OECD *Multilingual Summaries*

OECD Science, Technology and Industry Scoreboard 2013

Summary in English

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With lacklustre growth across much of the globe, promoting new sources of growth has become a global policy priority. Science, technology, innovation and entrepreneurship – which foster competitiveness, productivity, and job creation – are important mechanisms for encouraging sustainable growth.

The 260 science, technology, innovation and industrial performance indicators in this Scoreboard show how OECD and major non-OECD economies are performing in a wide range of areas. The STI Scoreboard helps governments design more effective and efficient policies and monitor progress towards their desired goals. The following are some of the key findings of the 2013 Scoreboard.

Investment in innovation remains a priority, largely through R&D support measures.

In 2012, OECD governments on average invested the equivalent of 0.8% of GDP in direct funding of R&D at home or abroad; Korea and Finland invested over 1%. In addition, 27 of the 34 OECD countries and a number of non-OECD economies now indirectly support business R&D via tax incentives. In 2011, the Russian Federation, Korea, France and Slovenia provided the most combined support for business R&D as a percentage of GDP. In Canada and Australia indirect funding of business R&D exceeded direct funding by a factor of five. R&D tax credits were worth USD 8.3 billion in the United States, followed by France and China. New estimates show that the cost to a firm of investing in R&D depends on its size, location and balance sheet. In 2013, Australia, Canada, France, Korea, the Netherlands and Portugal give more generous treatment to SMEs.

Young, dynamic firms contribute more to job creation than previously recognised.

Between 2008 and 2011, net employment in the OECD area fell by 2%, or 9 million people, two-thirds of them in the United States. The manufacturing and construction sectors were the hardest hit (an average loss of 32% and 25%, respectively), but information industries – ICT manufacturing, publishing or telecommunication services – suffered too. For many OECD countries, significant losses in employment continued well into 2012 with higher skilled managers affected just as much as the lower-skilled. During the crisis, most jobs destroyed in most countries reflected the downsizing of mature businesses; net job growth in young firms (five years old or less) remained positive. Young firms with fewer than 50 employees represent only around 11% of employment, but they generally account for more than 33% of total job creation in the business sector; their share of job destruction is around 17%.

Trade in value added provides a new perspective on trading relationships.

The OECD-WTO Trade in Value Added (TiVA) indicators reveal that countries have become more dependent on imports from a greater number of economies in order to maintain or improve their export performance. For example, in China, over 1995-2009, gross exports increased about 12-fold at current prices to almost USD 1 300 billion, and the foreign value added content of exports almost tripled to more than 30%; 20% of the value added of exports originated from OECD countries, half of it from Japan and Korea.

Foreign consumers sustain jobs.

As the interdependency of countries grows, consumers in one country sustain jobs in countries further up the value chain. In 2008, 20% to 45% of business sector jobs in most European economies and 20% of jobs in China were sustained by foreign demand. Shares are smaller in Japan and the United States owing to their relatively large size and lower dependency on exports and imports. Nonetheless, initial estimates suggest that in 2008, over 10 million US business sector jobs were sustained by foreign consumers, with East and Southeast Asian consumers sustaining 2 million American jobs.

Emerging economies increasingly play a role in science and innovation.

In the global landscape of scientific research, the emergence of new players has changed the structure of global collaboration networks. In 2011 China was the second-largest R&D performer after the United States, ahead of Japan, Germany and Korea. It was also the second largest producer of scientific publications, yet in terms of quality-adjusted research output (top cited papers) it lags most OECD countries. China accounted for more than 74 000 scientific collaborations in 2011 up from only 9 000 in 1998. Over the period, the number of Chinese publications co-authored with US-based institutions increased from nearly 2 000 to more than 22 000. The United States continues to be the centre of the international research network, accounting in 2011 for nearly 15% of all scientific collaborations documented in peer-reviewed scientific publications.

University hotspots are still concentrated in a few locations.

Worldwide, the top 50 universities with the highest relative impact over 2007-11 are highly concentrated geographically but less so than over 2003-09. Overall, 34 of the top 50 are located in the United States. The rest are in Europe, and, for the first time, two are outside the OECD area, in Chinese Taipei. The United Kingdom is second, with specific strengths in the medical and social sciences. There are notable differences by subject, with US-based universities most likely to excel in biochemistry, computer science, neuroscience and psychology. Universities in non-OECD economies, especially in Asia, play a relatively prominent role in chemical engineering, energy and veterinary research.

Researchers are increasingly mobile.

Researcher mobility and collaboration among institutions are increasing. A new indicator tracks changes in the affiliation of scientists who publish in scholarly journals. The top nine international bilateral flows of researchers coming into and leaving a country involve exchanges with the United States. While total US inflows exceed the outflows, more scientists who start by publishing in the United States move to affiliations in China and Korea than vice versa. The United Kingdom is the second most-connected economy. On average, the research impact of scientists who move affiliations across national boundaries is nearly 20% higher than that of those who never move abroad. For many economies, raising the performance of these “stayers” to the level of their internationally mobile researchers (those who leave and those who return) would allow them to catch up with leading research nations.

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