Innovation Union Scoreboard 2014

The Innovation Union's performance scoreboard for Research and Innovation

Executive summary

EN version

Enterprise and Industry

Executive summary

Innovation Union Scoreboard 2014: impact of economic crisis not as severe as expected. Differences in innovation performance are becoming smaller again although at a modest rate.

Last year's edition showed the impact of the crisis that resulted in the disturbances of the innovation convergence process between the Member States. This year's edition shows that there are again positive signs in Member States as the innovation performance improves and the catching up process of less innovative countries resumes.

Eight innovation dimensions and 25 indicators analyse the performance of the EU innovation system…

The measurement framework used in the Innovation Union Scoreboard distinguishes between 3 main types of indicators and 8 innovation dimensions, capturing in total 25 different indicators.

The **Enablers** capture the main drivers of innovation performance external to the firm and cover 3 innovation dimensions: *Human resources*, *Open, excellent and attractive research systems* as well as *Finance and support*. **Firm activities** capture the innovation efforts at the level of the firm, grouped in 3 innovation dimensions: *Firm investments*, *Linkages & entrepreneurship* and *Intellectual assets*. **Outputs** cover the effects of firms' innovation activities in 2 innovation dimensions: *Innovators* and *Economic effects*.

… and the Member States are classified into four performance groups based on their average innovation performance.

Based on the average innovation performance, the Member States fall into four different performance groups:

- Denmark (DK), Finland (FI), Germany (DE) and Sweden (SE) are "*Innovation Leaders*" with innovation performance well above that of the EU average;
- Austria (AT), Belgium (BE), Cyprus (CY), Estonia (EE), France (FR), Ireland (IE), Luxembourg (LU), Netherlands (NL), Slovenia (SI) and the United Kingdom (UK) are "*Innovation followers"* with innovation performance above or close to that of the EU average;
- The performance of Croatia (HR), Czech Republic (CZ), Greece (EL), Hungary (HU), Italy (IT), Lithuania (LT), Malta (MT), Poland (PL), Portugal (PT), Slovakia (SK) and Spain (ES) is below that of the EU average. These countries are '*Moderate innovators'*;
- Bulgaria (BG), Latvia (LV) and Romania (RO) are "*Modest innovators"* with innovation performance well below that of the EU average.

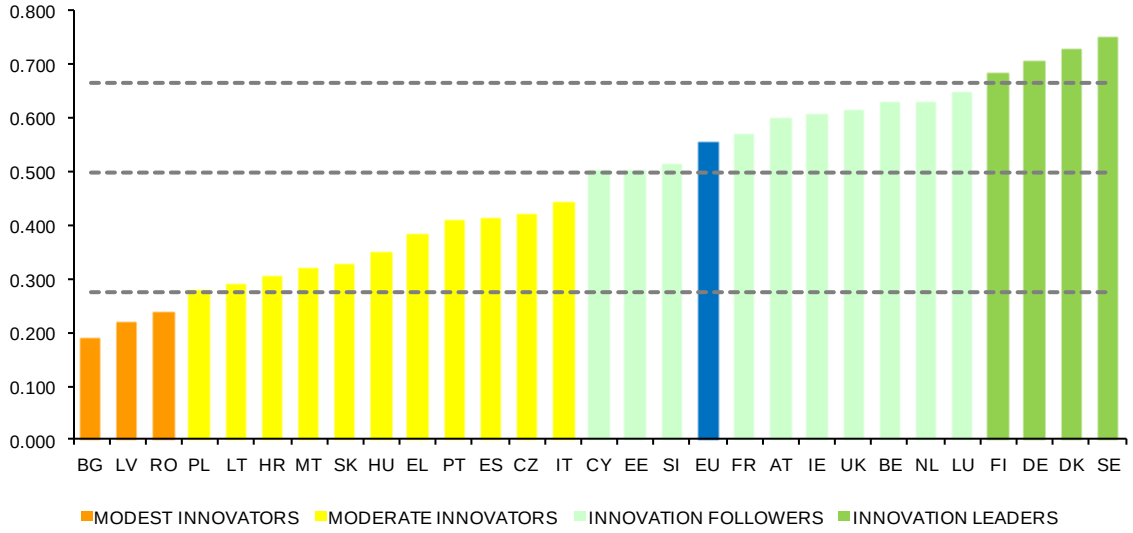
Sweden's innovation system is once more in first position in the EU with the overall ranking remaining relatively stable…

Sweden has once more the best performing innovation system in the EU, followed by Denmark, Germany and Finland. Overall, the performance group memberships remained relatively stable compared to the previous IUS edition with Poland being the only country that changed group membership by advancing from the Modest to the Moderate innovators.

… but with some changes inside the performance groups.

As each year, there are several upward and downward movements inside each of the performance groups. Denmark and Germany switched ranks within the Innovation leaders. Within the Innovation followers Luxembourg replaced the Netherlands as the top performer among the Innovation followers and Ireland and Austria switched ranks as well as Estonia and Cyprus. Within the Moderate innovators Italy is the top performer followed by the Czech Republic that has overtaken Spain and Portugal. Hungary and Slovakia as well as Malta and Croatia have switched ranks. Within the Modest innovators Romania and Latvia have switched ranks.

Figure 1: EU Member States' innovation performance



The most innovative countries have balanced innovation systems with strengths in all dimensions….

The most innovative countries perform best on all dimensions: from research and innovation inputs, through business innovation activities up to innovation outputs and economic effects, which reflects a balanced national research and innovation system. The Innovation leaders, followed by the Innovation followers have continuously the smallest variance in their performance across all eight innovation dimensions. This means that in all dimensions the performance of the Innovation leaders, Sweden, Denmark, Germany and Finland, is not too different. The Innovation leaders are also mostly on top and clearly above the EU average. Only in the second dimension *Open, excellent and attractive research system*, Germany scores slightly below the EU average.

… but some other countries reach top scores in individual dimensions

However, some other countries reach top scores when looking at individual dimensions. Sweden, Finland, Ireland and United Kingdom score best in *Human resources*; Denmark, the Netherlands, Sweden and United Kingdom reach top positions in *Open, excellent and effective research systems*; Estonia, Finland, Sweden and Denmark score top in *Finance and support*; Sweden, Germany, Finland and Slovenia reach highest ranks as regards *Firm investments*; Denmark, United Kingdom, Belgium and Sweden are top performers in *Linkages and entrepreneurship*; Denmark, Austria, Germany and Sweden reach top positions in *Intellectual assets*; Germany, Luxembourg, Sweden and Ireland are the highest performers in the *Innovators* dimension; and Ireland, Germany, Luxembourg and Denmark reach the highest results in *Economic effects*.

Overall, the EU is improving its innovation performance with Portugal, Estonia and Latvia being the innovation growth leaders…

Overall, the EU annual average growth rate of innovation performance reached 1.7% over the analysed eight-year period 2006-2013 with all Member States improving their innovation performance. Portugal, Estonia and Latvia are the innovation growth leaders. The lowest innovation growth rates were recorded in Sweden, the UK and Croatia.

…but the innovation growth differences exist also within the groups.

In the group of Innovation leaders, performance improved strongest for Germany, while Sweden's performance was improving at the lowest rate in this group. Estonia is the highest growing Innovation follower, while the UK was the lowest. In the group of Moderate innovators, Portugal improved the most, while Croatia was improving at the lowest rate. Among the Modest innovators, the highest innovation progress was recorded in Latvia.

However the innovation gap closes slowly…

Altogether, this year's results show that innovation performance among the Member States is converging but the convergence process slowed down. As a consequence the convergence level in innovation performance went back to the level of 2009

… and considerable differences between Member States exist particularly in knowledge excellence and internationalisation, and business innovation cooperation.

The differences in performance across all Member States are smallest in *Human resources,* where the best performing country (Sweden) is performing more than three times as well as the least performing country Malta. However, particularly large differences are in the international competitiveness of the science base (*Open, excellent and attractive research systems*), and business innovation cooperation as measured by *Linkages & entrepreneurship*. In both dimensions the best performing country (Denmark) is performing more than nine and seven times better than the least performing countries, Latvia and Romania respectively.

While Human resources and openness of the European research system have seen the highest growth in innovation performance…

When looking at individual dimensions, *Open, excellent and attractive research systems* contributed most to the overall innovation performance over the last eight years, followed by growth in *Human resources*. Looking at individual indicators, Community trademarks contributed most to the increase of the innovation performance, followed by Non-EU doctorate graduates and International scientific co-publications. Relatively good performance improvement is also observed in Innovation collaboration of SMEs and commercialisation of knowledge as measured by License and patent revenues from abroad.

…negative growth was observed in business innovation investments and financial support to innovation.

In two dimensions the overall change of performance was negative: *Firm investments* and *Finance and support*. In particular, the positive growth of public R&D expenditures (1.8%) was offset by a continuous decline in venture capital investments (-2.8%). In addition, a positive improvement in Business R&D expenditure (2.0%) was negatively offset by firms' Non-R&D innovation expenditures (-4.7%).

At a wider European level, Switzerland confirmed its top position outperforming all EU Member States…

Taking into account European countries outside the EU, also this year Switzerland confirms its position as the overall Innovation leader by continuously outperforming all EU Member States and by being the best performer in as many as 9 indicators. Iceland is one of the Innovation followers with an above EU-average performance, Norway and Serbia are Moderate innovators and the Former Yugoslav Republic of Macedonia and Turkey are Modest innovators.

…and internationally South Korea and the US defend their positions as top global innovators.

When looking at performance of innovation systems in a global context, South Korea, the US and Japan have a performance lead over the EU. The Unites States and South Korea outperform the EU both by 17% and Japan by 13%. While the gap between the US and Japan is decreasing, it widens with South Korea.

The top innovation leaders US, Japan and South Korea are particularly dominating the EU in indicators capturing business activity as measured by R&D expenditures in the business sector, Public-private co-publications and PCT patents but also in educational attainment as measured by the Share of population having completed tertiary education.

As compared with other key international partners, the EU continues to have a performance lead over Australia and Canada that score at 62% and 79% of the EU level respectively. The performance lead is even larger compared to the BRICS countries (Brazil, Russia, India, China and South Africa). This lead is stable or even increasing for almost all BRICS countries, except for China. China's current innovation performance is at 44% of the EU level, and continues to reduce the gap by improving faster and at a higher rate than the EU.

Methodological note

The Innovation Union Scoreboard (IUS) 2014 uses the most recent available data from Eurostat and other internationally recognised sources with data referring to 2012 for 11 indicators, 2011 for 4 indicators, 2010 for 9 indicators and 2009 for 1 indicator.

The IUS 2014 gives a comparative assessment of the innovation performance of the EU Member States and the relative strengths and weaknesses of their research and innovation systems. It monitors innovation trends across the EU Member States, including Croatia, from this edition as the 28th Member State, as well as Iceland, the Former Yugoslav Republic of Macedonia, Norway, Serbia, Switzerland and Turkey. It also includes comparisons between the EU and 10 global competitors. Average innovation performance is measured by summarizing performance over equally-weighted 25 indicators in one composite indicator: the Summary Innovation Index. This year, the IUS2014 is accompanied by the Regional Innovation Scoreboard 2014.