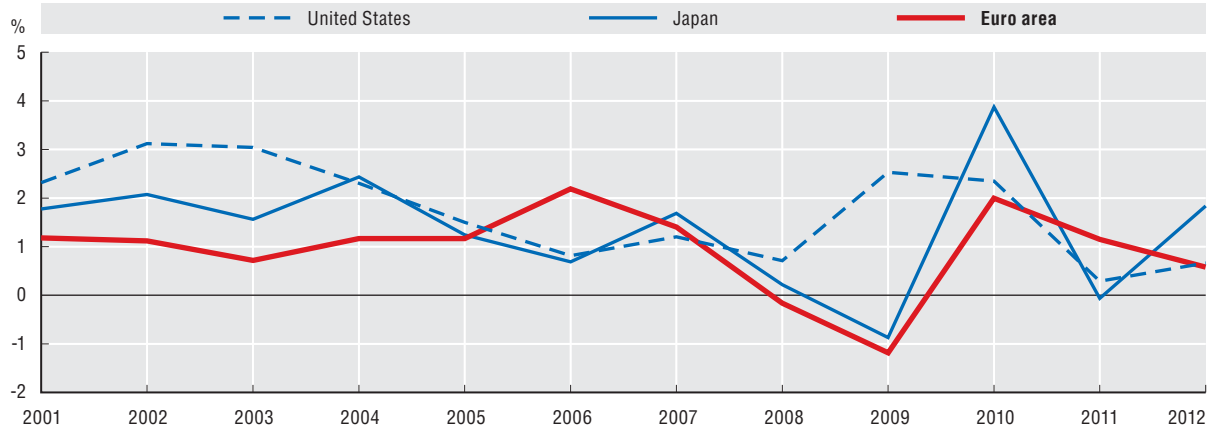
Sources of growth and the crisis

Productivity and the crisis

The world today faces extraordinary challenges, and the effects of the economic downturn are still being felt five years after the start of the crisis. In 2010, strong productivity growth accompanied global recovery. However, the pace of recovery varies across OECD countries and unemployment remains high in many. The BRIICS (Brazil, the Russian Federation, India, Indonesia, the People's Republic of China and South Africa) were less affected by the global slowdown, and productivity continued to grow at over 6% in 2009-12, compared to 1.5% in the OECD area. In China, GDP per employee grew at around 9% a year.

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

Average annual growth rates in percentage points

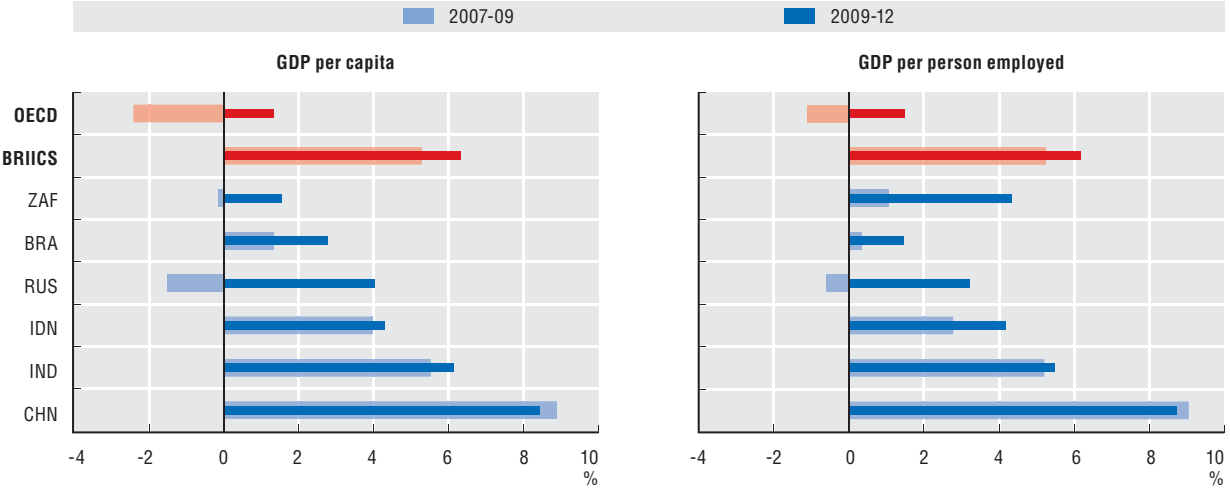


Source: OECD, Productivity Database, August 2013. StatLink contains more data. See chapter notes.

StatLink http://dx.doi.org/10.1787/888932889307

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

Average annual growth rates in percentage points



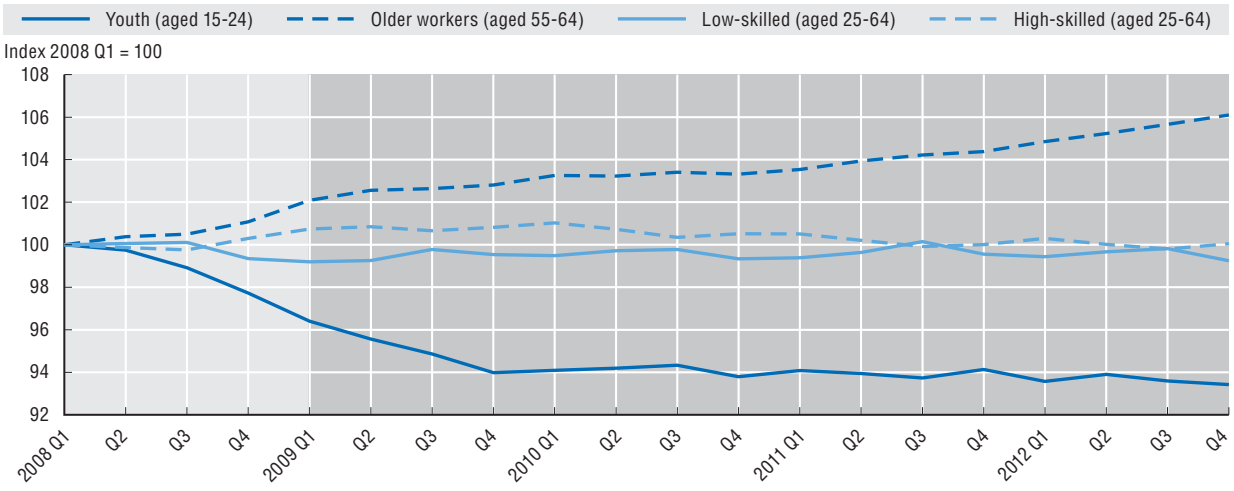
Source: OECD, Productivity Database, *www.oecd.org/std/productivity-stats*, August 2013. See chapter notes.

StatLink http://dx.doi.org/10.1787/888932889326

Jobs: The most pressing challenge

For policy makers, unemployment – which is still rising in many economies, particularly among youth – is the most pressing challenge, especially in the euro area. The OECD-wide unemployment rate declined by just a 0.5 percentage point from a post-war high of 8.5% in October 2009 to 8.0% in April 2013. Employment growth in different groups has varied widely during the recovery. Youth employment rates are of particular concern, as they have declined by almost 7 percentage points in relative terms. Moreover, lower- and higher-skilled workers do not show any increase in their relative employment rates.

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



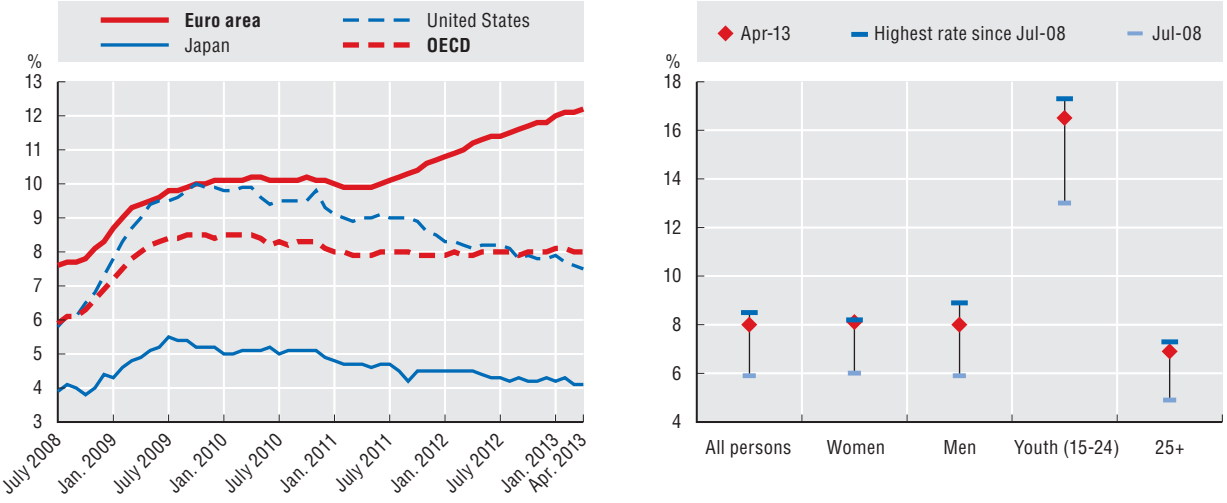
Notes: Ratio of each group's employment rates to overall employment rate. OECD is the weighted average of 34 countries for data by age, and of 30 countries for data by education (excluding Australia, Chile, Japan and New Zealand). Grey shading refers to the recovery period starting from the trough in OECD-wide GDP.

Source: OECD calculations based on OECD Short-Term Labour Market Statistics Database and National Labour Force Surveys, June 2013. StatLink contains more data. See chapter notes.

StatLink http://dx.doi.org/10.1787/888932889345

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

Percentage points



Source: OECD Short-Term Labour Market Statistics, June 2013. See chapter notes.

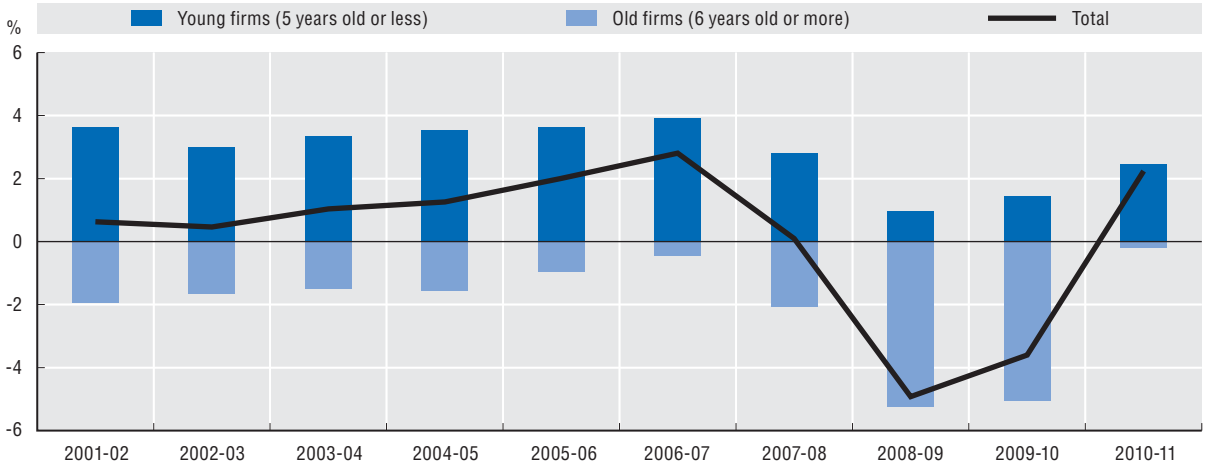
StatLink http://dx.doi.org/10.1787/888932889364

Young innovative firms and job creation

New evidence from 15 OECD countries for 2001-11 shows that young businesses play a crucial role in employment creation. During the financial crisis, the majority of jobs destroyed in most countries reflected the downsizing of old businesses, while net job growth in young firms remained positive.

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

Average over 15 countries



Note: Preliminary results from the OECD DYNEMP project. Average over the following countries: Austria, Belgium, Brazil, Finland, France, Hungary, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Spain, Sweden and the United States. The sectors of the economy considered are: manufacturing, construction and services (except for financial services). Owing to methodological differences, figures may deviate from officially published national statistics. Net job growth is defined as the ratio of the difference in employment for each group of firms (young, old and total) in two subsequent years to the average employment in the two years considered.
Source: OECD calculations based on the OECD DYNEMP data collection, July 2013. See chapter notes.

StatLink http://dx.doi.org/10.1787/888932889383

DYNEMP, a new OECD project on firm-level dynamics

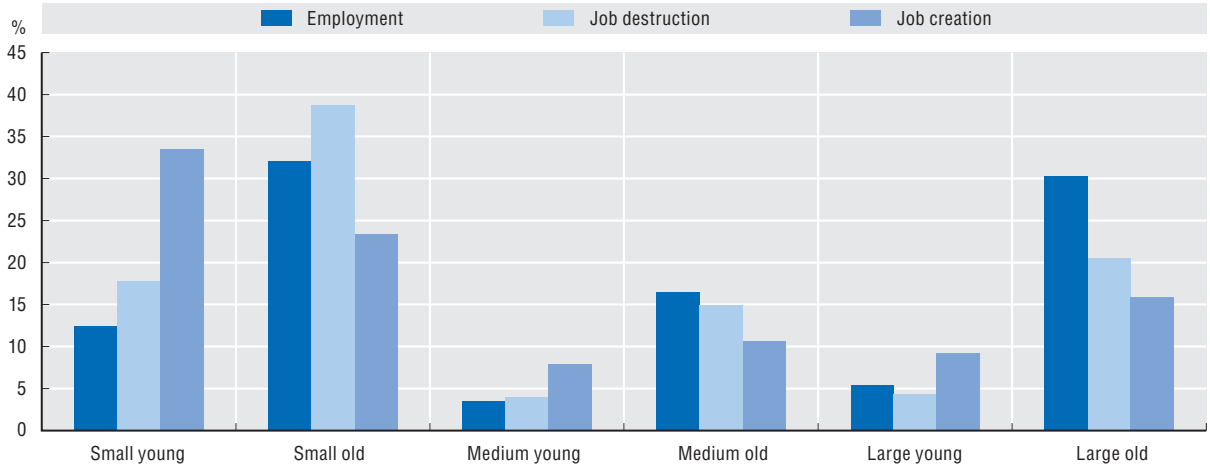
The OECD has collected cross-country evidence from countries' business registers to identify the sources of job creation across countries and over time. The project – called DYNEMP – currently involves 18 countries: Austria, Belgium, Brazil, Canada, Finland, France, Hungary, Italy, Japan, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, the United Kingdom and the United States. The number of participants continues to increase. DYNEMP aims to quantify the extent to which firms that differ in terms of age, size and sector of activity contribute to job creation and job destruction and to see how firm entry, growth and exit shape employment dynamics across countries and over time. The resulting statistics also provide insights on the effect of the recent international financial crisis on business dynamics. The project relies on a special collection of micro-aggregated data extracted mainly from national business registers (BR) or comparable official sources that provide comprehensive coverage of economic activity. As the information contained in these sources is often confidential in nature, and national data need to be harmonised for cross-country analysis, the DYNEMP project has developed an automated routine that allows national representatives to construct harmonised micro-aggregated data based on BR. DYNEMP is currently extending and deepening its analysis by gathering a wider range of employment-related information at a more disaggregated level on the overall distribution of firms (and not only on high-growth or average firms); by involving representatives from other economies; and by starting the collection of a range of new statistics related to productivity.

Young, innovative firms and job creation

Firm-level data also show that, across all countries in the sample, young firms are more dynamic than older firms. Young firms systematically create more jobs than they destroy. In particular, young firms with fewer than 50 employees represent only around 11% of employment, they generally account for more than 33% of total job creation in the business sector, while their share in job destruction is around 17%.

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

Non-financial business sector, average over 15 countries

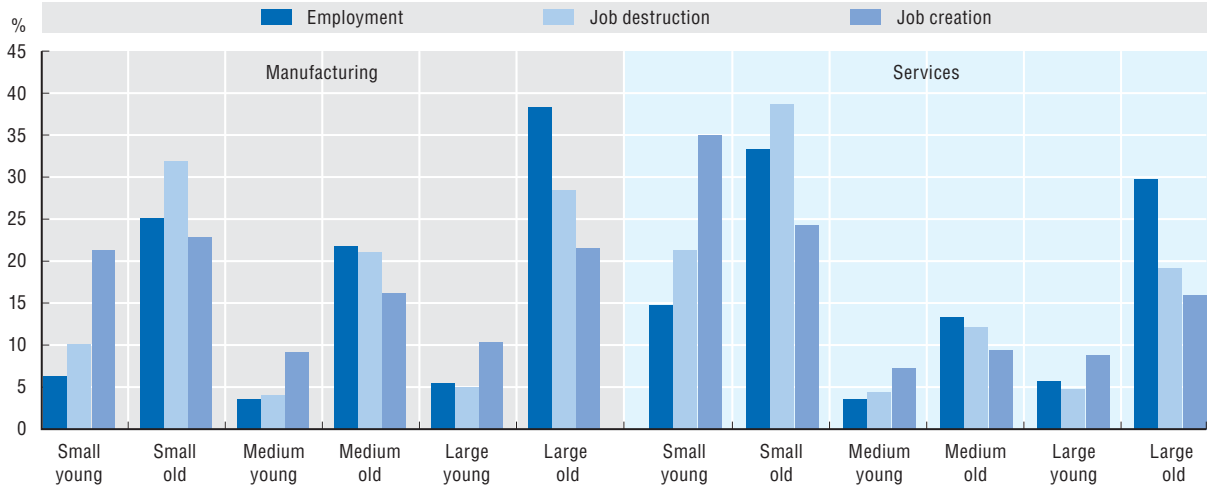


Source: OECD calculations based on the OECD DYNEMP data collection, July 2013. See chapter notes.

StatLink http://dx.doi.org/10.1787/888932889402

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

By firm age and size, average over 15 countries



Source: OECD calculations based on the OECD DYNEMP data collection, July 2013. See chapter notes.

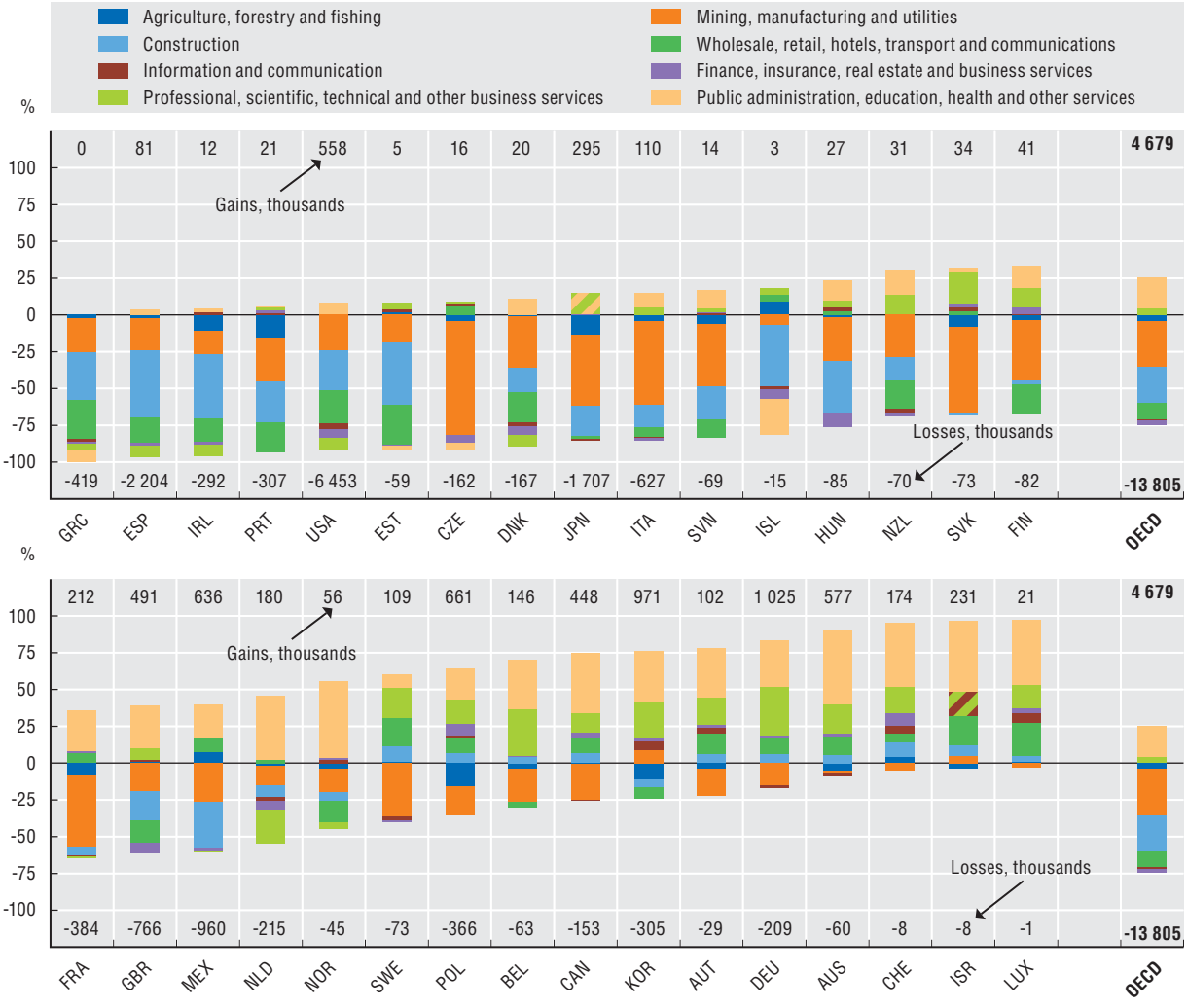
StatLink http://dx.doi.org/10.1787/888932889421

Jobs in the crisis

Between 2008 and 2011, the OECD area as a whole suffered a net loss of about 9 million jobs. Although this represents an overall drop of less than 2%, Estonia, Greece, Ireland and Spain suffered losses of over 8%. The United States alone shed about 6 million jobs over the period, a fall of about 4%. The construction and manufacturing sectors were the hardest hit, with significant declines in most OECD countries. Wholesale, retail, hotels, food services and transport sectors also struggled. In many countries, the losses were partly offset by gains in "Public administration, education, health and other services". Along with business services, this sector ensured that Australia, Germany, Israel, Korea and Switzerland saw jobs increase during this period.

8. Where people lost their jobs, 2008-11

Relative contribution to change in total employment by major sectors of economic activity



Note: For Israel and Japan certain industry breakdowns are not available. See chapter notes.
Source: OECD, Structural Analysis (STAN) Database, May 2013; OECD National Accounts (SNA) Database and national statistical institutes, June 2013. See chapter notes.

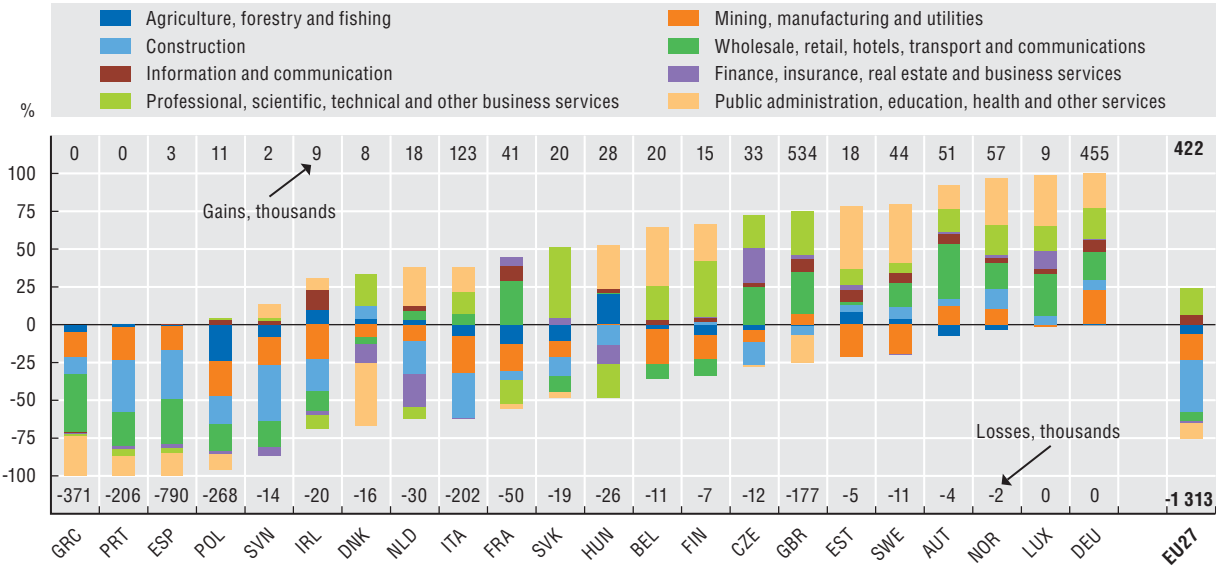
StatLink http://dx.doi.org/10.1787/888932889440

Jobs in the crisis

For many OECD countries, employment continued to decline well into 2012. Available data for Europe show that Greece, Portugal and Spain endured further falls of more than 4% from 2011. In several countries, including Greece, Portugal, Spain, Poland, Denmark and the United Kingdom, public sector employment declined substantially in this period.

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

Relative contribution to change in total employment by major sectors of economic activity



Source: OECD, National Accounts (SNA) Database and national statistical institutes, June 2013. See chapter notes.

StatLink http://dx.doi.org/10.1787/888932889459

How to read these figures

To assess the impact of the recent economic crisis on employment in different sectors of activity, sectoral changes in levels of employment can be "normalised" in order to highlight their relative contributions, in each country, to the total change in employment between two years. This is achieved, for each country, by expressing the sectoral changes as a percentage of the sum of the absolute changes. The aggregate activity groups are defined according to ISIC Rev.4 classes.

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 (for example, 2-digit ISIC Rev.4), the estimates for total gains and losses would be different. For example, the apparent loss of about 12 000 jobs between 2008 and 2011 in the Mining, manufacturing and utilities (B-E) sector in Australia actually includes gains of 57 000 in Mining (B) and 27 000 in Utilities (D-E) that are offset by losses of 96 000 in Manufacturing (C).

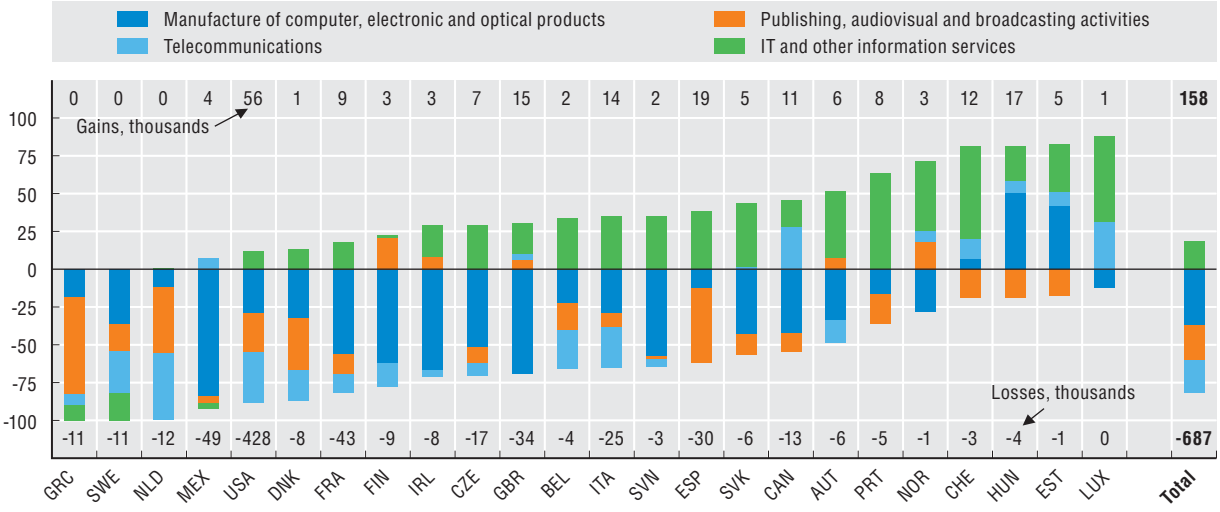
The employment data are mostly drawn from National Accounts (SNA) sources and are measured in terms of persons except for Canada, Japan, New Zealand and United States which provide figures for jobs. Care should be taken when comparing the changes in structural employment in these four countries with the others. In general, for countries that measure employment in both persons and jobs, declines were greater in jobs than in persons employed, as people switched to part-time work and job sharing.

Jobs in the crisis

The information industries are considered by many as an important source of growth in OECD countries. Between 2008 and 2011, in nearly all countries, IT and other information services saw gains in employment while employment in manufacturing of computer, electronic and optical products fell significantly. Losses were also apparent in publishing and telecommunication services. Over the period, Mexico and the United States had job losses in the information industries of about 8% and 6%, respectively.

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

Relative contribution to change in total employment in information industries by type of activity



Source: OECD, Structural Analysis (STAN) Database, ISIC Rev.4, May 2013; Eurostat National Accounts and national sources, June 2013. See chapter notes.

StatLink http://dx.doi.org/10.1787/888932889478

The new industry classification and the information industries

For this analysis, "Information industries" is defined according to ISIC Rev.4. To allow for better measurement of information and communication services, ISIC Rev.4 introduced Section J, which consists of Publishing activities (Division 58), Audiovisual and broadcasting activities (59-60), Telecommunications (61), and IT and other information services (62-63). It brings together elements of four ISIC Rev.3 sections as summarised below. The hierarchy of ISIC Rev.4 also means that as a high-level section, information and communication is now more likely to feature in statistical collections for which countries typically only report aggregate economic activities, such as labour force surveys and annual National Accounts (SNA). For the definition of information industries used here, Section J is joined by ISIC Rev.4 Division 26, Manufacture of computer, electronic and optical products. This corresponds approximately to ISIC Rev.3 Divisions 30, 32 and 33.

Approximate ISIC Rev.4 to ISIC Rev.3 2-digit correspondence for ISIC Rev.4 Sector J

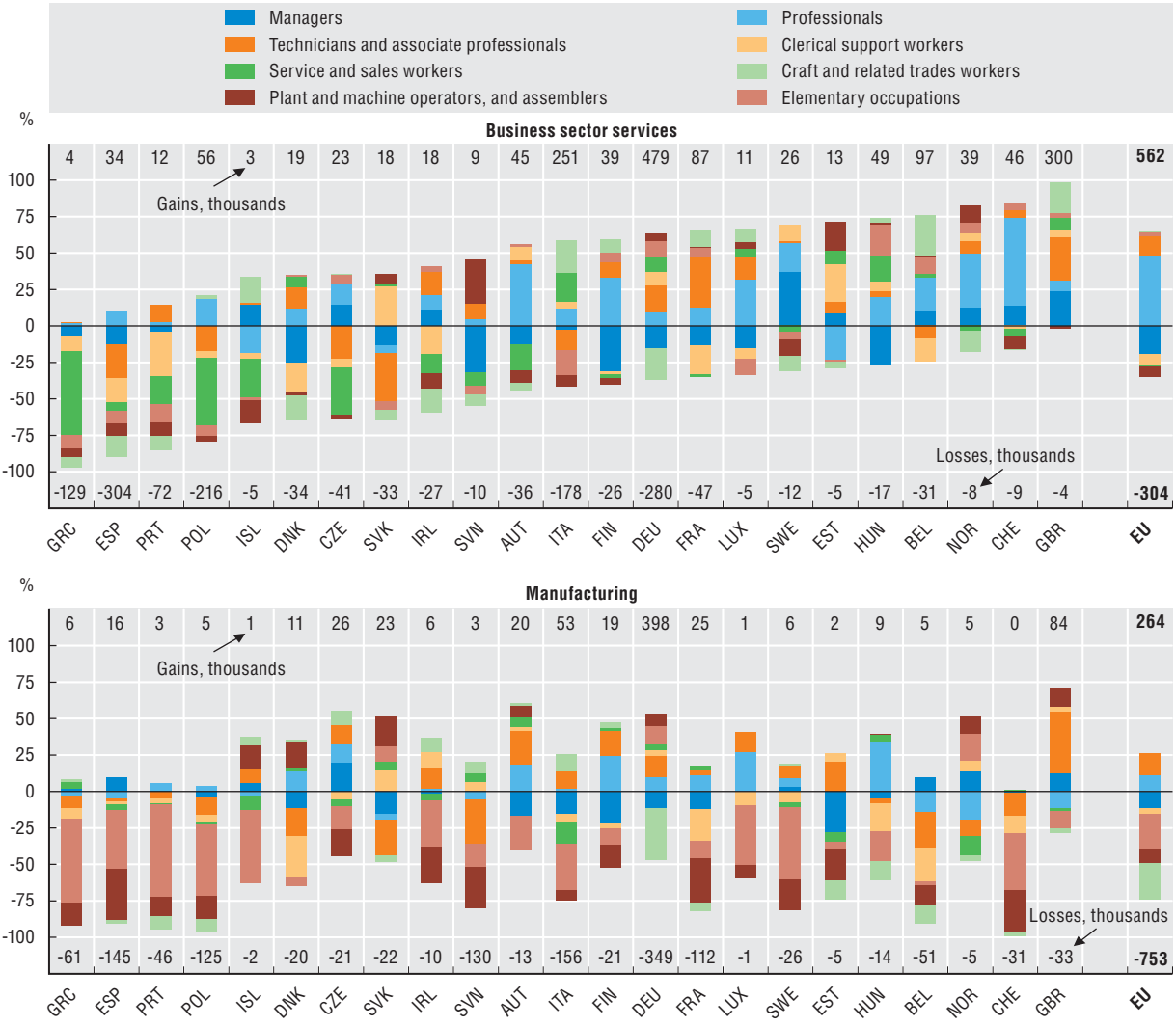
ISIC Rev.4		ISIC Rev.3	
18	Printing and reproduction of recorded media	22	Publishing, printing and reproduction of recorded media
58	**Publishing activities**		
59-60	**Audiovisual and broadcasting activities**	92	Recreational, cultural and sporting activities
90-93	Arts, entertainment and recreation		
53	Postal and courier activities	64	Post and telecommunications
61	**Telecommunications**		
62-63	**IT and other information services**	72	Computer and related activities

The skills challenge

Occupations provide another way of looking at changes in employment. Analysis of European labour force statistics suggests that during 2011-12, while there were some hints of recovery in employment, opportunities for managers declined. There was also a drop in lower-skilled jobs in both business services and manufacturing. However, employment rose for Professionals and for Technicians and associate professionals, i.e. higher-skilled "non-managerial" occupations.

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

Relative contribution to changes in total employment by major occupation groups



Source: OECD, based on Eurostat,8 European Labour Force Surveys, June 2013. See chapter notes.

StatLink http://dx.doi.org/10.1787/888932889497

How to read this figure

To see the occupations most affected by rises and falls in employment between 2011 and 2012, changes in the levels of employment in occupation groups were "normalised" to show their relative contributions to the total change in each country. This is achieved, for each country, by expressing changes in the level of occupation groups as a percentage of the sum of absolute change.

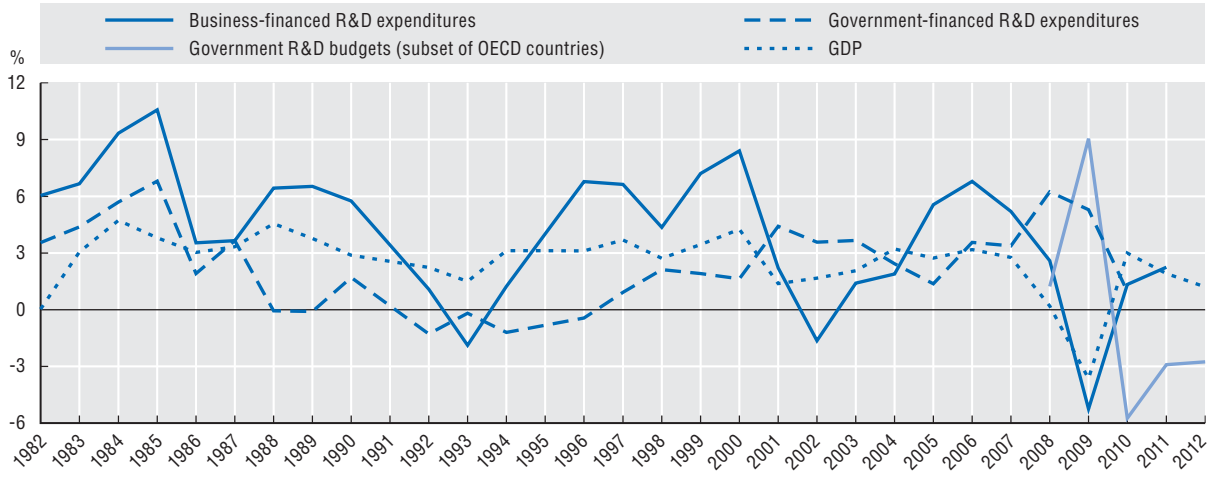
Occupations are defined according to the International Standard Classification of Occupations 2008 (ISCO-08). Gains and losses, in thousands, represent the sum of the occupations with positive changes and the sum of the occupations with negative changes, respectively. With a finer activity breakdown (for example, 3-digit ISCO-08), estimates of total gains and losses would differ, although the balance would remain the same.

R&D and innovation: emerging from the crisis?

Like other types of investment activity, expenditures on R&D and innovation are pro-cyclical. As data from 1982 to 2012 demonstrate, they mirror and amplify the economic performance of the OECD area. R&D financed by the business sector is particularly affected by the business cycle and reflects changes in financing constraints and aggregate demand. The unprecedented drop in GDP and business R&D in 2008-09 was partly balanced by a boost in government-funded R&D. From 2010, business-funded R&D appears to have recovered somewhat, counterbalancing to some extent what appears to be a significant reduction in government funding of R&D. Recent data also show that trademark activity in goods and services was strongly affected by the economic crisis, with drops that slightly preceded the inflection of GDP in the cycle. Several trademark categories that account for a large share of US trademarks (ICT and audiovisual, advertising and business services) have been on a downward trend since the beginning of 2012.

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

Average annual real growth rate, percentage

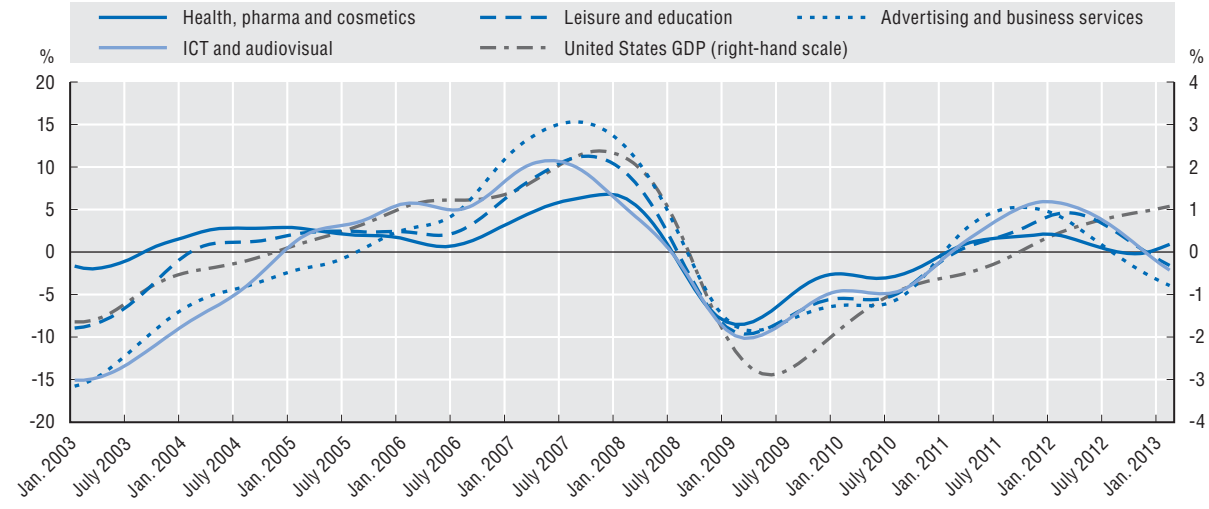


Source: OECD, Main Science and Technology Indicators Database, *www.oecd.org/sti/msti.htm*, June 2013. See chapter notes.

StatLink http://dx.doi.org/10.1787/888932889516

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

Comparing cycles, by type of trademarks, percentage deviation from the long-term trend



Source: OECD, based on US Patent and Trademark Office, Trademark Electronic Search System (TESS), June 2013; and OECD, Quarterly National Accounts Database, June 2013. See chapter notes.

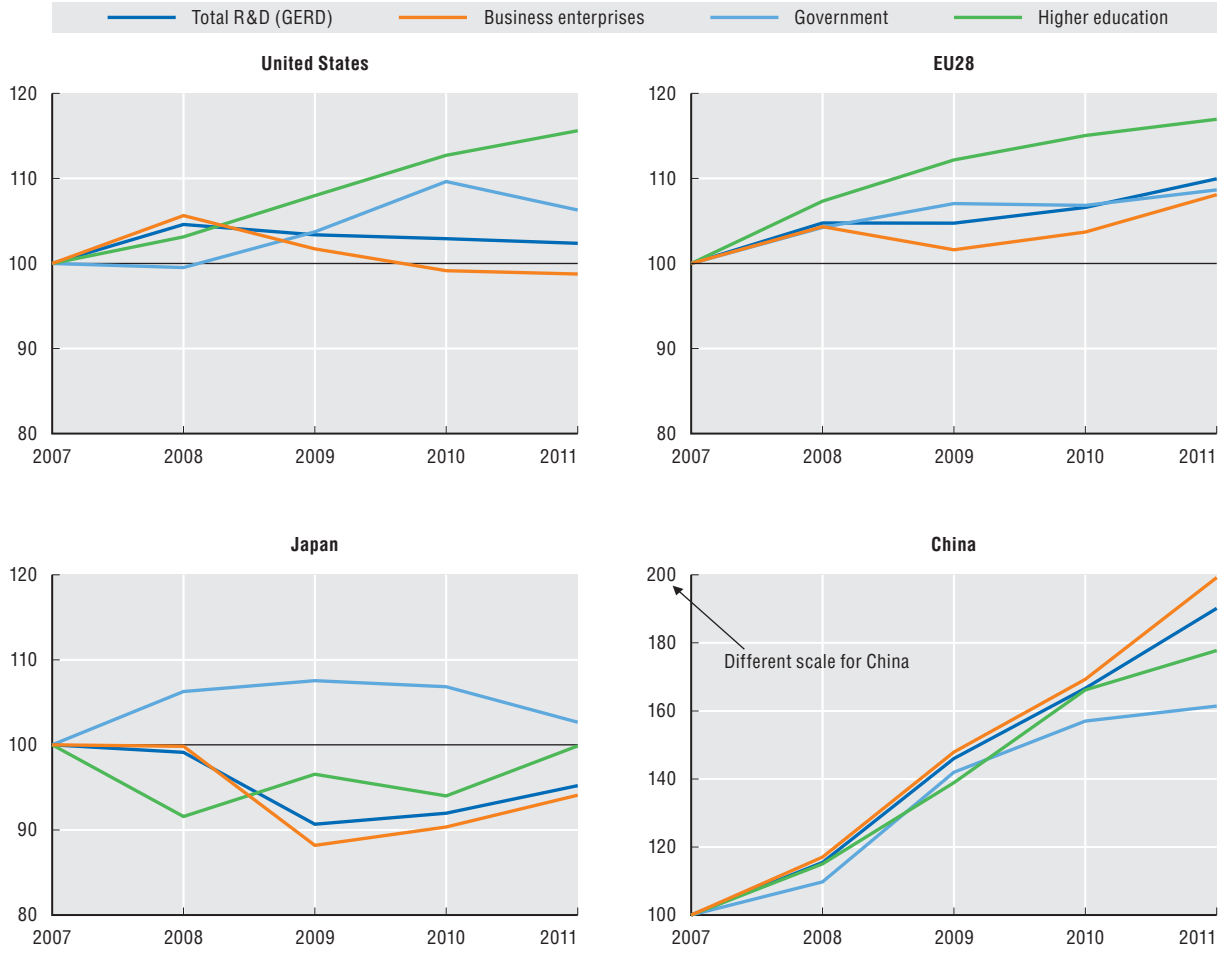
StatLink http://dx.doi.org/10.1787/888932889535

R&D through the recession

The performance of R&D from 2007 to 2011 has differed significantly across economies and sectors. In Europe, total GERD – measured in constant USD PPP – grew about 10 percentage points , while in Japan, it has still to recover its 2007 level, largely owing to the poor performance of the business sector. In the United States, GERD has been on a downward trend since 2008, due to the fall in business R&D, partly offset by increasing R&D in the higher education and government sectors. The EU28 performance has been more robust, mainly owing to the recovery of business R&D from a trough in 2009. This is principally due to growth in Germany's business R&D, which has more than offset reductions in other countries. In China, R&D expenditure has nearly doubled in real terms in the space of five years, principally boosted by the business sector. From 2009, R&D growth in the government and higher education sectors began to slow down but R&D levels continued to increase at a time when other countries were beginning to implement R&D budget cuts.

14. Recent R&D trends by sector of performance, 2007-11

Constant USD PPPs, index 2007 = 100



Source: OECD, Main Science and Technology Indicators Database, *www.oecd.org/sti/msti.htm*, June 2013.

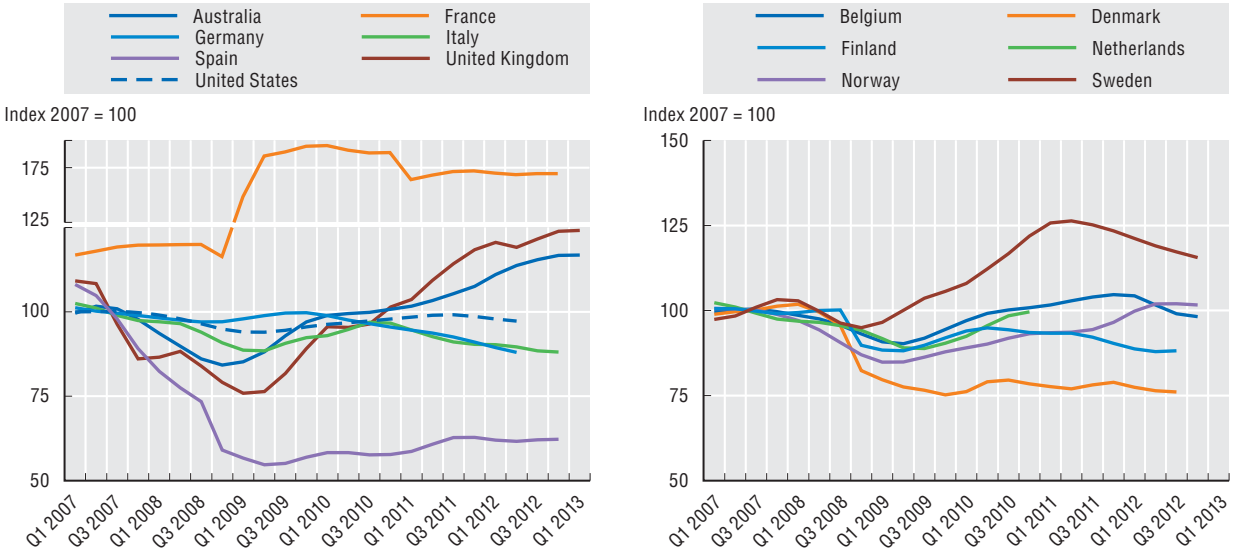
StatLink http://dx.doi.org/10.1787/888932889554

Creative destruction in the crisis

"Creative destruction" – the process whereby economic growth and structural change force less productive firms to exit and allow more innovative firms to enter – can help improve overall economic performance. The process of creative destruction slowed with the onset of the global financial crisis. Business register data show a decline in the rate of enterprise creation as early as 2007 for some of the largest economies. In 2009, the downward trend became more pronounced in several European countries. After six years only a few countries have returned to pre-crisis levels of enterprise creation. Trends in bankruptcies are broadly indicative of the cash flow situation of enterprises. However, as the length of countries' bankruptcy procedures varies, insolvent enterprises are not declared bankrupt at the same pace and this may affect the statistics shown. In several countries, bankruptcies continued to rise until 2011 and in nearly all of them remained much higher than in 2007.

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

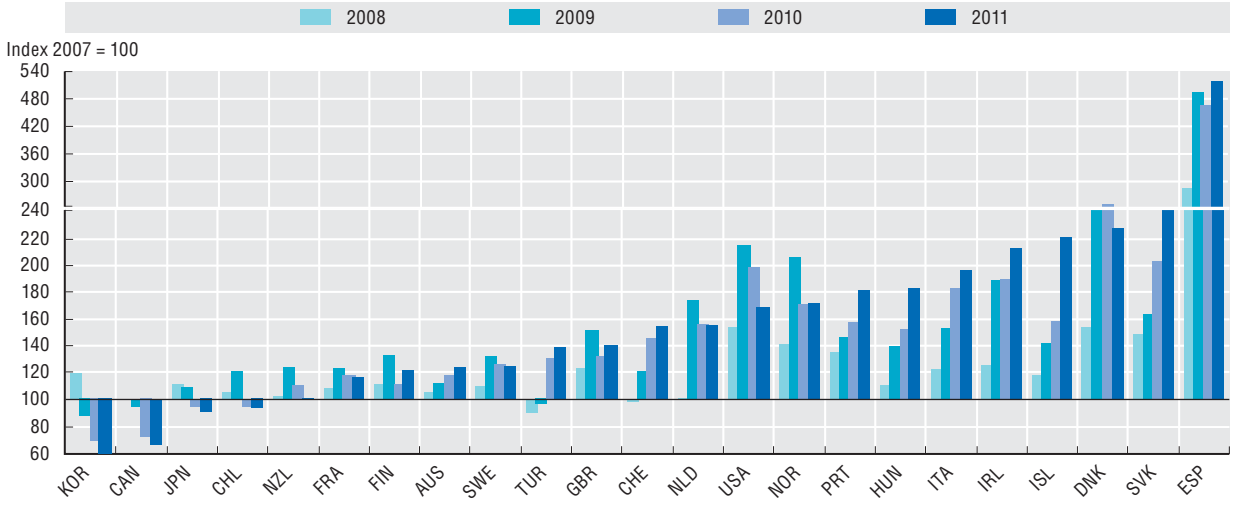
Trend cycle average



Notes: For France, there is a break in series in Q1-2009 when new legislation supporting *auto-entrepreneurs* led to a substantial increase in individual start-ups.
Source: OECD (2013), *Entrepreneurship at a Glance 2013*, OECD Publishing. StatLink contains more data. See chapter notes.

StatLink http://dx.doi.org/10.1787/888932889573

16. Trends in bankruptcies, 2007-11



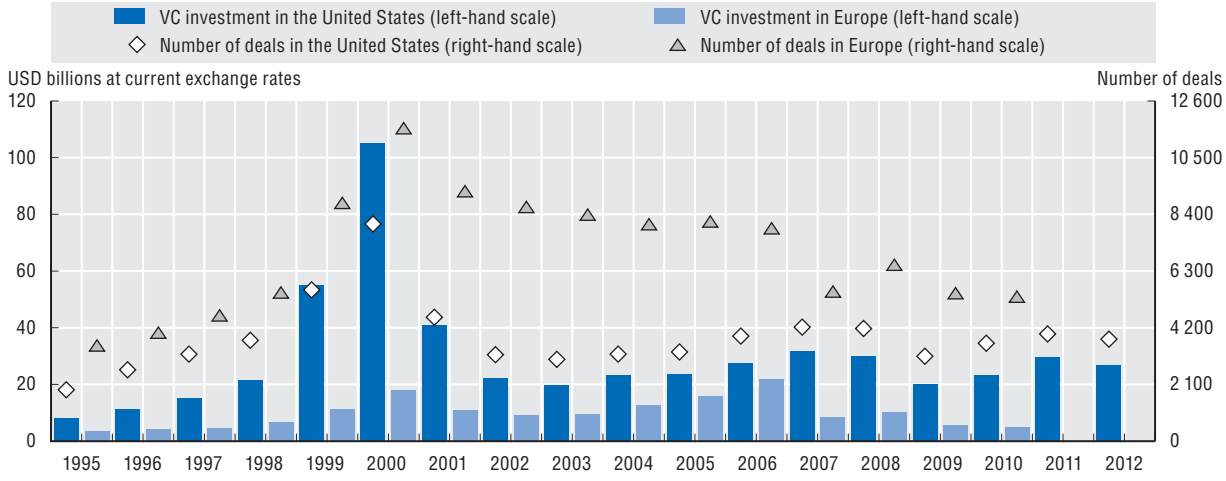
Note: Differences in national sources may affect international comparability.
Source: OECD (2013), *Financing SMEs and Entrepreneurs 2013: An OECD Scoreboard*, OECD Publishing and OECD (2013), *Entrepreneurship at a Glance 2013*, OECD Publishing. See chapter notes.

StatLink http://dx.doi.org/10.1787/888932889592

Financing of young innovative firms

Access to finance for new and innovative small firms involves both debt and equity finance. Venture capital (VC) is an important source of funding, especially for young technology-based firms. Even before the recent financial crisis, banks were reluctant to lend to small, innovative firms owing to their perceived riskiness and lack of collateral. The financial crisis widened the existing gap at the seed and early stage, as bank lending to start-ups fell and VC firms turned to later investment stages where risks are lower. In Europe venture capital markets appear less developed than in the United States, in terms both of the amounts invested and the amount per deal. Exits from VC and other private equity investments, through trade sales (mergers and acquisitions) or initial public offerings (IPOs) on stock markets, provide an opportunity for investors to realise returns from their investment and potentially free up funding for further investment in innovative young firms. As a consequence of the financial crisis, both trade sales and IPOs have declined significantly. Exit markets have not yet recovered (especially in Europe) and further improvement in these markets remains a challenge.

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

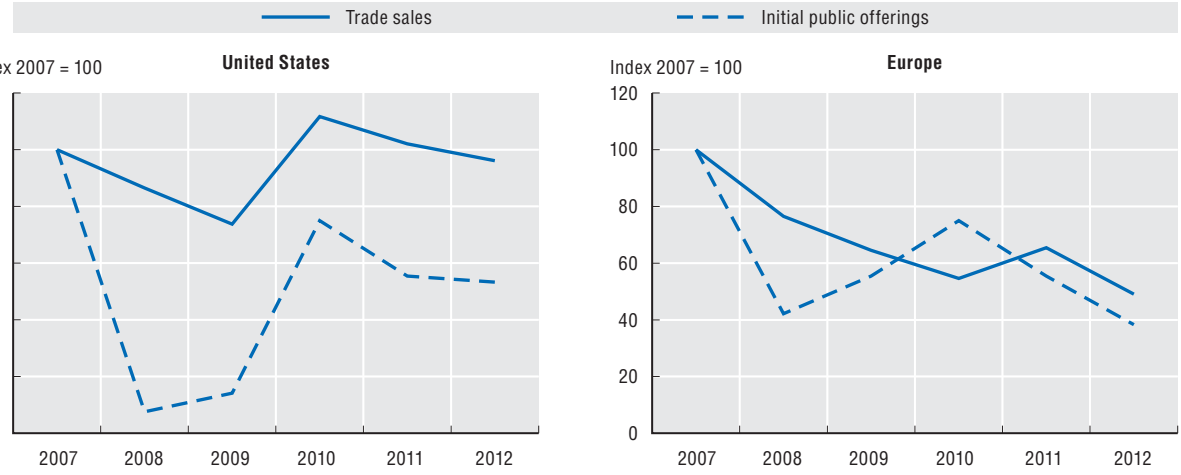


Source: OECD calculations based on PwCMoneyTree, EVCA/Thomson Reuters/PwC and EVCA/PEREP_Analytics, June 2013. See chapter notes.

StatLink http://dx.doi.org/10.1787/888932889611

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

Trade sales and initial public offerings



Source: OECD calculations based on EVCA/PEREP_Analytics and Thomson Reuters/National Venture Capital Association, June 2013. See chapter notes.

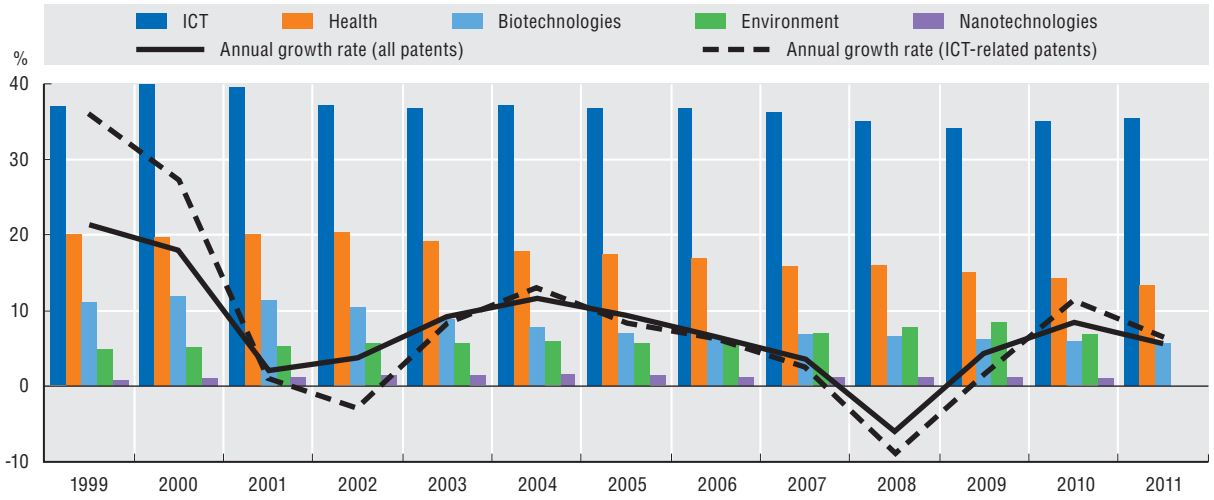
StatLink http://dx.doi.org/10.1787/888932889630

Technology development

Data on patent applications can be used to investigate the extent to which inventions occur in different technology areas, and the pace at which these fields develop and mature. Patents in ICT, health and biotechnologies account for the majority of patent applications worldwide, although their relative importance has decreased from almost 72% in 2000 to 54% in 2011. This decline has been mainly driven by a gradual reduction in the number of patent applications in health- and biotechnology-related technologies. Patents in nanotechnologies and the environment, instead, which in 2000 accounted for about 6% of all patents, saw their relative share increase to almost 10% in 2010.

19. Patents by technology fields, 1999-2011

As a percentage of total patent applications



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

StatLink http://dx.doi.org/10.1787/888932889649

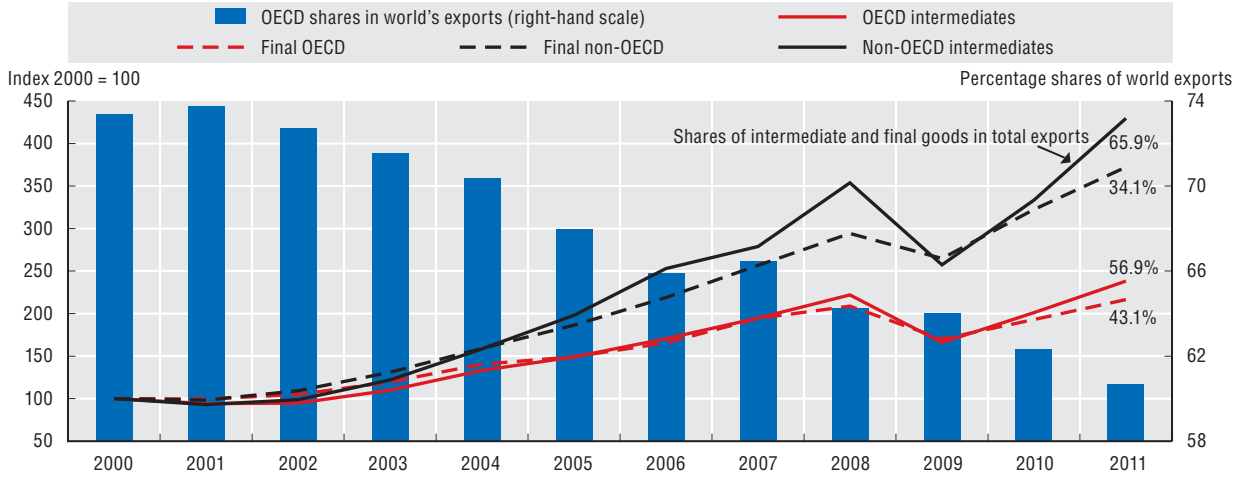
Classifying patents into technology areas

Information contained in patent documents – the invention's International Patent Classification (IPC) and national patent classification fields, its title, the abstract describing it, and its list of claims – can be used to classify a patent in the relevant technology. In the case of IPC classes, one or several codes may be attributed during the patent examination process. However, for emerging and rapidly evolving technologies, specific categories or classes may not be available when needed. This can make it difficult to identify patents relating to such technologies at a later date. A careful examination of the IPC classes and subclasses, combined with searches for appropriate keywords in the text fields of the patent document, makes it possible to define the boundaries of a given technology domain. A comprehensive allocation of patented inventions based on 4-digit IPC codes was developed by Schmoch (WIPO, 2008, revised in 2013), who subdivided patents into 35 technology classes. Additionally, groups of experts have identified key domains on the basis of IPC classes and the ad hoc tagging system of the European Classification System (ECLA) to highlight the areas of application of patented inventions.

Trade in the crisis

Growth of international trade has greatly outpaced growth of GDP over the past decade. Between 2000 and 2008, and before the financial crisis triggered a worldwide slump in 2009, there was a nearly threefold increase in reported global exports of goods and services. Movements of intermediate goods were the hardest hit but were also the first to recover. Between 2000 and 2011 growth of exports from emerging economies outpaced exports of OECD countries. By 2011, the OECD's share of goods exports had fallen by about 12 percentage points from 2000 and its share of exports of services had fallen by 10 percentage points. In general, services were less affected by the collapse. By 2011, in both OECD and non-OECD economies, global trade in goods and services had recovered, supported by increases in commodity prices. The amplitude of the crisis underscored the depth and breadth of global interdependencies and prompted calls for better tools to link trade, demand and output flows across countries, sectors and commodities. The recent development of the OECD-WTO Trade in Value Added (TiVA) Database has made it possible to analyse trade dynamics and relations from a new perspective.

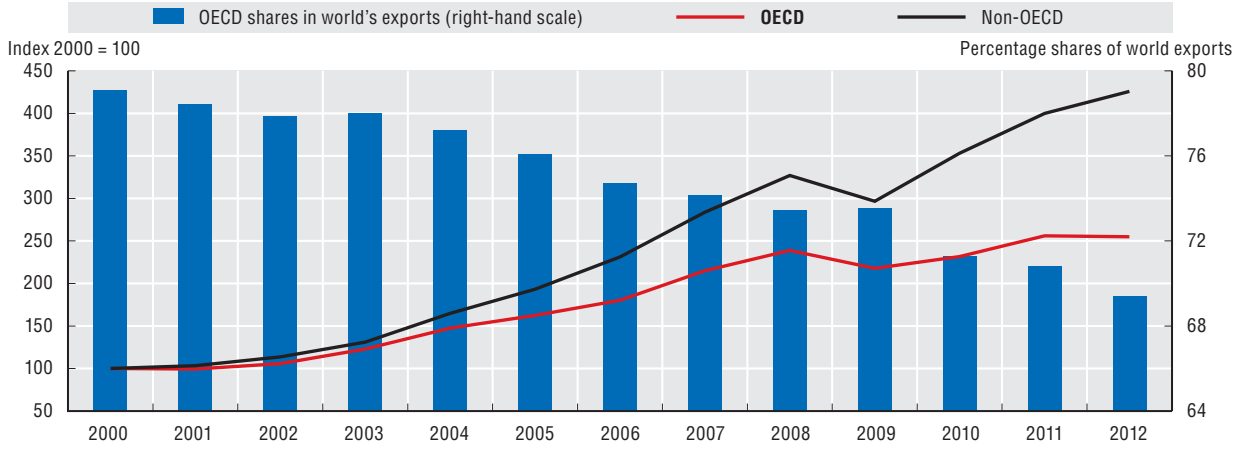
20. The dynamics of merchandise exports in OECD and non-OECD economies, 2000-11



Source: OECD, STAN Bilateral Trade Database by Industry and End-use (BTDIxE), *www.oecd.org/sti/btd*, May 2013. StatLink contains more data. See chapter notes.

StatLink http://dx.doi.org/10.1787/888932889668

21. The dynamics of trade in services in OECD and non-OECD economies, 2000-12



Source: UNCTAD, UNCTADstat, June 2013.

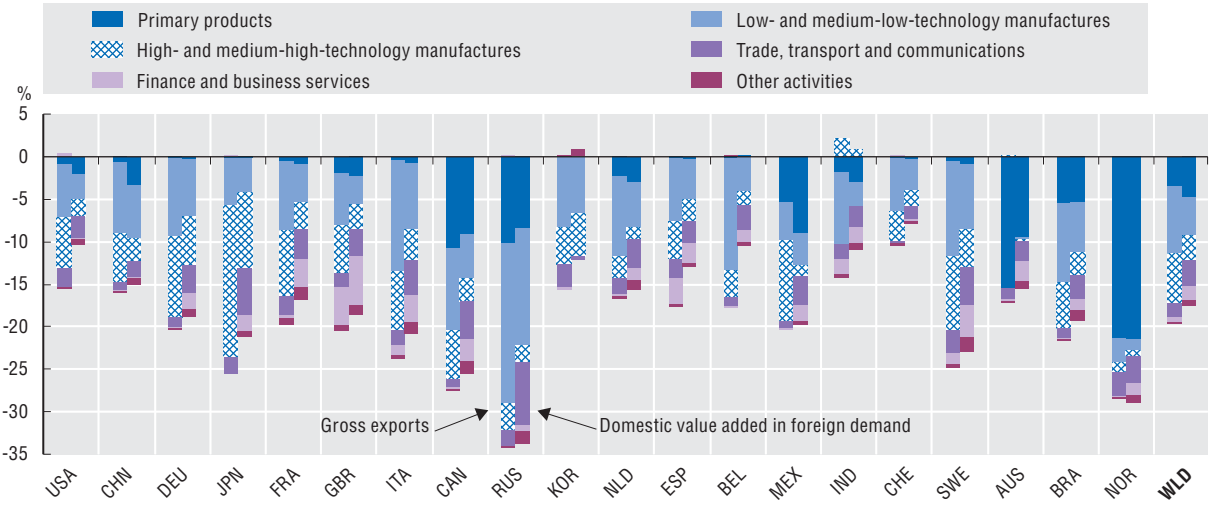
StatLink http://dx.doi.org/10.1787/888932889687

Trade in the crisis

Measuring international trade in value added terms makes it possible to avoid counting flows of embodied intermediate goods and services more than once and offers a new perspective on the 2009 global collapse in trade. Drops in countries' value added in foreign final demand (value added exports) were slightly less severe than declines in exports measured in "traditional" gross terms. A value added measure also reveals that falls in exports of primary goods and of services had a greater impact on the 2008-09 contraction than gross measures would indicate. The influence of manufactured exports on the trade crisis appears significantly weaker once the widespread fall in flows of intermediate goods is better accounted for.

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

Contributions to total percentage fall by major groups of activity, for top 20 exporting OECD/BRIICS countries



Source: OECD-WTO, Trade in Value Added (TiVA) Database, *http://oe.cd/tiva*, May 2013. StatLink contains more data. See chapter notes.

StatLink *http://dx.doi.org/10.1787/888932889706*

Measuring trade in value added

The goods and services people buy are composed of inputs from various countries around the world. However, the flows of goods and services within these global production chains are not always reflected in conventional measures of international trade. Reporting the total value of an export often means counting embodied imported intermediates every time they cross borders.

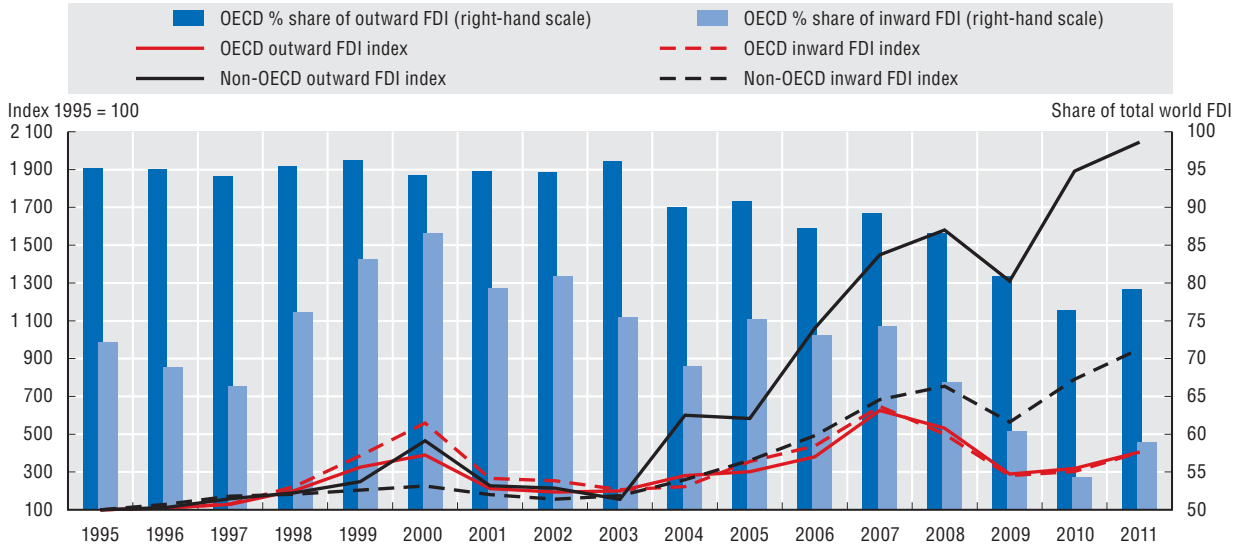
The joint OECD–WTO Trade in Value Added (TiVA) Database considers the value added by each country in the production of the goods and services consumed worldwide. It recognises that growing global value chains mean that a country's exports increasingly rely on significant intermediate imports. TiVA indicators are designed to inform policy makers by providing new insights into the commercial relations between nations. The TiVA database (May 2013) presents indicators for 57 economies (including all OECD countries) for the years 1995, 2000, 2005, 2008 and 2009, broken down by 18 industries. The indicators include: breakdown of gross exports by industry into their domestic and foreign content; origin of value added in countries' final demand; the services content of gross exports by exporting industry (broken down by foreign/domestic origin); bilateral trade balances based on flows of value added embodied in domestic final demand; intermediate imports embodied in exports.

For example, the indicator FDDVA (domestic value added embodied in [foreign] final demand) accounts for the fact that industries export value both directly, via exports of final goods and services, and indirectly, via exports of intermediates embodied in other countries' exports to meet foreign final demand (household and government consumption or capital investment). It shows the connection of industries (upstream in a value chain) to consumers in other countries, even when no direct trade relationship exists. It can thus contribute to a better understanding of the impact on domestic output of changes in final demand in foreign markets. Indicators of trade in value added are derived from the OECD's input-output tables, which are integrated into the global Inter-Country Input-Output (ICIO) system using additional information from the OECD's Bilateral Trade in Goods by Industry and End-Use (BTDIxE) Database, the bilateral Trade in Services (TIS) Database, the Structural Analysis (STAN) Database, and aggregate annual National Accounts (SNA) and Balance of Payments statistics.

Investment in the crisis

Since the mid-1990s, foreign direct investment (FDI) has grown at a faster pace than international trade in goods and services. Although most flows still take place within the OECD, the landscape has changed dramatically in the past decade. Until 2003, around 95% of FDI outflows originated from OECD countries, but in the following years their share fell below 80% owing to the spectacular rise in overseas investment by emerging economies. The impact of the 2008 crisis on FDI flows varied across countries. Non-OECD economies overall experienced a severe slump (about 20%) in 2009 followed by an immediate recovery. In the OECD area as a whole, both inward and outward flows were already falling in 2008 and by 2011 had still not reached their pre-crisis levels.

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



Source: IMF, Balance of Payments Database, June 2013. See chapter notes.

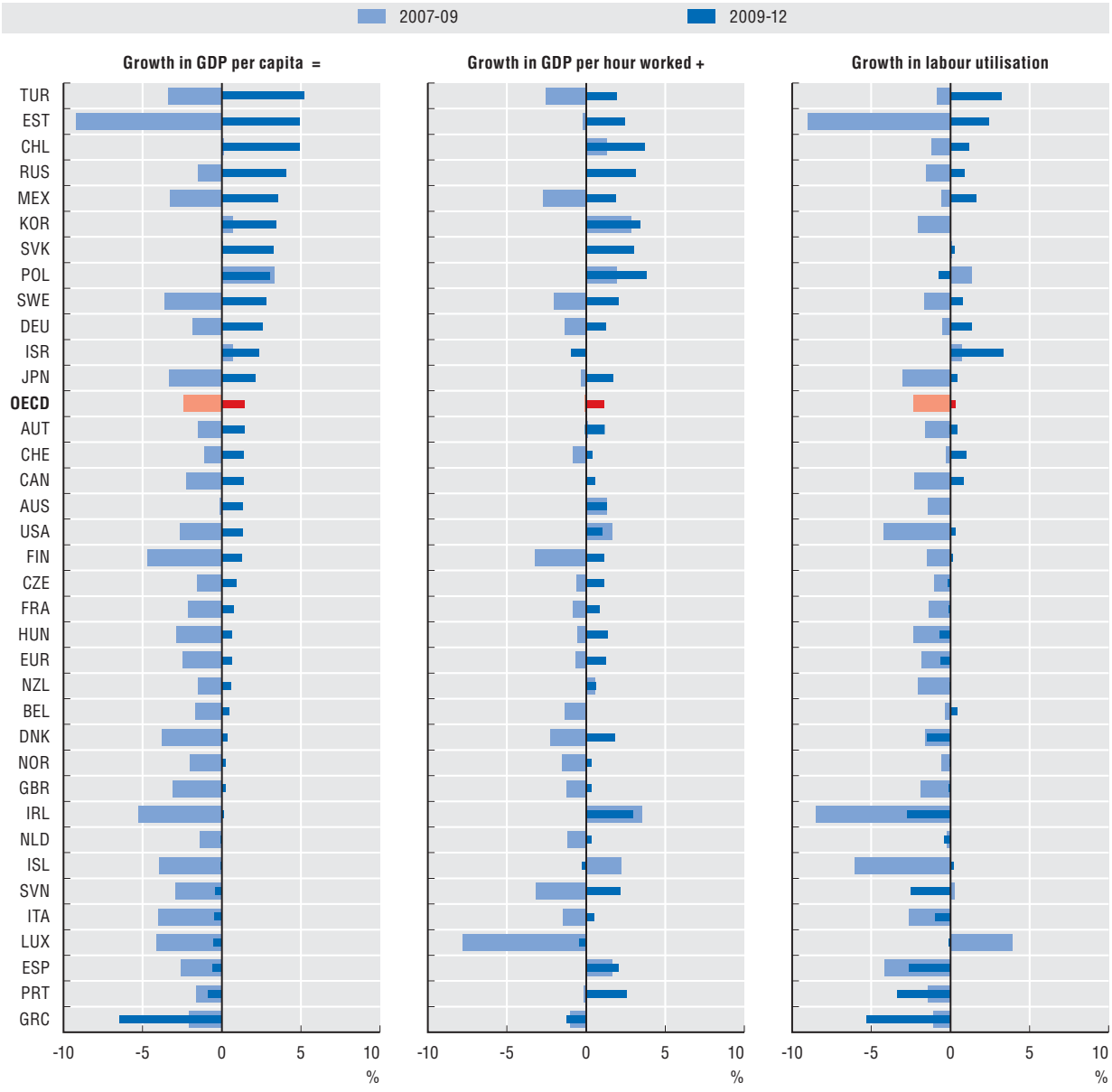
StatLink http://dx.doi.org/10.1787/888932889725

GDP per capita

GDP per capita is a measure traditionally used to gauge a nation's welfare. Changes in this measure can result from changes in labour productivity (GDP per hours worked) and labour utilisation (hours worked per employee and employment per capita). Differences in GDP per capita growth in OECD countries can be mainly attributed to differences in labour productivity growth, as labour utilisation has generally increased only marginally over the past 15 years. The picture has been slightly different since the onset of the financial crisis. In most countries, the decline in GDP per capita was primarily due to substantial declines in labour utilisation, only partly offset by increases in productivity. These were due to falls both in employment and hours worked per person, while labour force participation remained broadly unchanged. In 2010 widespread growth signalled the start of a global recovery. However, the pace of recovery varies in OECD countries and obliges them to find new and sustainable sources of growth.

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

Total economy, annual percentage change



Source: OECD, Productivity Database, *www.oecd.org/std/productivity-stats*, August 2013. StatLink contains more data. See chapter notes.

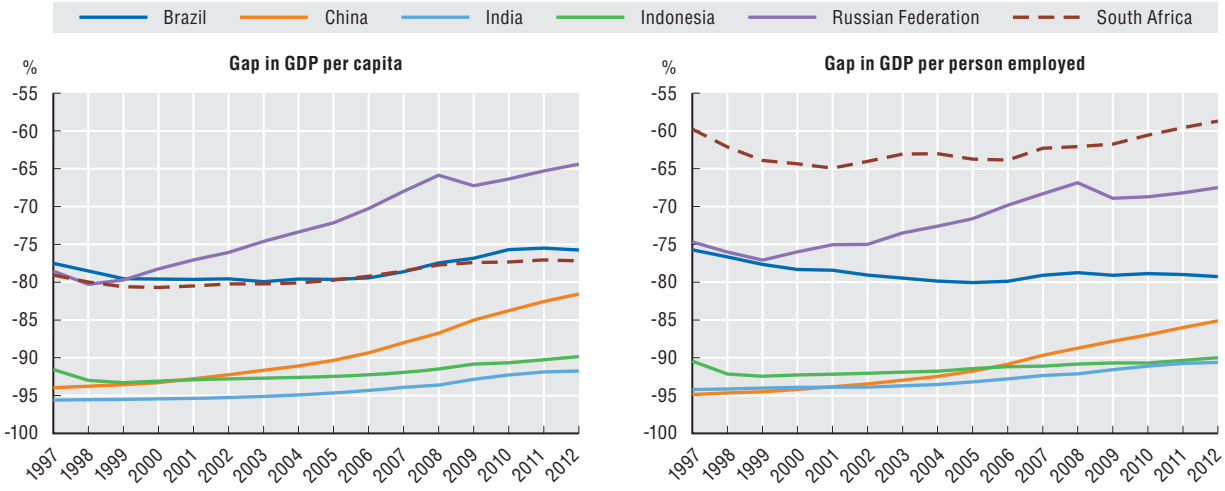
StatLink http://dx.doi.org/10.1787/888932889744

GDP per capita

What stands out from the breakdown of GDP per capita is the importance of labour productivity in explaining the cross-country dispersion in income per capita. Despite rapid convergence in some of the BRIICS, all still have income gaps of between 65% and 92%, mainly due to large labour productivity shortfalls compared to the United States. Among the BRIICS, China's GDP per capita soared during the years of the crisis, narrowing the gap by over 6 percentage points; its labour force participation rates remained above the OECD average and the difference in income per capita is essentially due to lower capital per worker and lower multifactor productivity. In Brazil the GDP per capita gap is slowly diminishing, but it remains large and is mainly due to comparatively weak labour productivity performance.

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

In percentage points



Source: OECD, Productivity Database, *www.oecd.org/std/productivity-stats*, August 2013. See chapter notes.

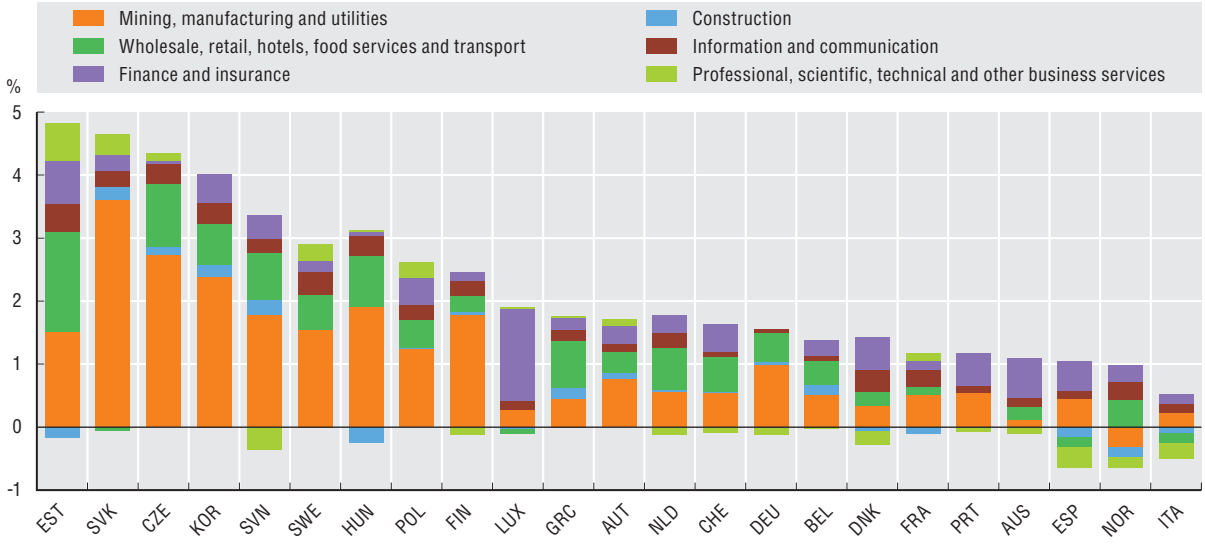
StatLink http://dx.doi.org/10.1787/888932889763

Labour productivity

Understanding the drivers of productivity growth at the total economy level requires an understanding of the contribution of each industry. An individual sector's contribution depends not only on its productivity growth but also on its share of value added and employment. In the years up to the economic crisis, productivity growth was almost entirely driven by manufacturing and business-sector services. The contribution of manufacturing was generally due to increasing productivity and not to the growth of the sector. The strong contribution of business-sector services reflected their increasing share in overall activity; excluding real estate, business-sector services accounted for 35% to 50% of value added across OECD countries.

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

Contribution to average annual percentage change by industry



Source: OECD, National Accounts (SNA) Database and Structural Analysis (STAN) Database, ISIC Rev.4, May 2013. See chapter notes.

StatLink http://dx.doi.org/10.1787/888932889782

How to read this figure

Labour productivity growth is defined as the rate of growth in real value added per hour worked. Differences in labour productivity growth across sectors may relate, for instance, to the intensity with which sectors use capital and skilled labour in their production, the scope for product and process innovation, the absorption of external knowledge, the degree of product standardisation, the scope for economies of scale, and involvement in international competition.

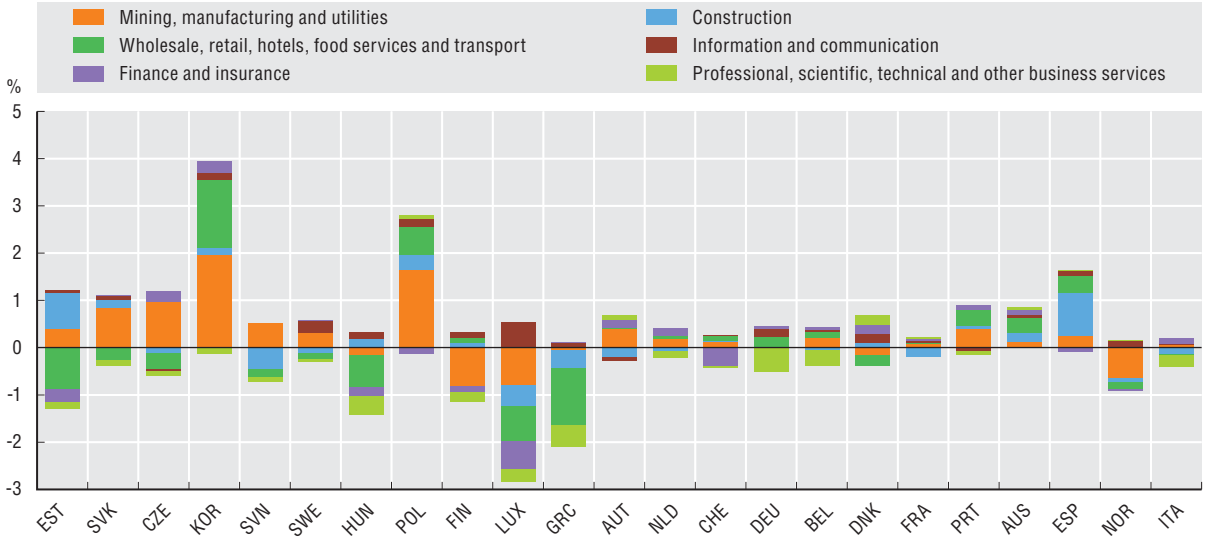
Productivity growth rates differ widely across industries. High growth rates are found particularly in the manufacturing sector but also in some business-sector services. The differences in sectors' productivity performances do not appear to explain all of the differences in productivity growth across countries. For instance, in manufacturing, productivity growth rates ranged from less than 1% in Italy to 8% in the Czech Republic between 1995 and 2011. For most OECD countries for which data are available, labour productivity growth has declined since the onset of the financial crisis, and the decline is broadly spread across sectors. Spain is a notable exception, but its labour productivity growth was due to significantly larger falls in employment than in output.

Labour productivity

Since the crisis, productivity growth has been sluggish in many OECD countries; positive growth, however small, has typically occurred in manufacturing, information and communication, and, to a lesser extent, finance and insurance. However, many recent gains, especially in manufacturing, stem from aggregate efficiency increases following heavy job losses in the sector.

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

Contribution to average annual percentage change by industry



Source: OECD, National Accounts (SNA) Database and Structural Analysis (STAN) Database, ISIC Rev.4, May 2013. See chapter notes.

StatLink http://dx.doi.org/10.1787/888932889801

Measuring labour productivity by sector

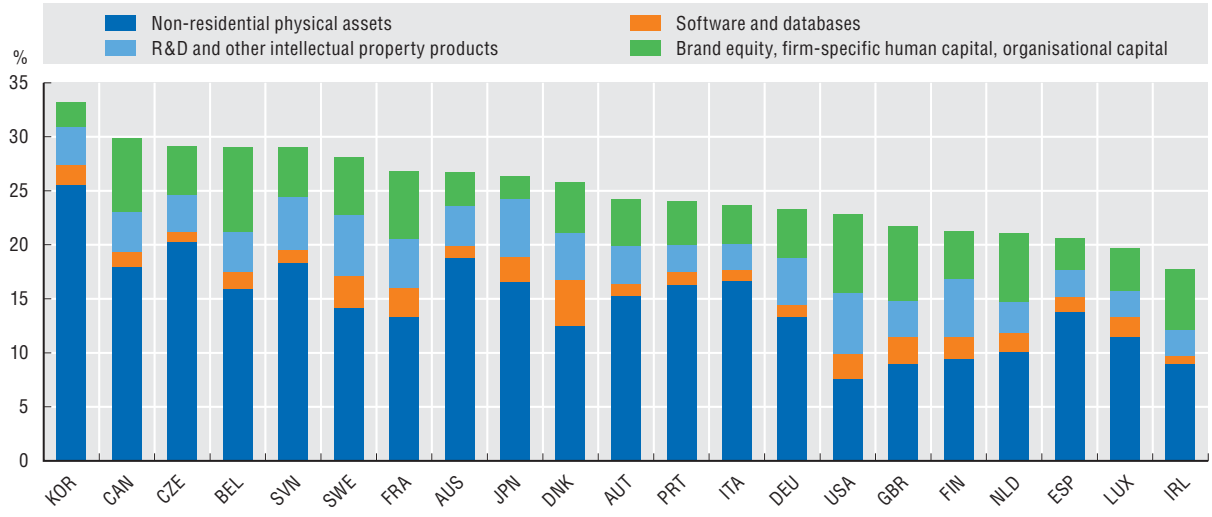
The comparability of productivity growth across industries and countries may be affected by problems in measuring real value added. This is particularly relevant for services, as it is difficult to isolate price effects due to changes in the quality or the mix of services from pure price changes. In spite of the substantial progress made in the past ten years in compiling service producer price indices (SPPIs), the methods used to compute real value added still vary across OECD countries. In many of them, estimates of real value added in some industries are based on a sum-of-costs approach, which deflates compensation of employees using assumptions about labour productivity growth. For example, most countries assume no change in labour productivity for public administration activities, which is why this sector is not included here. Also excluded are real estate services, as the output of this sector mainly reflects the imputation made for the dwelling services provided and consumed by homeowners. In addition, sectors such as construction and several services are characterised by a high degree of part-time work and self-employment, which can affect the quality of estimates of actual hours worked. See OECD (2012) *Compendium of Productivity Indicators* 2012, OECD Publishing.

Knowledge-based capital

Innovation stems from more than investment in R&D. It requires complementary assets such as software, design, human capital and appropriate organisational structures. Investment in such knowledge-based capital (KBC) has been rising in many OECD economies, often at a faster pace than investment in traditional physical capital. In the United States, the country with the longest time series, investment in KBC has been rising almost continuously for more than 40 years to reach some 15% of GDP by 2010. In Denmark, Finland, France, the Netherlands, the United Kingdom and the United States, these investments exceeded investment in machinery and equipment in 2010. R&D and other innovative property assets only represent between 26% and 55% of total KBC investments.

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

As a percentage of value added of the business sector



Source: Statistics on knowledge-based investment based on INTAN-Invest Database, *www.intan-invest.net*, and national estimates by researchers. Estimates of physical investment are based on OECD Annual National Accounts (SNA) and INTAN-Invest Database, May 2013. See chapter notes.

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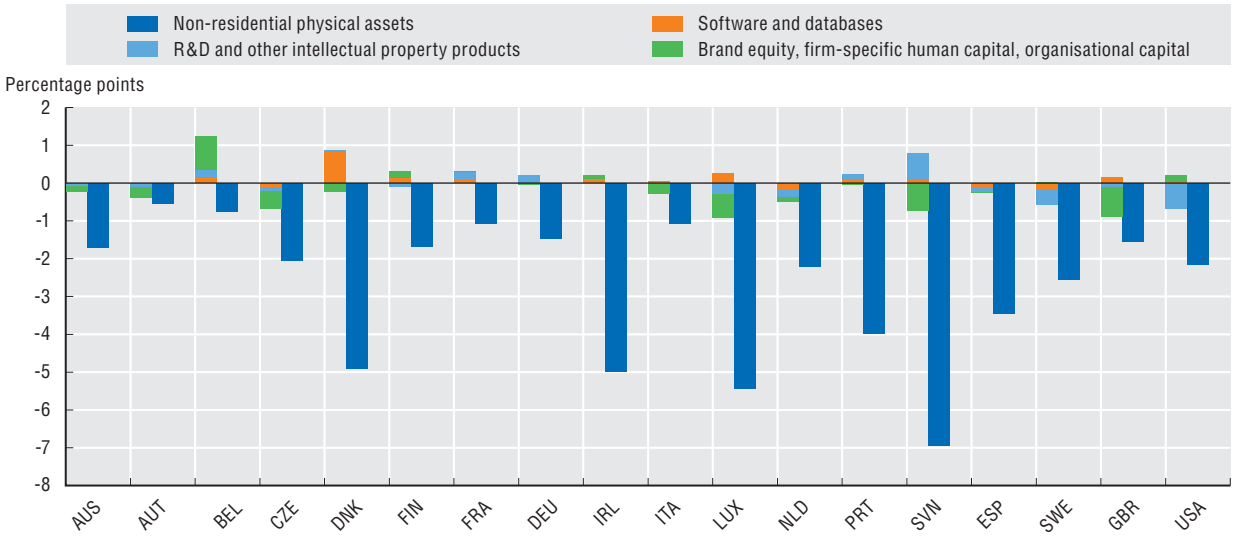
What do we mean by "knowledge-based capital"?

Sometimes referred to as "intangible assets" or "intellectual capital", knowledge-based capital has been defined as "claims on future benefits that do not have a physical or financial embodiment" (Lev, 2001). Much of the focus has been on R&D, key personnel and software, but the range of assets in the bundle of KBC is considerably broader. One classification, offered by Corrado et al. (2009), groups intangible investments into three main types: computerised information (such as software and databases); innovative property (such as scientific and non-scientific R&D, copyrights, designs, trademarks); and economic competencies (including brand equity, aspects of advertising and marketing, firm-specific human capital, and the organisational know-how that increases enterprise efficiency). On the basis of that study, researchers in several countries have computed aggregates for KBC investment. Some intangibles – software and, more recently, R&D – are now recognised by the international statistical community as capital assets and will be accounted for in the System of National Accounts (see the 2010 *OECD Handbook on Deriving Capital Measures of Intellectual Property Products*, OECD Publishing). More work is needed to harmonise the definition of KBC and collect data on an internationally comparable basis for better identification and measurement of new sources of growth.

Dynamics of knowledge-based assets

Evidence suggests that business investment in KBC relates to growth and productivity. KBC can be the source of increasing returns to scale in production by allowing firms to make use of existing knowledge without re-incurring the costs of developing it. In addition, some of the knowledge created by assets such as R&D, design and new business processes can spill over into other parts of the economy, spurring growth. Growth accounting studies for the European Union and the United States show that business investment in KBC is the source of 20% to 27% of average labour productivity growth. Recently gathered data suggest that, at least in the early phase of the global economic crisis, business investment in KBC either grew faster than, or did not decline to the same extent as, investment in physical capital. This characteristic of aggregate investment in KBC may depend in part on the nature of the expenditures measured, primarily wages, which tend to be stickier than other forms of business expenditures.

29. Change in business investment intensity between 2008 and 2010



Source: Statistics on knowledge-based investment are based on INTAN-Invest Database, *www.intan-invest.net*, and national estimates by researchers. Estimates of physical investment are based on OECD Annual National Accounts (SNA) and the INTAN-Invest Database, May 2013. See chapter notes.

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How to read this figure

Since the start of the global economic crisis, business investment has suffered, although not equally across different types of assets. This figure shows the change in investment in KBC and in physical assets between 2008 and 2010. For example, in the United States, investment in physical assets fell from 9.7% to 7.6% of business-sector value added, a drop of 2.1 percentage points. Investment in innovative property fell by 0.67 percentage points, while investment in economic competencies increased by 0.16 percentage points.

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).

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