

### 3. REGIONAL CONCENTRATION OF PATENTS

Patent applications give an indication on the output and process of inventive activities. The analysis of regional patenting helps assess the concentration of innovative activities within countries and can indicate innovative regions that act as important sources of knowledge. The data refer to Patent Co-operation Treaty (PCT) applications, regionalised according to the inventor's residence.

The number of PCT Patent applications per million inhabitants varies significantly among OECD countries (Figure 3.1). In 2005 Finland, Sweden and Switzerland displayed the largest number of applications (over twice as much as the OECD average) while Mexico, Poland, Turkey and the Slovak Republic showed the lowest number of applications.

PCT patent applications are concentrated in a small number of regions within each country (Figure 3.2). In 2005, 45% of all patent applications in OECD countries were recorded by 10% of regions. In Turkey, the regions of Istanbul, Bursa and Kocaeli account for 91% of the total number of patent applications. The concentration of patents is also related to the fact that generating patents requires inputs (e.g. investments and physical and human capital) and infrastructure (e.g. laboratories) which tend to be geographically clustered. Sectorial concentration of industries also has an influence on the concentration of patents, as some sectors have a higher propensity to patent than others.

Regional differences within countries in the number of PCT patent applications are the largest in Turkey, where Istanbul had almost five times more applications than the country average. In Mexico the variation is notable, ranging from a few regions with no applications to 6.2 applications per million inhabitants in the Distrito Federal (almost 4 times the country average). Also in the Slovak Republic while Stredne Slovenko has only 1.8 patent applications per million population in 2005, Bratislav Kraj has 19.8.

Ireland and Belgium are the countries showing the lowest regional variation in patenting activity. Relatively low levels of disparity in PCT patent applications were also displayed by Finland and Sweden, which, are the countries showing the highest levels of investment in R&D activities (Figure 3.3).

Figure 3.4 compares the regions with the highest number of PCT patent applications per million inhabitants to their country average. If, as mentioned above, Istanbul and the Distrito Federal display a number of patents applications much higher than their country average, the actual number of patents is very low in absolute terms. The region producing the highest number of patents per million inhabitants is Ostschweiz in Switzerland (537) followed by Zuid Nederland in the

Netherlands (528), and Massachusetts (438) in the United States. These regions together with Navarra (Spain), Central Hungary and Prague apply for PCT patents more than twice as much their country average.

#### Definition

A patent is an exclusive right granted for an invention, which is a product or a process that provides, in general, a new way of doing something, or offers a new technical solution to a problem. A patent provides protection for the invention to the owner of the patent. The protection is granted for a limited period, generally 20 years.

The Patent Co-operation Treaty (PCT) is an international treaty, administered by the World Intellectual Property Organization (WIPO), between more than 125 countries. The PCT makes it possible to seek patent protection for an invention simultaneously in each of a large number of countries by filing a single "international" patent application instead of filing several separate national or regional patent applications.

#### Source

OECD REGPAT Database and OECD Regional Database, <http://stats.oecd.org/WBOS>, theme: Regional Statistics.

See Annex B for more details on the source and the definition of the indicator.

#### Reference years and territorial level

2005; TL2

Data for Iceland and New Zealand are not available at the regional level.

#### Further information

OECD work on patents: [www.oecd.org/sti/ipr-statistics](http://www.oecd.org/sti/ipr-statistics).

OECD (2008), "University Inventions and Entrepreneurships: A Regional Perspective", Working Party on Industry Analysis.

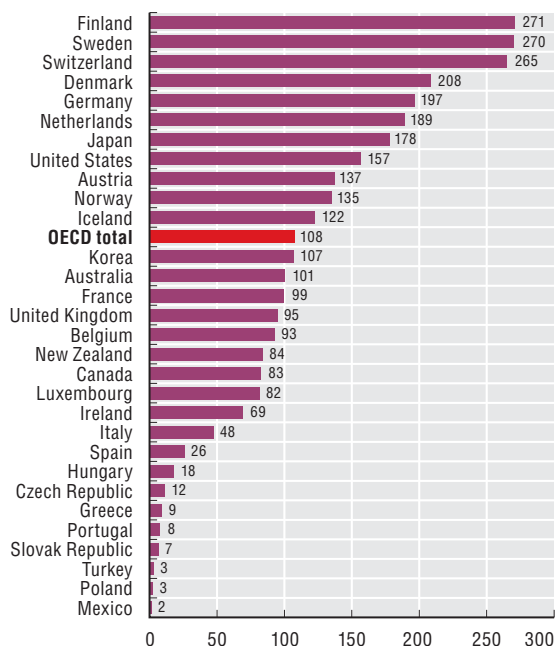
#### Figure notes

Figure 3.3: Percentage of the country average (country average = 100).

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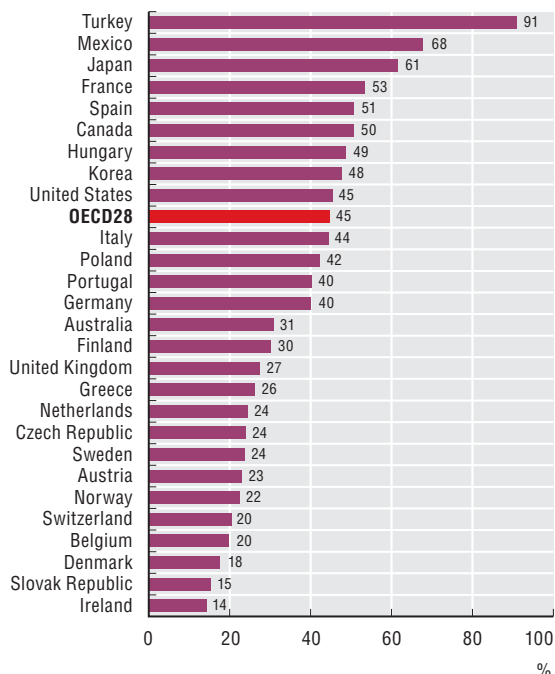
#### 3.1 PCT patent applications per million population, 2005

Finland and Sweden are the countries with the highest rate of PCT patent applications.



#### 3.2 Per cent of patent applications in the 10% of TL2 regions with the highest concentration of patents, 2005

45% of PCT patents applications are recorded in only 10% of OECD regions.



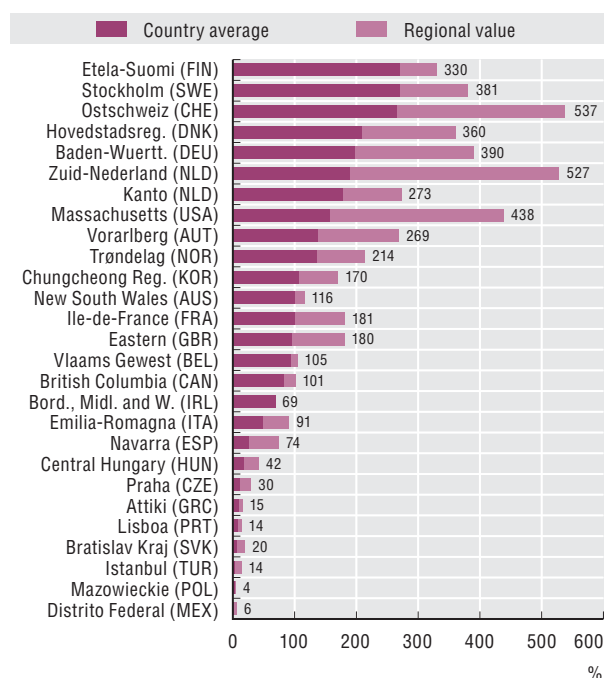
#### 3.3 Range in TL2 regional patent applications per million population, 2005

Turkey and Mexico show the largest disparities in PCT patent applications.



#### 3.4 TL2 regions with the highest number of patent applications per million population compared to their country average, 2005

Ostschweiz, Switzerland, has the highest number of patent applications per inhabitant.

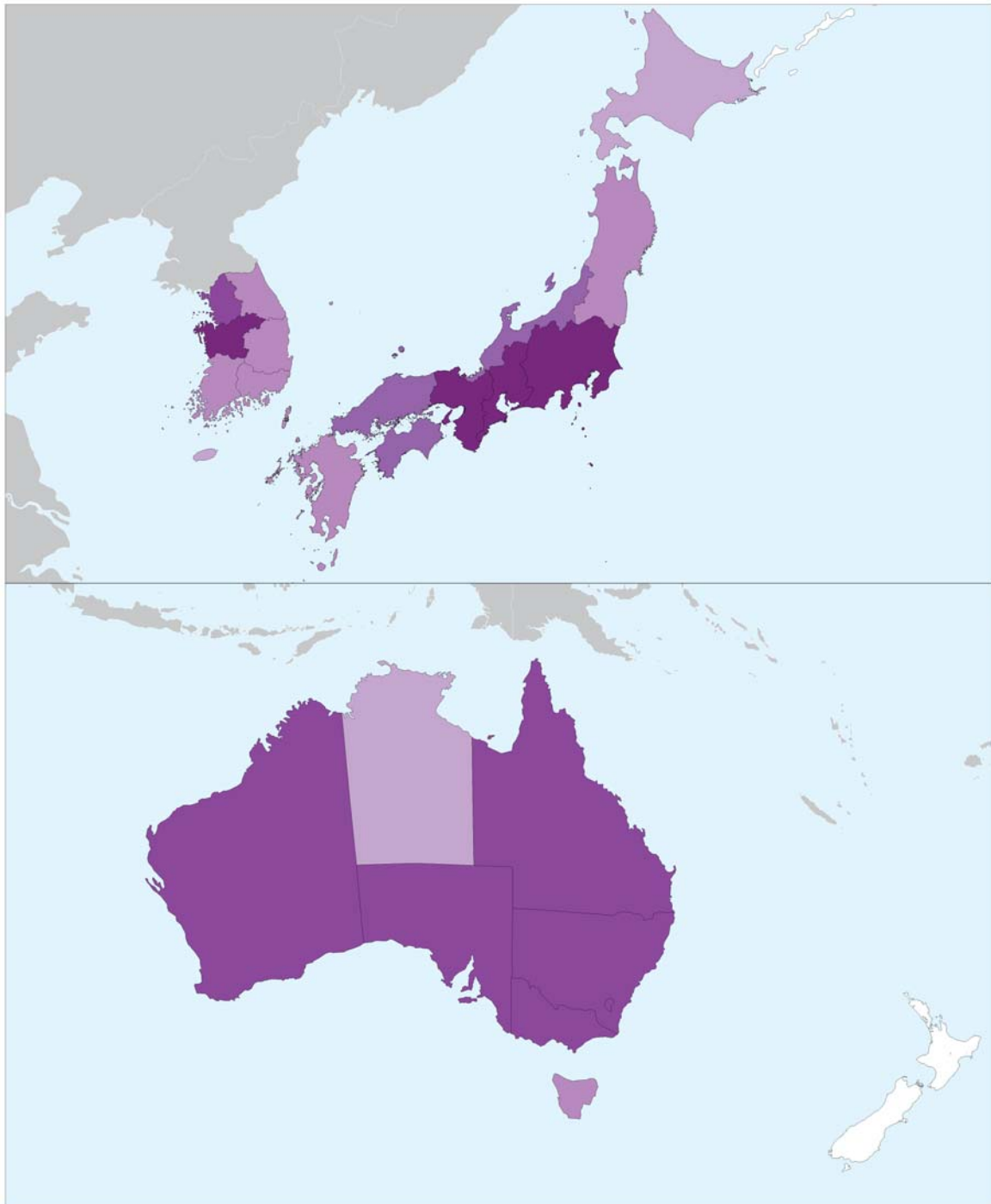


### 3. REGIONAL CONCENTRATION OF PATENTS

#### 3.5 PCT patent applications per million inhabitants: Asia and Oceania

TL2 regions, 2005

- Higher than 150
- Between 80 and 150
- Between 50 and 80
- Between 15 and 50
- Between 3 and 15
- Lower than 3
- Data not available

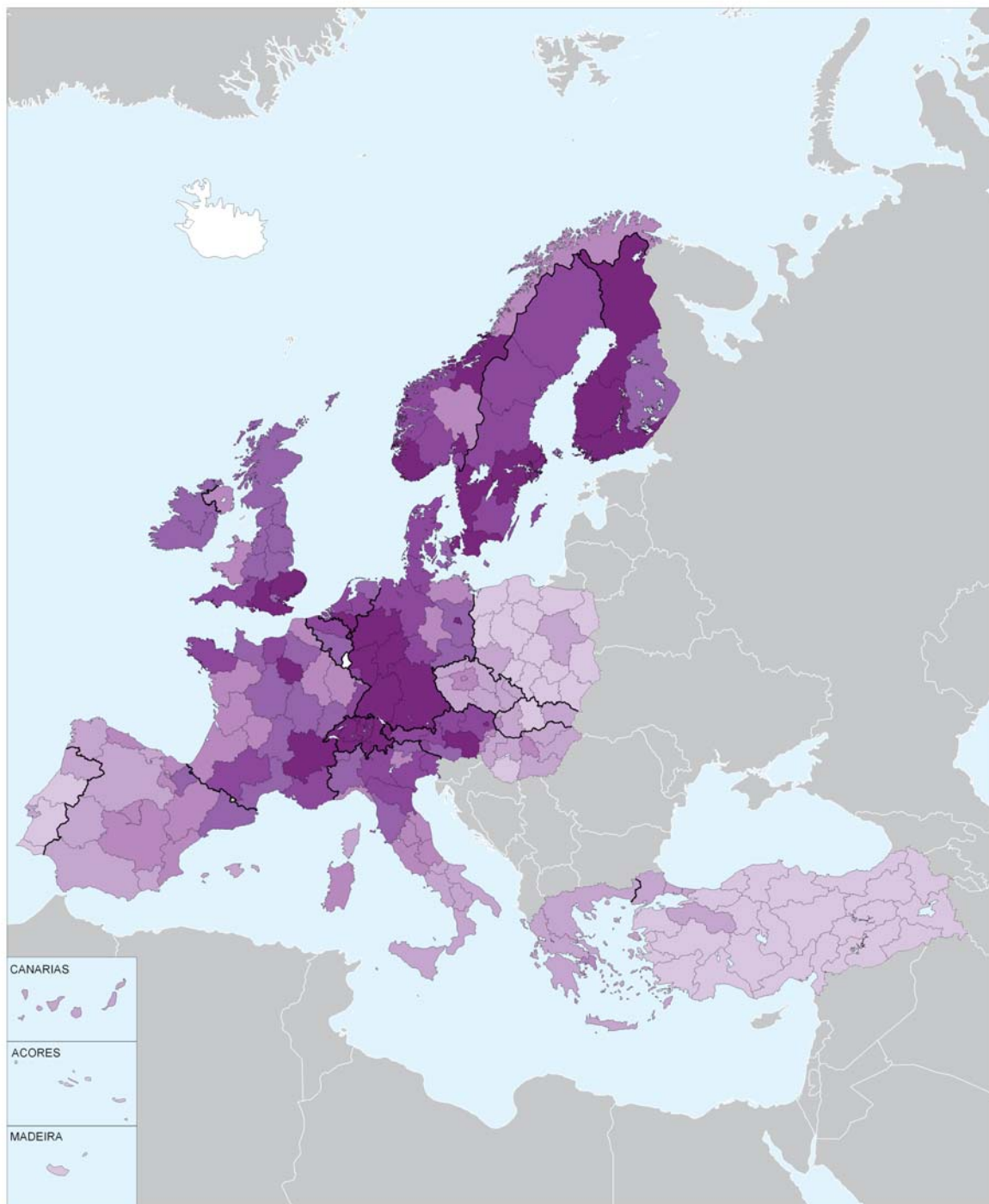



StatLink  <http://dx.doi.org/10.1787/524457534648>

#### 3.6 PCT patent applications per million inhabitants: Europe

TL2 regions, 2005

- Higher than 150
- Between 80 and 150
- Between 50 and 80
- Between 15 and 50
- Between 3 and 15
- Lower than 3
- Data not available



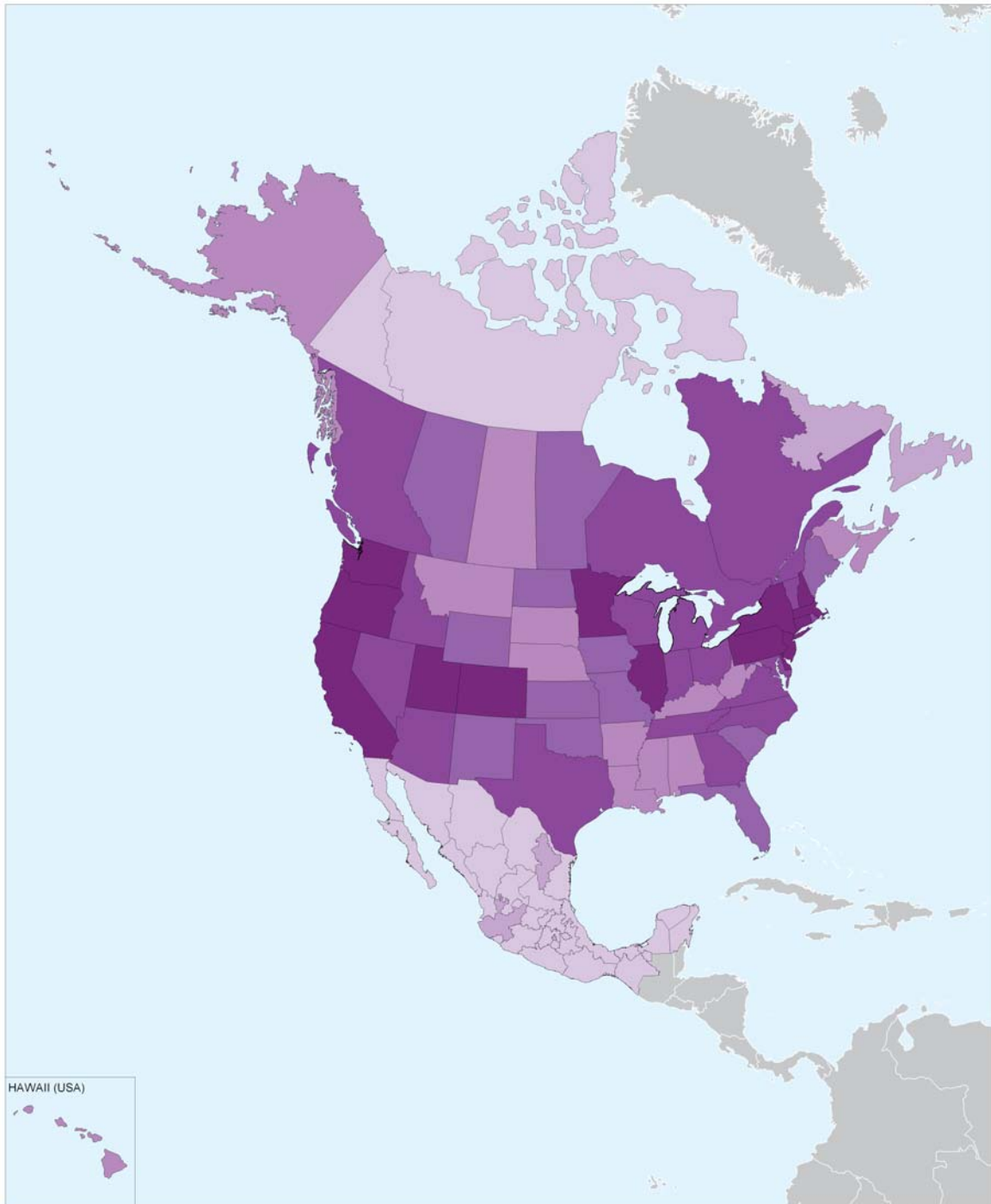
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#### 3.7 PCT patent applications per million inhabitants: North America

TL2 regions, 2005

- Higher than 150
- Between 80 and 150
- Between 50 and 80
- Between 15 and 50
- Between 3 and 15
- Lower than 3
- Data not available



StatLink <http://dx.doi.org/10.1787/524457534648>

#### Does university research affect local industrial innovation?

The concept of “technology transfer” from the public research sector (government research centres and universities) to industry is an important element of national and regional innovation policy. Investment research made by non-business organisations (NBOs) is one of the tools used by governments to boost regional innovation. The idea is that innovation is encouraged by proximity of innovators and that spill over of research carried out in non-business organisations can enhance proximity-based positive effects.

Governments try to create incentives in various ways: having universities transfer more and encouraging industries to be more responsive to such transfers.

To what extent does NBOs research affect industrial innovation in regions? The question at hand is understanding what emphasis the national or regional government should put on university research in local innovation policies.

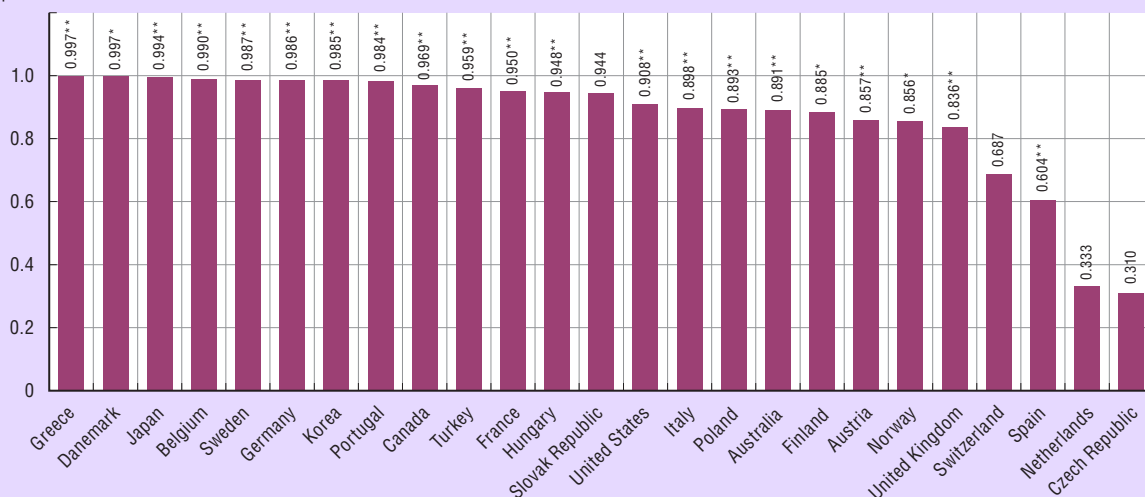
Data on patents make it possible to use the address of the inventor as the place where the research leading to the patent application was done in order to define whether it is a university or a private firm. An analysis on the extent to which non-business and business patents originate from the same region gives a first hint of possible interactions at the local level between universities or public research centres and businesses.

The correlation between business and NBOs patenting activity show a high coefficient (0.75) and is statistically significant across TL2 regions. In Australia, the United States and France the correlation is strongest. In the United States it could be explained by the long tradition of co-operation between universities and businesses, while in Australia systematic linkages between NBOs and industry were promoted notably by the government. In France the strong positive correlation is probably due more to linkages between government research organisations and the business sector than to universities.

#### 3.8 Spearman correlation coefficient between patenting activities of the business sector and of non-business organisations, 2005

*A positive correlation is found between business and non-business patenting activities.*

Spearman rank correlation coefficient

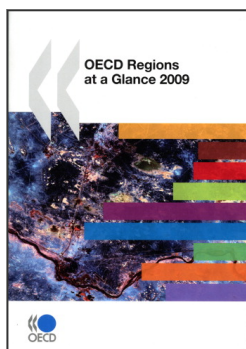


Note: No data are available for Iceland, New Zealand and Mexico. No correlation coefficient is calculated for Ireland and Luxembourg.

\* Correlation significant at the 0.05 level.

\*\* Correlation significant at the 0.01 level.

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