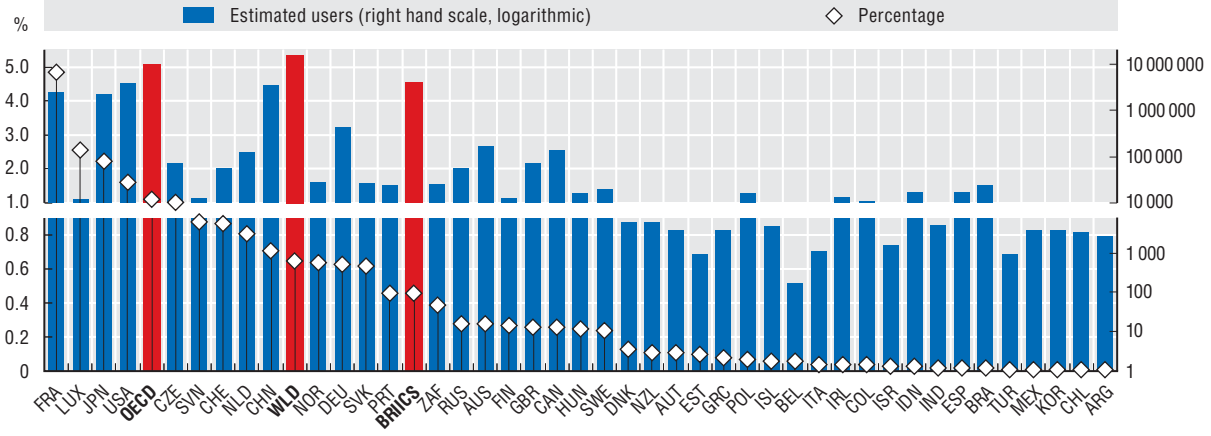


Source: Cisco Visual Networking Index (VNI), June 2013. See chapter notes.

StatLink http://dx.doi.org/10.1787/888932890162

47. IPv6 deployment by country, November 2012

As a percentage of Internet users



Source: OECD (2013), *OECD Communications Outlook 2013*, OECD Publishing, based on *www.potaroo.net/reports/oecd* and report files published by the regional Internet registries (RIRs), November 2012. See chapter notes.

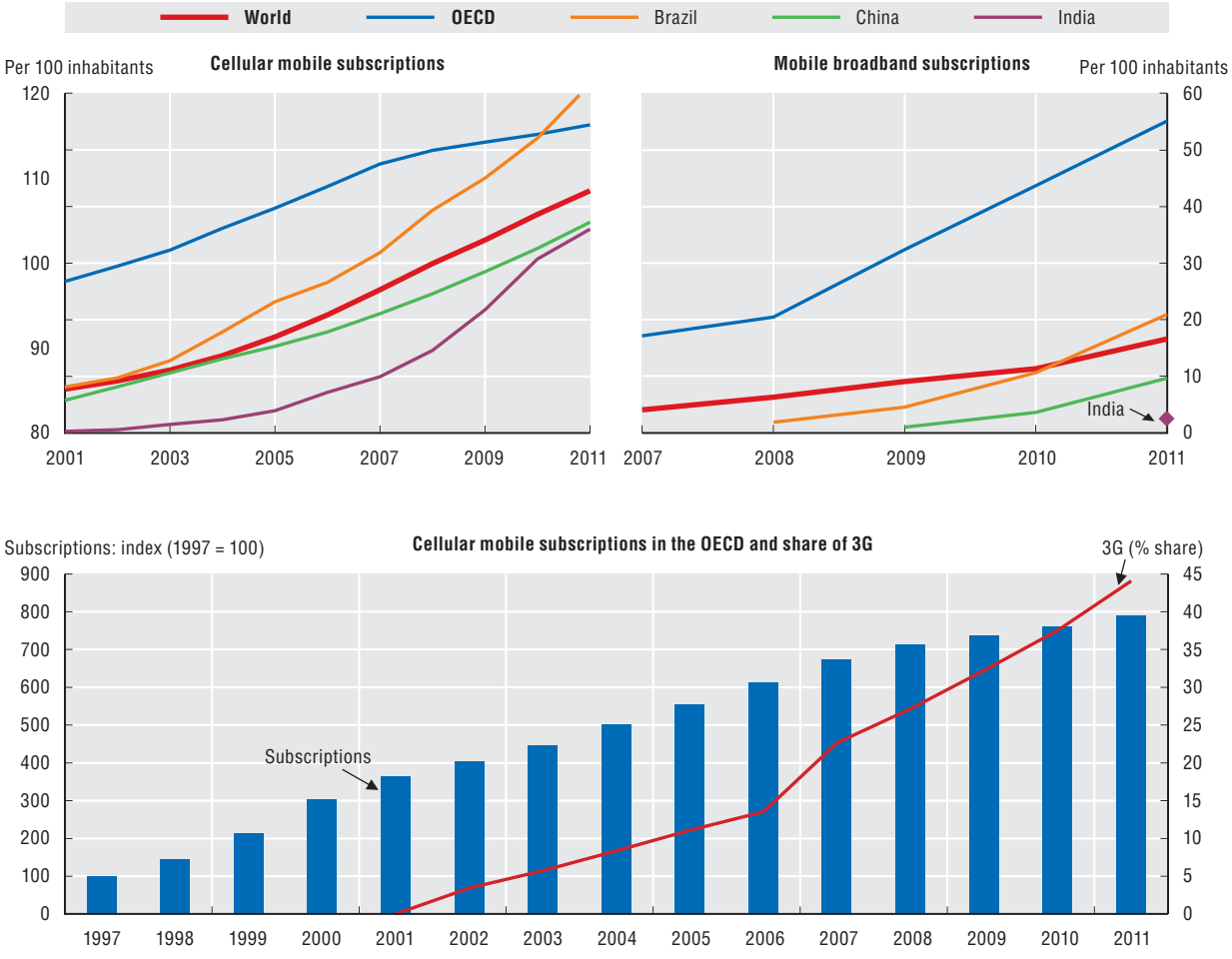
StatLink http://dx.doi.org/10.1787/888932890181

Towards near ubiquity

Around three-quarters of the world's inhabitants now have access to a mobile phone. The number of mobile subscriptions in use worldwide, both pre-paid and post-paid, has grown from fewer than 1 billion in 2000 to over 6 billion today, of which nearly 5 billion in developing countries. Mobile cellular penetration (per 100 inhabitants) in the OECD area passed 100% in 2008 and world subscriptions are estimated to approach this level in 2013. Emerging countries are now looking to replicate the success of the pre-paid model for mobile devices with Internet access capability. In 2011 Brazil overtook the OECD, with 123 subscriptions per 100 inhabitants, while China and India had about three subscriptions for every four inhabitants. Ownership of multiple subscriptions is increasingly common and their numbers may soon exceed that of the population. Convergence of mobile broadband penetration to OECD levels has yet to occur, but this service is recent and affordability and quality are improving fast. Subscriptions in the OECD area rose from 20% in 2008 to 55% in 2011 (less than 20% at world level). They are expected to reach 63% in the OECD area in 2012. In 2011, about 45% of OECD cellular mobile subscribers were 3G-enabled, and LTE (a more powerful version of 3G known as 4G) has reached most OECD countries. The story of mobile communications will now shift from the phone to how it is used. Near ubiquity brings new opportunities.

48. Mobile cellular and broadband penetration worldwide, 2001-11

Subscriptions per 100 inhabitants, indices and percentages



Source: OECD, Telecom Database and ITU, World Telecommunication/ ICT indicators Database, June 2013. StatLink contains more data. See chapter notes.

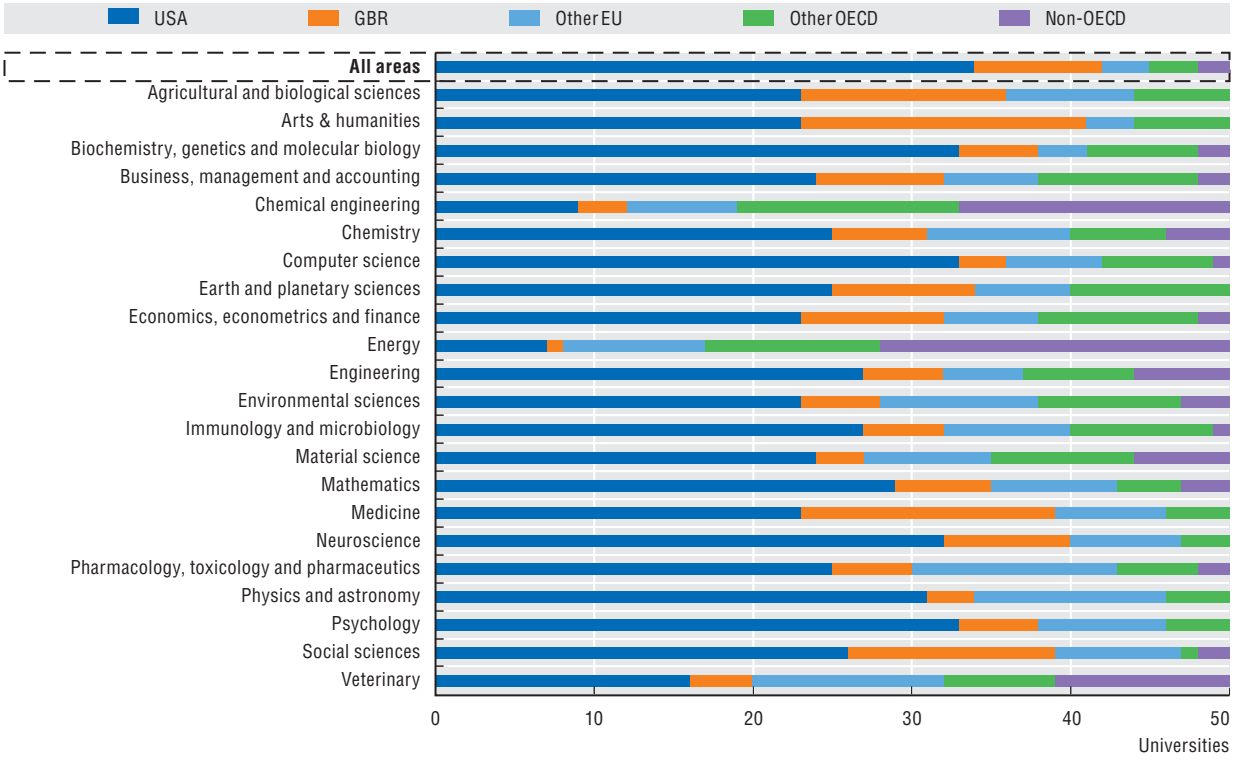
StatLink http://dx.doi.org/10.1787/888932890200

University hotspots

Worldwide, the top 50 universities with the highest relative impact in 2007-11 – in terms of normalised citations to academic publications across disciplines – are highly concentrated geographically but less so than in 2003-09. Overall, 34 of the top 50 are located in the United States. The rest are in Europe, and, for the first time, two are outside the OECD area, in Chinese Taipei. The United Kingdom is the second-ranked economy, with specific strengths in the medical and social sciences. There are interesting differences by subject, with US-based universities most likely to excel in biochemistry, computer science, neuroscience and psychology. Universities in non-OECD economies, especially in Asia, play a relatively prominent role in chemical engineering, energy and veterinary research. These results refer to measures of output quality per unit of production, not absolute values of high-quality publications. Economies also differ in the share of scientific output produced outside the higher education sector, for example in government research institutes.

49. University hotspots, geographical distribution of highest impact institutions, 2007-11

Location of top 50 universities by main subject areas



Source: OECD and SCImago Research Group (CSIC), *Compendium of Bibliometric Science Indicators 2014*, based on Scopus Custom Data, Elsevier, May 2013. StatLink contains more data. See chapter notes.

StatLink http://dx.doi.org/10.1787/888932890219

How to read this figure

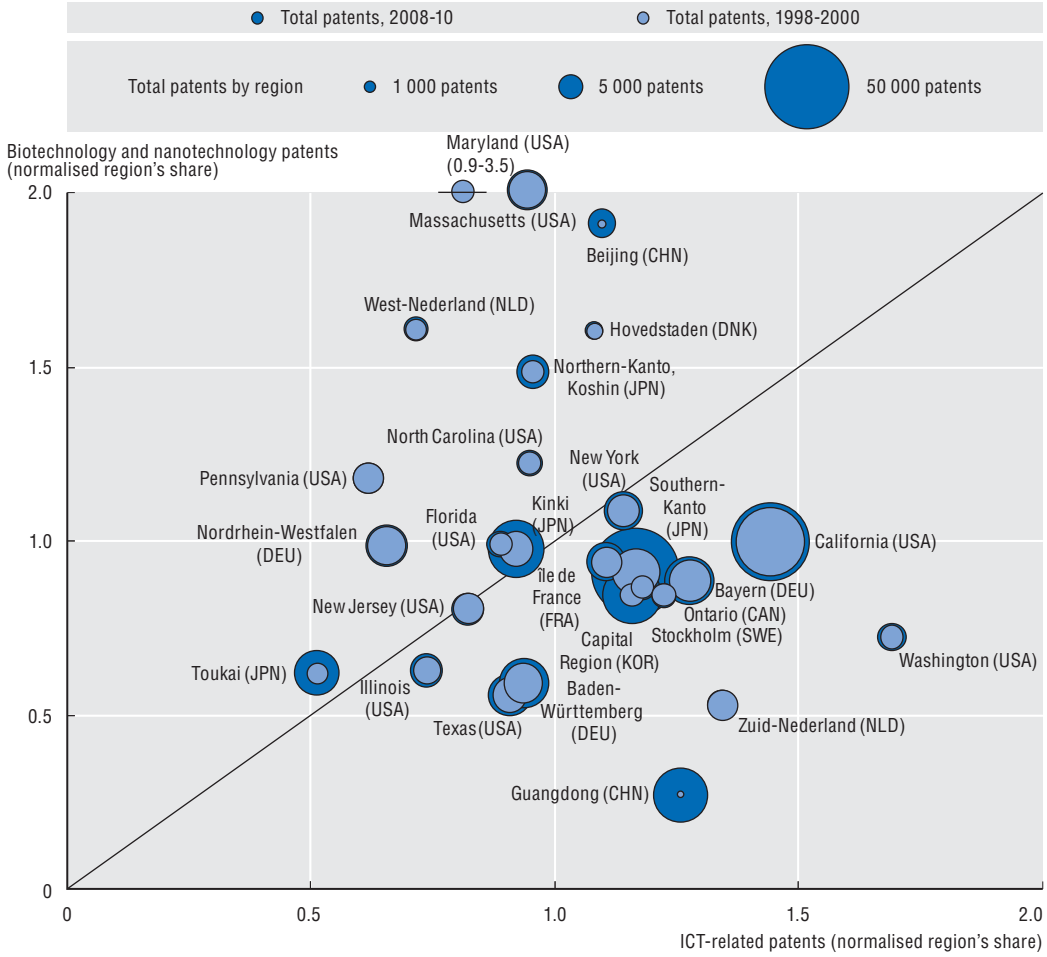
The X axis shows the geographic distribution of the top 50 universities in the main subject areas (Y axis) according to their normalised impact. The publication threshold set for the institutions was at least 100 documents in 2011, except for some disciplines for which the threshold was set at 50 documents. The normalised impact is the ratio between the average number of citations received by a specific unit and the world average of citations in the same time period, document type and subject area, i.e. the normalisation is done at the level of the individual article. If an article belongs to several subject areas a mean value of the areas is calculated. The normalised impact of these institutions is calculated for 2007-11 and only for the production in which the country is the main contributor (production in which the corresponding author belongs to the institution).

Regional innovation hotspots

Location seems to matter. Many of the leading firms in knowledge-intensive industries – such as information and communication technologies, biotechnology and nanotechnology – have emerged in a limited number of regions. The top 20 patenting regions in these enabling technologies are concentrated in a handful of countries, particularly the United States (34% of these regions' patent applications in 2008-10, down from about 50% ten years earlier) and Japan (29%, up from about 17% ten years earlier). China also has innovation hotspots, with the Beijing region relatively specialised in all three technologies but particularly in biotechnology and nanotechnology, and the Guangdong region relatively more specialised in ICT (a 90-fold increase in ICT applications over a ten-year period). Seven European regions are among the top innovation hotspots in enabling technologies, with a share in top patenting regions of about 21% (down from about 29% ten years earlier). Such regions appear to provide environments that are particularly conducive to business innovation. Much of the effort of policy makers in other regions goes to replicating or nurturing the conditions present in the best-performing regions.

50. Innovation hotspots in ICT, biotechnologies and nanotechnologies, 1998-2000 and 2008-10

Regional comparative advantage by technology field, top patenting regions



Source: OECD, REGPAT Database, June 2013. See chapter notes.

StatLink http://dx.doi.org/10.1787/888932890238

How to read this figure

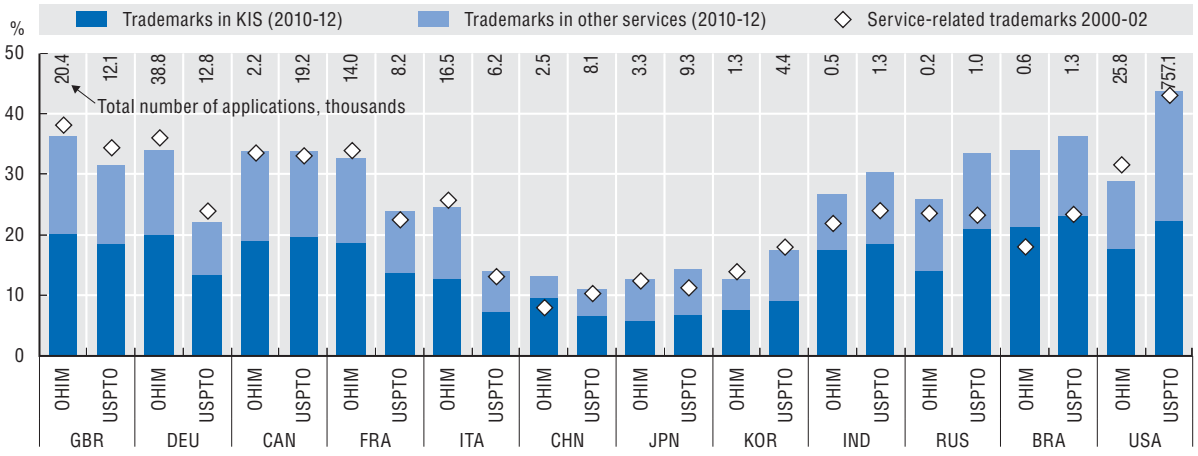
The world's top 20 patenting regions in ICT, biotechnology and nanotechnology are presented. The size of the bubble represents the volume of patent applications in all three fields in the two periods covered. Each region's share in the country's patents in the selected technology fields is normalised to the region's share in the country's patents for all technologies. This corrects for the average likelihood of some regions to patent more than others. Top patenting regions along the 45-degree line have an equal relative propensity to patent in ICT, on the one hand, and in biotechnology and nanotechnology, on the other. Top patenting regions to the right of the x value = 1 are relatively more specialised in these three technologies than in any other technology. For example, California is an innovation hotspot for ICT, biotechnology and nanotechnology, with ICT the dominant field of specialisation.

Innovation for new markets

Because trademark registrations often accompany the launch of new products and services, trademark-based indicators can point to the presence of incremental and marketing innovations. While trademark applications have increased over time, the share of trademark applications related to service classes has remained stable or declined slightly over the last decade in most OECD economies. In contrast, the share of service-related trademarks protected on both the European and US markets by the BRIICS economies has increased since 2000-02. Trademarks in knowledge-intensive business services account for the majority of service trademarks registered by all the economies considered, and especially in Brazil and the United States. A breakdown of trademarks in knowledge-intensive services (KIS) helps reveal firms' strategies in different markets. R&D-related trademarks applied for by the G7 and the BRIICS economies appear relatively more likely to be protected in the United States than in Europe, while the BRIICS have a relatively larger share of registrations of business-services-related trademarks on the European market.

51. Service-related trademark applications at USPTO and OHIM, selected OECD and non-OECD economies, 2000-02 and 2010-12

As a percentage of total trademark applications

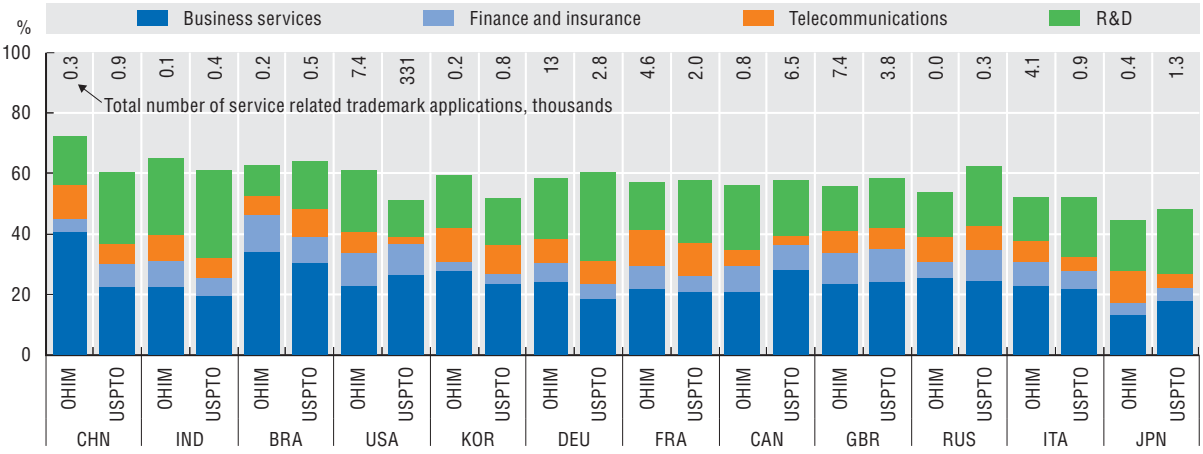


Source: US Patent and Trademark Office Bulk Downloads: Trademark Application Text hosted by Google, May 2013; OHIM Community Trademark Database CTM Download, May 2013. StatLink contains more data. See chapter notes.

StatLink http://dx.doi.org/10.1787/888932890257

52. Trademarks in knowledge-intensive services, selected OECD and non-OECD economies, 2010-12

As a percentage of total service-related trademark applications



Source: US Patent and Trademark Office Bulk Downloads: Trademark Application Text hosted by Google, May 2013; OHIM Community Trademark Database CTM Download, May 2013. StatLink contains more data. See chapter notes.

StatLink http://dx.doi.org/10.1787/888932890276

Notes and References

Cyprus

The following note is included at the request of Turkey:

"The information in this document with reference to 'Cyprus' relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Turkey recognizes the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the 'Cyprus issue'."

The following note is included at the request of all the European Union Member States of the OECD and the European Union:

"The Republic of Cyprus is recognised by all members of the United Nations with the exception of Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus."

Israel

"The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities or third party. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

"It should be noted that statistical data on Israeli patents and trademarks are supplied by the patent and trademark offices of the relevant countries."

1. Labour productivity growth based on hours worked, total economy level, 2001-12

Euro area here excludes Cyprus and Malta.

2. Growth in GDP per capita and GDP per person employed in the BRIICS and the OECD, 2007-09 and 2009-12

Calculations are based on GDP at constant prices, converted to USD using 2005 purchasing power parities. GDP for Brazil, Indonesia and South Africa are from OECD, Quarterly National Accounts, April 2013. GDP for India is from OECD, Annual National Accounts, April 2013; the series was extended after 2009 using OECD, Quarterly National Accounts, April 2013.

Employment estimates for Brazil, China, India and Indonesia are based on GGDC, Total Economy Database, January 2013.

Employment data for South Africa are from OECD, Annual National Accounts, April 2013; the series was extended after 2010 using GGDC, Total Economy Database, January 2013.

3. Job recovery across socio-economic groups, 2008 Q1-2012 Q4

The skill dimension is based on ISCED97 as follows: low-skilled (ISCED97 0/1/2), less than upper secondary education; medium-skilled (IECD97 3/4), upper secondary education; high-skilled (ISCED97 5/6); tertiary education.

4. Harmonised unemployment rates, OECD, Euro area, United States and Japan, July 2008-April 2013

The OECD harmonised unemployment rates, compiled for all 34 OECD member countries, are based on the International Labour Office (ILO) guidelines. The unemployed are persons of working age who, in the reference period: are without work; are available for work; and have taken specific steps to find work.

Rates are seasonally adjusted.

Euro area here excludes Cyprus and Malta.

5. Net job growth, younger versus older firms, 2001-11

Establishments and firms that appear only for one year are excluded.

Mergers and acquisitions are not taken into account in determining firm age and firm exit.

The shares are calculated as shares of total employment, job destruction and job creation.

Small firms have between 1 and 49 employees, medium firms have between 50 and 249 employees, and large firms have more than 250 employees.

For Austria, data are at the establishment level.

For Japan, data are at the establishment level and refer to the manufacturing sector only.

For Austria, Italy, Luxembourg and Sweden, data refer to 2001-10.

For Brazil, data refer to 2002-10.

For France, data refer to 2002-07.

For Japan and New Zealand, data refer to 2001-09.

For Spain, data refer to 2003-09.

6. Employment, job creation and job destruction, by firm age and size, 2001-11

See notes under 5.

7. Employment, job creation and job destruction, manufacturing and services 2001-11

See notes under 5.

8. Where people lost their jobs, 2008-11

General note:

The aggregate activity groups are defined according to ISIC Rev.4 Divisions 01-03 (Section A), 05-39 (B-E), 41-43 (F), 45-56 G-I), 58-63 (J), 64-68 (K-L), 69-82 (M-N) and 84-99 (O-U).

Additional notes:

For Australia, calendar year averages from the Quarterly Labour Force Survey (QLFS), June 2013. Finance, insurance and real estate activities includes renting and hiring of machinery and equipment (77).

For Iceland, Annual Labour Force Survey (LFS) data by industry are used in the absence of employment by activity statistics published in an SNA context.

For Israel, estimates based on SNA employment data provided to OECD according to ISIC Rev.3. Professional, scientific, technical and other business services (69-82) includes Information and communication (58-63) and Finance, insurance and real estate activities (64-68).

For Japan, public administration, education, health and other services (84-99) includes Professional, scientific, technical and other business services (69-82).

For New Zealand, data are based on employment estimates for fiscal years 2008/09 and 2011/12. Agriculture, forestry and fishing (01-03) includes Mining and quarrying (05-09).

The OECD aggregate does not include Chile and Turkey.

9. Where people lost their jobs in Europe, 2011-12

See general note under 8.

10. Job creation and destruction in the information industries, 2008-11

To assess the effects of the economic crisis on employment across information industries, sectoral changes in levels of employment can be "normalised" in order to highlight their relative contributions, within each country, to the total change in information industry employment between 2008 and 2011. This is achieved, for each country, by expressing the sectoral changes as a percentage of the sum of the absolute changes.

The four activity groups comprising "information industries" are defined according to ISIC Rev.4 Divisions 26 (CI), 58-60 (JA), 61 (JB) and 62-63 (JC) respectively.

The gains and losses, in thousands, represent the sum of the aggregate sectors with positive changes and the sum of the aggregate sectors with negative changes, respectively. With a finer activity breakdown (such as 3-digit ISIC Rev.4), the estimates for total gains and losses could differ. For example, within the losses noted for Manufacture of computer, electronic and optical products (26), certain (3- or 4-digit) activities may have experienced gains in employment.

The employment data are measured in terms of persons except for Canada and the United States where number of jobs is the unit of measurement.

For Spain, IT and other information services (JC) includes Telecommunications (JB).

11. Change in the skill mix in Europe, services and manufacturing, 2011-12

Occupations are defined according to International Standard Classification of Occupations 2008 (ISCO-08). The following major groups are used 1) Managers, 2) Professionals, 3) Technicians and associate professionals, 4) Clerical support workers, 5) Service and sales workers, 7) Craft and related trades workers, 8) Plant and machine operators and assemblers, and 9) Elementary occupations.

Craft and related trades workers includes ISCO-08 major group 6, Skilled agricultural, forestry and fishery workers, which are reported by a few countries under manufacturing and business-sector services.

Manufacturing corresponds to ISIC Rev.4 (NACE Rev.2) Divisions 10-33 (Section C) while business-sector services cover Divisions 45-82 (G-N).

12. R&D growth over the business cycle by source of financing, OECD area, 1982-2012

Business and government-financed R&D expenditures are subcomponents of gross domestic expenditure on R&D (GERD), i.e. intramural R&D expenditures on R&D performed in the national territory. Funding sources are typically identified by the R&D-performing units.

Estimates for government R&D budgets are based on GBAORD (government budget appropriations or outlays for R&D) data for OECD countries with information available for 2012 (Denmark, Estonia, Finland, Germany, Greece, Hungary, Iceland, Ireland, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, the Slovak Republic, Slovenia and the United States). Rates of growth for this series only from 2008. Government budget data tend to be more timely but may not coincide with R&D performer-reported funding by government, owing to factors such as differences between budgetary plans and actual disbursements.

13. US GDP and trademark applications at the US Patent and Trademark Office, 2003-13

US GDP is based on the series of seasonally adjusted GDP, expenditure approach, in volume (chained volume estimates) contained in the OECD Quarterly National Accounts Database, June 2013.

The following aggregated fields based on the Nice Classification are used: Health, pharma and cosmetics: classes 3, 5, 10 and 44; Leisure and education: classes 13, 15, 16, 28 and 41; Advertising and business services: classes 35, 36 and 45; ICT and audiovisual: classes 9 and 38.

Raw GDP and trademark applications series were treated using the OECD's Composite Leading Indicators methodology. Monthly data were used for trademark applications and quarterly data for GDP, converted to a monthly frequency via linear interpolation and aligned with the mid-quarter month. This treatment removes seasonal patterns and trends (using the Hodrick-Prescott filter) in order to extract the cyclical pattern. The cyclical pattern presented on the graph is expressed as a percentage deviation from the long-term trend. Considering the filters applied, the remaining cycles are those with a period of between 18 months and 10 years. The analysis was performed on series from January 1990 to February 2013 for trademark applications and to March 2013 for GDP. For more information on the methodology, see OECD (2012), "OECD System of Composite Leading Indicators", *www.oecd.org/std/leading-indicators/41629509.pdf*.

The figure shows a peak around 2004 for the trademark series that does not correspond to economic activity. It corresponds to the accession of the United States to the Madrid Agreement in November 2003, which facilitated the filing procedure for foreign applications.

15. New enterprise creations, selected OECD countries, 2007-13

The trend cycle reflects the combined long-term (trend) and medium-to-long-term (cycle) movements in the original series.

For Australia, data exclude non-incorporated companies.

For Spain, data exclude natural persons and sole proprietors.

For the United States, data only refer to establishments with employees.

16. Trends in bankruptcies, 2007-11

For France, Norway and Spain, data refers to SMEs only.

17. Venture capital investment in the United States, 1995-2012 and in Europe, 1995-2010

Data for the United States refer to market statistics, data for Europe refer to industry statistics.

Europe includes Austria, Belgium, Bosnia-Herzegovina, Bulgaria, Croatia, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, the Former Yugoslav Republic of Macedonia, Montenegro, the Netherlands, Norway, Poland, Portugal, Romania, Serbia, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Ukraine and the United Kingdom.

18. Venture capital exits in the United States and Europe, 2007-12

Trade sale refers to the sale of company shares to industrial investors.

Initial public offering refers to the sale or distribution of a company's shares to the public for the first time.

Europe includes Austria, Belgium, Bosnia-Herzegovina, Bulgaria, Croatia, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Former Yugoslav Republic of Macedonia, Montenegro, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Ukraine and United Kingdom.

19. Patents by technology fields, 1999-2011

The data refer to counts of patent applications filed under the Patent Cooperation Treaty (PCT), at international phase, by priority date. Data for 2011 are estimates.

Patents in biotechnologies, nanotechnologies health- and ICT-related technologies are based on a selection of International Patent Classification (IPC) classes.

Patents in environment-related technologies are defined using combinations of IPC classes and codes Y02 of the European Classification (ECLA).

20. The dynamics of merchandise exports in OECD and non-OECD economies, 2000-11

Underlying values are in current USD. Data refer to manufactured goods and goods stemming from primary activities (i.e. agriculture, fishing, forestry, mining and quarrying); a few utilities, such as electricity and some community services, are also covered.

22. Worldwide collapse in exports, in gross value added terms between 2008 and 2009

Gross exports of goods and services are estimated from the underlying inter-country input-output (ICIO) system used to produce the OECD-WTO Trade in Value Added (TiVA) indicators. Of necessity, the system requires consistent bilateral trade matrices in which exports of products X from country A to B are equal to imports of products X by B from A. Efforts are made to ensure consistency with aggregate exports and imports as reported in countries' National Accounts or Balance of Payments statistics. However, because of the required balancing of global bilateral trade matrices, certain results may not match countries' perceptions of their trading patterns.

23. Trends in world foreign direct investment flows, 1995-2011

From 2005, data refer to the definition of FDI of the 6th revision of the *Balance of Payments Manual*.

The OECD share in world total is based on the average of inward and outward FDI flows.

24. Decomposition of growth in GDP per capita, 2007-09 and 2009-12

Calculations are based on GDP at constant prices, converted to USD using 2005 purchasing power parities.

For Australia, estimates refer to fiscal years beginning 1st July.

For New Zealand, underlying GDP series refer to fiscal years beginning 1st April.

25. Gap in GDP per capita and GDP per person employed in the BRIICS, with respect to the United States, 1997-2012

Calculations are based on GDP at constant prices, converted to USD using 2005 purchasing power parities.

26. Labour productivity growth in non-agricultural business sector before the crisis, 2001-07

General notes:

The contribution of each sector to aggregate labour productivity growth is computed as the difference between the growth rate of real value added and that of hours worked, weighted by the sector's share in total nominal value added and total hours worked, respectively.

The aggregate activity groups are defined according to ISIC Rev.4 Divisions 05-39 (Sections B-E), 41-43 (F), 45-56 (G-I), 58-63 (J), 64-66 (K) and 69-82 (M-N) respectively. Total non-agriculture business sector thus includes all activities except ISIC Rev.4 Sections A: Agriculture, forestry and fishing (Divisions 01-03), L: Real estate (68), and O-U: Public administration, education, health and other services (84-99).

Additional note:

Korean hours worked for 2001 are a Secretariat estimate which applies the 2004 industry distribution of hours worked to a 2001 total economy figure.

27. Labour productivity growth in non-agricultural business sector after the crisis, 2007-11

See general notes under 26.

28. Investment in fixed and knowledge-based capital, 2010

For Canada, Japan and Korea estimates refer to 2008.

Estimates refer to the business sector for all countries except Korea, for which estimates refer to the total economy. Value added in the business sector is adjusted to include knowledge-based investments.

Data on knowledge-based capital (KBC) for Australia provided by L. Talbott; all data for Canada provided by J. Baldwin, W. Gu and R. Macdonald; data on KBC and physical assets for members of the European Union, Norway and the United States provided by the INTAN-Invest consortium led by C. Corrado, J. Haskel, C. Jona-Lasinio and M. Iommi; all data for Japan provided by K. Fukao and T. Miyagawa; data on KBC for Korea provided by H. Chun. Data on tangible investment for Australia, Austria, Denmark, Finland, France, Ireland, Italy, Korea, Luxembourg, the Netherlands, Spain and Sweden and data on adjusted value added for Australia, Korea, Luxembourg and Portugal are OECD calculations based on OECD and Annual National Accounts Databases, May 2013.

29. Change in business investment intensity between 2008 and 2010

Estimates refer to the business sector for all countries.

Data on knowledge-based capital (KBC) for Australia provided by L. Talbott; data on KBC and physical assets for members of the European Union, Norway and the United States provided by the INTAN-Invest consortium led by C. Corrado, J. Haskel, C. Jona-Lasinio and M. Iommi. Data on tangible investment for Australia, Austria, Denmark, Finland, France, Ireland, Italy, Luxembourg, Netherlands, Spain and Sweden and data on adjusted value added for Australia, Luxembourg and Portugal are OECD calculations based on OECD and Annual National Accounts Databases, May 2013.

30. Foreign value added content of exports, 1995

Regional aggregations are as follows:

ASEAN: Brunei Darussalam, Cambodia, Indonesia, Malaysia, the Philippines, Singapore, Thailand and Viet Nam. The aggregate does not include Laos and Myanmar.

EU15: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom.

Other EU: Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Iceland, Latvia, Lithuania, Malta, Norway, Poland, Romania, the Slovak Republic, Slovenia and Switzerland.

Rest of the world (world excluding TiVA countries, see *www.oecd.org/sti/ind/TiVA_Guide_to_Country_Notes.pdf*).

For the regions ASEAN, EU15 and Other Europe, intra-regional trade is included. For example, the arrow from USA to EU15 includes USA value added embodied in EU15 countries' exports to other EU15 countries.

This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

31. Foreign value added content of exports, 2009

See notes under 30.

32. Foreign value added content of exports, non-OECD economies, 2009

OECD calculated as a weighted average of OECD countries.

33 Service value added in manufacturing exports by industry, 1995 and 2009

The manufacturing activities covered are based on the following ISIC Rev.3 industries: 15-16 (Food products, beverages and tobacco); 17-19 (Textiles, wearing apparel, leather and related products); 20-22 (Wood, paper products, printing and publishing); 23-26 (Chemicals, pharmaceuticals, plastics and other non-metallic mineral products); 27-28 (Basic metals and fabricated metal products); 29 (Machinery and equipment); 30-33 (Electrical and optical equipment); 34-35 (Transport equipment); 36-37 (Other manufacturing and recycling).

Outliers were excluded from the computation of indices.

34. Foreign direct investment inflows, 1995-2000, 2001-06 and 2007-11

Data from 2005 to 2011 refer to the IMF (2009), Balance of Payments and International Investment Position Manual, 6th edition, definition of FDI. Data prior to 2005 refer to the IMF (1993), Balance of Payments and International Investment Position Manual, 5th edition definition of FDI.

Other OECD includes: Australia, Canada, Chile, Iceland, Israel, Korea, Mexico, New Zealand, Norway, Switzerland and Turkey.

Other BRIICS includes: Brazil, India, Indonesia, Russian Federation and South Africa.

Southeast Asia includes: Cambodia, Chinese Taipei, Hong Kong (China), Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Viet Nam.

35. Outward foreign direct investment flows from BRIICS, 2001-04, 2005-07 and 2008-11

For Indonesia, the 2001-04 average is not available.

The IMF (2009), Balance of Payments and International Investment Position Manual, 6th edition definition of FDI is used for 2005-07 and 2008-11, IMF (1993), Balance of Payments and International Investment Position Manual, 5th edition definition for 2001-04.

36. Outward foreign direct investment flows from China, yearly average 2007-11

Offshore financial centres include Antigua & Barbuda, the Bahamas, the British Virgin Islands, the Cayman Islands, St Vincent & the Grenadines, and Bermuda.

Southeast Asia includes Brunei Darussalam, Cambodia, Chinese Taipei, Indonesia, Laos, Macau, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Viet Nam.

37. Top 20 countries, total stock of foreign direct investment, 2012

Top 20 countries by the sum of inward and outward positions.

Countries are ranked by their inward position.

38. Composition of GDP in OECD and BRIICS economies, 2011

The major activity groups defined according to ISIC Rev.4 are: Market services: ISIC Divisions 45-82 (G-N); Non-market services: 84-99 (O-U); Industry: 05-39 (B-E), i.e. Mining (05-09), Manufacturing (10-33) and Utilities (35-39); Construction: 41-43 (F); and Agriculture: 01-03 (A).

Value added is measured in basic prices except for Indonesia and Japan (market prices) and India and the United States (factor costs).

For Australia data refer to the fiscal year ending June 2012.

For Brazil and Canada data refer to 2009.

For India data refer to the fiscal year ending March 2012.

For New Zealand data refer to the fiscal year ending March 2010.

39. Top 20 OECD and BRIICS economies reliant on natural resources, 2011

For Estonia, previous year data refer to 1995.

Total natural resources rents are the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents. Rents are estimated as the difference between the value of production at world prices and total costs of production, including depreciation of fixed capital and return on capital.

40. Top manufacturers, 1990, 2000 and 2011

For Canada the 2011 share is based on a Secretariat extrapolation from official current price value added statistics available up to 2009.

For China the 2011 share is based on an estimate calculated by the United Nations Statistics Division and derived by applying the average 2008-10 share of manufacturing value added to total industry value added published for 2011.

42. Exports from energy-intensive manufacturing industries, 2011

The five industries considered are those included in ISIC Rev.4 Divisions 17, 19, 20, 23 and 24.

43. Biggest net CO_2 importers and net CO_2 exporters, 2009

Countries are listed by production-based CO_2 emissions, in descending order on the left-hand side, in ascending order on the right-hand side.

44. R&D in OECD and key partner countries, 2011

Figures for researchers are in full-time equivalent units.

For Brazil, Chile and the Netherlands, data refer to 2010.

For Iceland, Indonesia and South Africa data refer to 2009.

For Switzerland, data refer to 2008.

For Greece, data refer to 2007.

For Australia, data refer to 2010 for R&D expenditures and 2008 for researchers.

For India, data refer to 2007 for R&D expenditures and 2005 for researchers.

For Canada, France and Germany, data for researchers refer to 2010.

For United States, data for researchers refer to 2007.

Data for Brazil are provided by Brazil's Ministry of Science, Technology and Innovation. Data for India and Indonesia from the Science & Technology Statistics collected and published by the UNESCO Institute for Statistics. Owing to methodological differences, data for these countries may not be fully comparable with those for other countries.

45. Business R&D intensity and government support to business R&D, 2011

This is an experimental indicator. International comparability may be limited. For more information, see *www.oecd.org/sti/rd-tax-stats.htm*.

For Australia, Belgium, Brazil, Chile, Ireland, Israel and Spain, figures refer to 2010. For China, Luxembourg and South Africa, figures refer to 2009 and for Switzerland to 2008.

Estimates of direct funding for Belgium, France, Italy and Portugal are based on imputing the share of direct government-funded BERD in the previous year to the current ratio of BERD to GDP. For Austria, the 2009 share is used for 2011. For Brazil, the 2008 share, based on national sources, is used for 2010.

In Austria, Poland and South Africa, R&D tax incentive support is included in official estimates of direct government funding of business R&D. It is removed from direct funding estimates to avoid double-counting.

Estonia, Finland, Germany, Luxembourg, Mexico, New Zealand, Sweden and Switzerland did not provide information on expenditure-based R&D tax incentives for 2011. For Israel the R&D component of incentives cannot be separately identified at present.

Estimates do not cover sub-national and income-based R&D tax incentives and are limited to the business sector (excluding tax incentive support to individuals). Data refer to estimated initial revenue loss (foregone revenues) unless otherwise specified.

Estimates refer to costs of incentives for business expenditures on R&D, both intramural and extramural unless otherwise specified. Direct support figures refer only to intramural R&D expenditures, except for Brazil.

Country specific notes are available at *www.oecd.org/sti/rd-tax-stats.htm*.

46. Global Internet Protocol (IP) traffic, 2005-13

VoD: video on demand. WAN: wide area network.

2013: estimates.

47. IPv6 deployment by country, November 2012

Data collected on 19 November 2012.

48. Mobile cellular and broadband penetration worldwide, 2001-11

OECD series are computed with OECD data.

For Brazil, China, India and World, data are from ITU for mobile subscriptions and from the United Nations for population.

49. University hotspots, geographical distribution of highest impact institutions, 2007-11

Other OECD includes Australia, Canada, Israel, Japan, Korea, Mexico, New Zealand, Norway and Switzerland.

Other EU (and OECD) includes Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Poland, Portugal, Spain and Sweden.

Non-OECD includes Brazil, China, Chinese Taipei, Hong Kong (China), India, Iran, Lithuania, Malaysia, Singapore, South Africa and Thailand.

50. Innovation hotspots in ICT, biotechnology and nanotechnology, 1998-2000 and 2008-10

Data relate to patent applications filed under the Patent Cooperation Treaty (PCT) in ICT, biotechnology and nanotechnology. Patent counts are based on the priority date, the inventor's region of residence and fractional counts. The regional breakdown used is the OECD's Territorial Level 2.

51. Service-related trademark applications at USPTO and OHIM, selected OECD and non-OECD economies, 2000-02 and 2010-12

Shares of service trademarks are calculated using fractional counts of the classes designated in the trademark application. Classes 1 to 34 relate to goods; classes 35 to 45 relate to services.

Trademarks in knowledge-intensive services refer to applications in classes 35, 36, 38 and 42 of the Nice Classification. Trademarks in other services refer to applications in classes 37, 39, 40, 41, 43, 44 and 45 of the Nice Classification.

52. Trademarks in knowledge-intensive services, selected OECD and non-OECD economies, 2010-12

Shares of knowledge-intensive service trademarks are calculated using fractional counts of the classes designated in the trademark application. The following classes of the 10th edition of the Nice Classification are covered: class 35, business services; class 36, finance and insurance; class 38, telecommunications; and class 42, R&D.

53. Patents and trademarks per capita, 2000-02 and 2009-11

Patent families are counted using fractional counts and according to the earliest priority date (first patent application worldwide) and the inventor's country of residence.

Trademarks abroad are counted according to the application date and the address of the applicant.

55. The impact of scientific production and the extent of international scientific collaboration, 2003-11

The international institutional collaboration indicator is based on the proportion of documents involving institutional affiliations with other countries or economies, as a proportion of documents attributed to authors with an affiliation in the reference economy. Single-authored documents with multiple affiliations across boundaries can therefore count as institutional international collaboration.

56. The impact of internationally mobile scientists, inflows versus outflows, 1996-2011

International mobility of scientific researchers is inferred from authors listed in the Scopus Custom database of peer-reviewed scientific publications with at least two documents during the reference period, based on changes in the location of their institutional affiliation. Outflows are defined on the basis of their first affiliation. Inflows are defined on the basis of the final affiliation and exclude individual authors who "return" to their original country of affiliation.

A proxy measure of scientific impact for researchers with different mobility patterns is estimated by calculating, for each author and mobility profile, the median across the relevant journals' Source-Normalized Impact per Paper (SNIP) over the entire period. A SNIP impact value that is higher than one means that the median-attributed SNIP for authors of that country/category is above average.

58. The innovation-science link by technology area, 2001-11

To identify whether NPL corresponds to a scientific document, NPL references were matched to Thomson Reuters Web of Science database, an index of scientific literature. For matched references, scientific domains correspond to Thomson Reuters Essential Science Indicators 22-field classification (*http://archive.sciencewatch.com/about/met/fielddef/*). For presentational purposes, the fields are combined into a reduced set of 11 categories. Medical sciences encompasses clinical medicine, neuroscience, psychiatry and psychology. Life sciences covers biology and biochemistry, immunology, microbiology, molecular biology and genetics. Earth science includes geosciences and environment/ecology. Economics is included in social sciences. Other items are as indicated.

59. International collaboration in science and innovation, 2007-11

International co-authorship of scientific publications is defined at institutional level. A scientific document is deemed to involve an international collaboration if there are institutions from different countries or economies in the list of affiliations reported by single or multiple authors. Estimates are based on whole counts from information contained in the Scopus® database (Elsevier B.V.).

International co-inventions are measured as the share of patent applications filed under the Patent Cooperation Treaty (PCT) with at least one co-inventor located in a different country in total patents invented domestically. Patent counts are based on the priority date, the inventor's country of residence and whole counts.

60. Cross-border ownership of patents, 2009-11

The data refer to counts of patent applications filed under the Patent Cooperation Treaty (PCT), at international phase, by priority date, country and fractional counts.

61. Scientific collaboration with the BRIICS countries, 2001 and 2011

Numbers are based on whole counts.

North America includes the United States, Canada and Mexico.

Far East and Oceania includes Australia, Japan, Korea, Malaysia, New Zealand, Singapore and Thailand.

62. Co-inventions with the BRIICS countries, 1991-2011

Co-inventions are measured as the share of patent applications with at least one co-inventor located in a BRIICS country in total patents invented domestically.

Data refer to counts of patent applications filed under the Patent Cooperation Treaty (PCT), at international phase, by priority date, inventor's country of residence and whole counts.

63. Triadic patent families by blocs, 2001 and 2011

"Triadic" patent families refer to patents filed at the European Patent Office (EPO), the Japan Patent Office (JPO) and the United States Patent and Trademark Office (USPTO) that protect the same invention. Patent counts are based on the priority date, the inventor's country of residence and fractional counts.

Data for 2011 are estimates.

64. Technology transfers to selected BRIICS, 2005-09

Data refer to patent families, i.e. patents applied for at more than one patent office, one of which is among the following: Canadian Intellectual Property Office (CIPO, Canada); Companies and Intellectual Property Commission (CIPC, South Africa); Deutsches Patent- und Markenamt (DPMA, Germany); European Patent Office (EPO); Federal Service for Intellectual Property (ROSPATENT, Russian Federation); Institut National de la Propriété Industrielle (INPI, France); Instituto Nacional de Propriedade Industrial (INPI, Brazil); Japan Patent Office (JPO, Japan); Korean Intellectual Property Office (KIPO, Korea); State Intellectual Property Office of the People's Republic of China (SIPO, China); UK Intellectual Patent Office (UKIPO, United Kingdom); and the United States Patent and Trademark Office (USPTO, United States).

Patents are allocated to technology fields using the International Patent Classification (IPC) codes and the classification presented in Schmoch (2008, revised in 2013). Patent counts are based on the earliest priority date, the inventor's country of residence and fractional counts.

65. Gender differences in seeking health-related information on the Internet, 2011

Except where otherwise stated, the recall period is three months.

Averages are calculated using data from available OECD countries for which data are strictly comparable.

The national source for the Russian Federation is the Institute for Statistical Studies and Economics of Knowledge, Higher School of Economics (HSE) of the National Research University, May 2013.

For Canada, individuals aged 16 and over. Internet users are defined for a recall period of 12 months.

For Korea and New Zealand, data refer to 2012. Internet users are defined for a recall period of 12 months.

For Switzerland, data refer to 2010. Internet users are defined for a recall period of 6 months.

For the United States, data refer to May 2011 and are from the Pew Research Center. Percentages refer to adult Internet users (aged 18 or more) who have ever looked on line for health or medical information. There is no recall period.

66. Age differences in seeking employment-related information on the Internet, 2011

The recall period is three months, except for Canada, Chile, Japan and Korea (12 months), and the United States, which has no recall period (see note below).

The national source for the Russian Federation is the Institute for Statistical Studies and Economics of Knowledge, Higher School of Economics (HSE) of the National Research University, May 2013.

For Canada, data refer to 2010 and to search for employment only. The recall period is 12 months.

For Chile, data refer to 2012. Calculations for 16-64 year-olds are based on population figures for the group of individuals 15-64 years old.

For Japan, data refer to 2012 with different age groups: 15-59 year-olds, 15-19 year-olds and 50-59 year-olds.

For Korea data refer to 2012.

For the United States, data refer to May 2011 and are from the Pew Research Center. Percentages refer to adult Internet users (aged 18 or more) who have ever looked on line for information about a job. Internet users aged 18 or more instead of 16-64, 18-29 instead of 16-24 and 50-64 instead of 55-64.

67. Public perception of the impact of science and technology on personal well-being, 2010

For Japan and the Russian Federation, data refer to 2011.

For Korea, data refer to 2012.

For the United States, data refer to 2004.

For India, data refer to 2004.

Based on surveys conducted by means of face-to-face interviews. Results for Japan are based on web-based questionnaire.

Respondents in Japan, the Russian Federation and the United States were offered the following options (Strongly agree, Agree, Disagree, Strongly disagree, Don't know). Respondents in India were presented with three options (Agree, Disagree, Don't know). For Korea, only results for Strongly agree and Agree to some extent are available.

National sources within the following publications:

China: Ministry of Science and Technology of the People's Republic of China (2010). EU countries: European Commission (2010). Japan: National Institute of Science and Technology Policy (2011). Korea: Korea Foundation for the Advancement of Science and Creativity (2012). Russian Federation: National Research University – Higher School of Economics (2012). United States: National Science Board (2012). India: National Science Board (2012).

68. Public perception of scientific research benefits, 2010

For Japan and the Russian Federation, data refer to 2011.

For Korea, data refer to 2006.

Based on surveys conducted by means of face-to-face interviews.

For Japan, Korea, the Russian Federation and the United States, respondents were invited to choose among the following options: Benefits are much greater than harm, Benefits are slightly greater than harm, Benefits and harm are about equal, Harm is slightly greater than benefits, Harm is much greater than benefits, and Don't know.

For Brazil, respondents are asked to choose among the following options: Only benefits, More benefits than harm, Both benefit and harm, More harm than benefits, Only harm, and Don't know.

For EU countries and China, the question invited respondents to express their (dis)agreement with the statement, "The benefits of science are greater than any harmful effects it may have", by choosing among the following: Totally agree, Tend to agree, Neither agree nor disagree, Tend to disagree, Totally disagree, Don't know.

National sources within the following publications:

Brazil: Ministry of Science and Technology of Brazil (2010). China: Ministry of Science and Technology of the People's Republic of China (2010). EU countries: European Commission (2010). Japan: National Institute of Science and Technology Policy (2011). Korea: National Science Board (2012). The Russian Federation: National Research University – Higher School of Economics (2012). United States: National Science Board (2012).

References

Baldwin, J., W. Gu and R. Macdonald (2012), "Intangible capital and productivity growth in Canada", in *The Canadian Productivity Review Research Papers*, Statistics Canada, Ottawa, *www.statcan.gc.ca/pub/15-206-x/15-206-x2012029-eng.htm*.

Bravo-Biosca, A., C. Criscuolo and C. Menon (2013), "What Drives the Dynamics of Business Growth?", *OECD Science, Technology and Industry Policy Papers*, No. 1, OECD Publishing. Doi: *http://dx.doi.org/10.1787/5k486qtttq46-en*.

Chun, H., K. Fukao, S. Hisa and T. Miyagawa (2012), "Measurement of Intangible Investments by Industry and Its Role in Productivity Improvement Utilizing Comparative Studies between Japan and Korea", *RIETI Discussion Paper Series*, 12-E-037.

Corrado, C., C. Hulten, and D. Sichel (2009), "Intangible Capital and US Economic Growth", *Review of Income and Wealth*, Vol. 55, No. 3, pp. 661–685.

Corrado, C., J. Haskel, C. Jona-Lasinio and M. Iommi (2012), "Intangible Capital and Growth in Advanced Economies: Measurement Methods and Comparative Results", *Working Paper*, June, *www.intan-invest.net*.

Department of Industry, Innovation, Science, Research and Tertiary Education, Commonwealth of Australia (2012), *Australian Innovation System Report – 2012*, *www.innovation.gov.au/innovation/policy/AustralianInnovationSystemReport/AISR2012/index.html*.

European Commission (2010), *Special EUROBAROMETER 'Science and Technology Report'*, European Commission Directorate-General for Research, Brussels, *http://ec.europa.eu/public_opinion/archives/ebs/ebs_340_en.pdf*, accessed 10 June 2013.

Eurostat, "'High-technology' and 'knowledge based services' aggregations based on NACE Rev.2" (Eurostat online document), *http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/Annexes/htec_esms_an3.pdf*.

Graham, S., G. Hancock, A. Marco and A. Myers (2013), "The USPTO Trademark Case Files Dataset: Descriptions, Lessons, and Insights", *SSRN Working Paper*, *http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2188621*.

International Energy Agency (2013), *CO_2 Emissions from Fuel Combustion*, 2012 edition, *www.iea.org/co2highlights/co2highlights.pdf*.

JPO (2001-12), *Annual Reports*, Japan Patent Office (JPO),Tokyo, *www.jpo.go.jp*.

Notes and References

Korea Foundation for the Advancement of Science and Creativity (KOFAC) (2012), *Survey of Public Attitudes toward and Understanding of Science and Technology*, KOFAC, Seoul.

Lev, B. (2001), *Intangibles: Management, Measurement and Reporting*, Bookings Institution Press, Washington, DC.

Ministry of Science and Technology of Brazil (2010), *Public Perception of Science and Technology in Brazil: 2010 Poll results*, Ministry of Science and Technology, *www.mct.gov.br/upd_blob/0214/214770.pdf*, accessed 10 June 2013.

Ministry of Science and Technology of the People's Republic of China (2010), *China Science and Technology Indicators 2010*, Scientific and Technical Documentation Press, Beijing.

Miroudot, S., R. Lanz and A. Ragoussis (2009), "Trade in Intermediate Goods and Services", *OECD Trade Policy Working Papers*, No. 93, OECD, Paris. Doi: *http://dx.doi.org/10.1787/5kmlcxtdlk8r-en*.

Nakano, S., A. Okamura, N. Sakurai, M. Suzuki, Y. Tojo and N. Yamano (2009), "The Measurement of CO_2 Embodiments in International Trade: Evidence from the Harmonised Input-Output and Bilateral Trade Database", *OECD Science, Technology and Industry Working Papers*, 2009/03, OECD Publishing. Doi: *http://dx.doi.org/10.1787/227026518048*.

National Institute of Science and Technology Policy (NISTEP), Ministry of Education, Culture, Sports, Science and Technology (MEXT) (2011), *The Change of the Public Attitudes to Science and Technology The Findings from Face-to-Face Interviews and from a Monthly Internet Survey*, NISTEP, Tokyo, *http://hdl.handle.net/11035/1156*, accessed 10 June 2013.

National Research University – Higher School of Economics (2012), *Science and Technology Indicators in the Russian Federation: Data book*, Moscow, *www.hse.ru/en/primarydata/st2012*.

National Science Board (2012), *Science and Engineering Indicators 2012*, National Science Foundation, Arlington, VA, *www.nsf.gov/statistics/seind12*, accessed 10 June 2013.

OECD, "ISIC Rev.3 Technology Intensity Definition", (OECD, online document), *www.oecd.org/dataoecd/43/41/48350231.pdf*.

OECD, "Carbon Dioxide Emissions Embodied in International Trade", (OECD, online document), *www.oecd.org/document/22/0,3746,en_2649_34445_46878038_1_1_1_1,00.html*.

OECD (2001), "Measuring Productivity – OECD Manual: Measurement of Aggregate and Industry-Level Productivity Growth, OECD Publishing". Doi: *http://dx.doi.org/10.1787/9789264194519-en*.

OECD (2002), *Frascati Manual 2002. The Measurement of Scientific and Technological Activities. Proposed Standard Practice for Surveys on Research and Experimental Development*, 6th edition, OECD Publishing, *www.oecd.org/sti/frascatimanual*. Doi: *http://dx.doi.org/10.1787/9789264199040-en*.

OECD (2005), *A Framework for Biotechnology Statistics*, OECD, Paris, *www.oecd.org/dataoecd/5/48/34935605.pdf*.

OECD/Eurostat (2005), *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data, The Measurement of Scientific and Technological Activities*, 3rd edition, OECD Publishing. Doi: *http://dx.doi.org/10.1787/9789264013100-en*.

OECD (2009), *OECD Biotechnology Statistics 2009*, OECD, Paris, *www.oecd.org/dataoecd/4/23/42833898.pdf*.

OECD (2009), *OECD Patent Statistics Manual*, OECD Publishing. Doi: *http://dx.doi.org/10.1787/9789264056442-en*.

OECD (2010), *Measuring Innovation: A New Perspective*, OECD Publishing. Doi: *http://dx.doi.org/10.1787/9789264059474-en*.

OECD (2010), *OECD Handbook on Deriving Capital Measures of Intellectual Property Products*, OECD Publishing. Doi: *http://dx.doi.org/10.1787/9789264079205-6-en*.

OECD (2011), *OECD Guide to Measuring the Information Society 2011*, OECD Publishing. Doi: *http://dx.doi.org/10.1787/9789264113541-en*.

OECD (2011), *Science, Technology and Industry Scoreboard 2011*, OECD Publishing. Doi: *http://dx.doi.org/10.1787/sti_scoreboard-2011-en*.

OECD (2012), *OECD Compendium of Productivity Indicators 2012*, OECD Publishing. Doi: *http://dx.doi.org//10.1787/9789264188846-en*.

OECD (2012), *OECD Science, Technology and Industry Outlook 2012*, OECD Publishing. Doi: *http://dx.doi.org/10.1787/sti_outlook-2012-en*.

OECD (2012), "OECD System of Composite Leading Indicators", (OECD, online document), *www.oecd.org/std/leading-indicators/41629509.pdf*.

OECD (2013), *OECD Economic Outlook 2013*, Issue 1, OECD Publishing. Doi: *http://dx.doi.org/10.1787/eco_outlook-v2013-1-en*.

OECD (2013), *OECD Employment Outlook 2013*, OECD Publishing. Doi: *http://dx.doi.org/10.1787/empl_outlook-2013-en*.

OECD (2013), *Economic Policy Reforms 2013: Going for Growth*, OECD Publishing. Doi: *http://dx.doi.org/10.1787/growth-2013-en*.

OECD (2013), *Education at a Glance 2013: OECD Indicators*, OECD Publishing. Doi: *http://dx.doi.org/10.1787/eag-2013-en*.

OECD (2013), *Entrepreneurship at a Glance 2013*, OECD Publishing. Doi: *http://dx.doi.org/10.1787/entrepreneur_aag-2013-en*.

OECD (2013), "FDI in Figures", April 2013, *www.oecd.org/daf/inv/FDI%20in%20figures.pdf*.

OECD (2013), *Financing SMEs and Entrepreneurs 2013: An OECD Scoreboard*, OECD Publishing. Doi: *http://dx.doi.org/10.1787/9789264166769-en*.

OECD (2013), *Interconnected Economies: Benefiting from Global Value Chains*, OECD Publishing. Doi: *http://dx.doi.org/10.1787/9789264189560-en*.

OECD (2013), *OECD Communications Outlook 2013*, OECD Publishing. Doi: *http://dx.doi.org/10.1787/comms_outlook-2013-en*.

OECD and SCImago Research Group-CSIC (forthcoming), *Compendium of Bibliometric Science Indicators 2014*.

Schmoch, U. (2008), "Concept of a Technology Classification for Country Comparisons, Final Report to the World Intellectual Property Organisation (WIPO)", revised in January 2013, *www.wipo.int/export/sites/www/ipstats/en/statistics/patents/pdf/wipo_ipc_technology.pdf*.

UNCTAD (2012), *World Investment Report 2012*, *www.unctad-docs.org/files/UNCTAD-WIR2012-Overview-en.pdf*.

World Bank (2012), *Information and Communications for Development 2012: Maximizing Mobile*, The World Bank, Washington, DC. Doi: *http://dx.doi.org/10.1596/978-0-8213-8991-1*. Licence: Creative Commons Attribution CC BY 3.0.

WTO and Institute of Developing Economies – Japan External Trade Organization (IDE-JETRO) (2011), *Trade Patterns and Global Value Chains In East Asia: From Trade in Goods to Trade in Tasks*, Geneva, *www.wto.org/english/res_e/booksp_e/stat_tradepat_globvalchains_e.pdf*.