Patent statistics provide a measure of innovation, as they reflect the inventive performance of countries, regions and firms. The geographic distribution of patents therefore indicates the level of diffusion of technology and knowledge across regions.

Innovation is highly concentrated…

Figure 7.1 suggests that patents are concentrated in a small number of regions within countries. In 2003, 57% of all patents in OECD countries were recorded by 10% of regions.

The geographic concentration index reveals that Sweden and Korea (66), Japan and Greece (65), Turkey (63) and Hungary (60) had the highest concentration of patents in 2003 (Figure 8.2), followed closely by Spain (58), Mexico (56), Denmark and Finland (54), Norway and Portugal, (53), and Canada and Australia (52). The geographic concentration was lowest in Belgium (28), Austria and Poland (32), and the Czech Republic and Germany (35).

Over the period 1998-2003, the geographic concentration of patents increased most in the Slovak Republic (18) and Portugal (11), and it decreased most in Poland (–12) and Hungary (–8).

… particularly in urban areas

Predominantly urban regions appear to provide the most fertile ground for innovative activity. In 2003, the correlation between patents and population in urban regions was positive in all OECD countries (Figure 7.3). It was particularly pronounced in the Netherlands (0.92), Denmark (0.86), and Portugal (0.81).

Although somewhat less so, intermediate regions also make a noteworthy contribution to patent activity. In 10 out of 21 OECD countries the correlation between patents and population in intermediate regions was positive.

Finally the correlation between patent activity and population in rural regions was negative in all OECD countries except Korea (0.77), the Czech Republic (0.37) and Poland (0.01). The negative correlation was particularly pronounced in Canada (–0.90), the United Kingdom (–0.76) and Sweden (–0.74).

Innovation does not always mirror skill levels…

As patent activity is very skill-intensive, one might expect the regional distribution of patents to mirror that of skilled workers. In fact, a comparison of the geographic concentration indexes of patents and skilled workers (population with tertiary education) reveals that, in most countries, patents are more concentrated than the highly skilled population (Figure 7.4). Only in Australia is the skilled population more concentrated than patents.

… as it also requires physical capital

Thus, the geographic pattern of knowledge creation, as proxied by patent registrations, and of the skilled population, as proxied by the share of the workforce with a post-secondary degree or diploma, is not necessarily the same. The generation of patents requires inputs (*e.g.* physical capital) and infrastructure (*e.g.* laboratories) which tend to be geographically more concentrated than human capital.

Definition

A patent is defined as a right granted by a government to an inventor in exchange for the publication of the invention. It entitles the inventor to prevent any third party from using the invention in any way, for an agreed period.

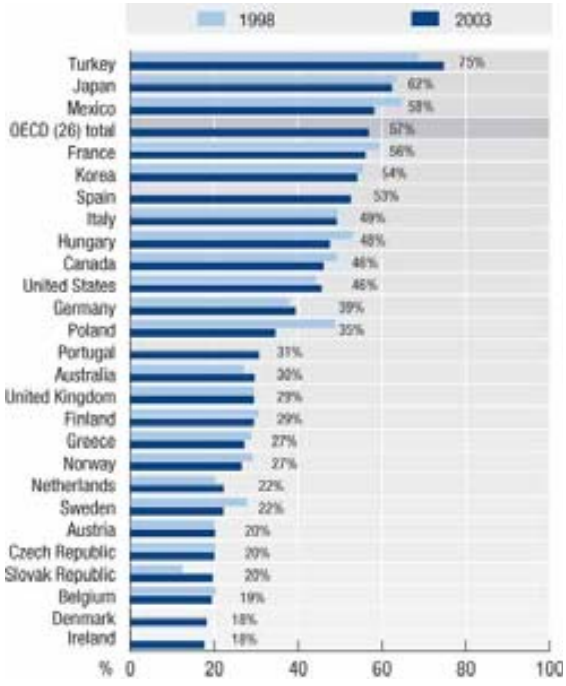
Patant data refere to priority data which corresponds to the first filing of the invention.

The regional distribution of patent applications is assigned according to the inventor's region of residence. If an application has more than one inventor, the application is divided equally among all inventors and subsequently among their regions of residence, thus avoiding double counting.

OECD REGIONS AT A GLANCE 2007 – ISBN 978-92-64-00987-5 – © OECD 2007

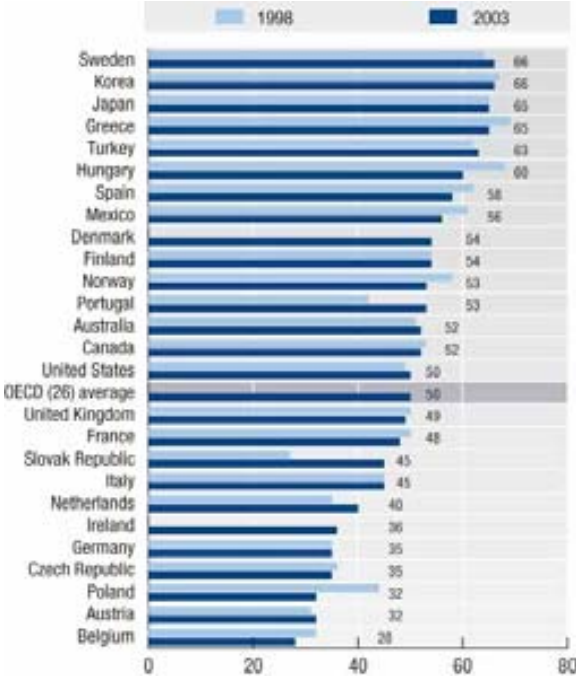
7.1. **In 2003, 57% of total patents were concentrated in only 10% of regions**

Per cent of national patent applications in the 10% of regions with the highest concentration of patents (TL2)



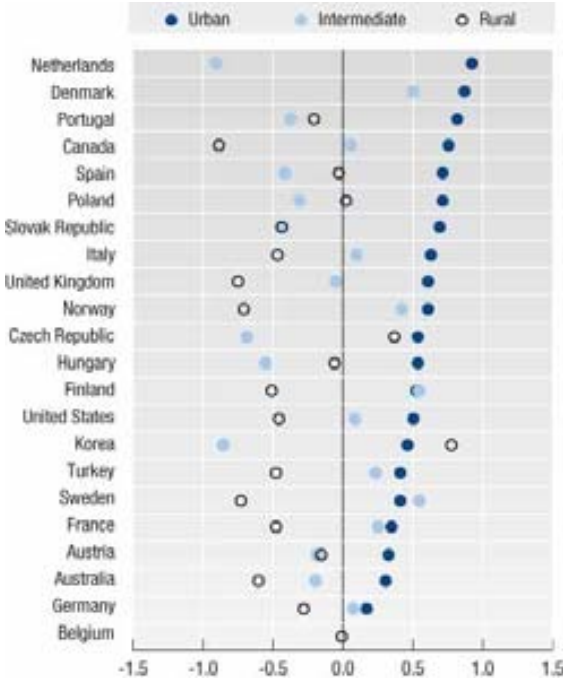
7.2. **Sweden, Korea, Japan and Greece have the highest geographic concentration of patents**

Index of geographic concentration of patents (TL2)



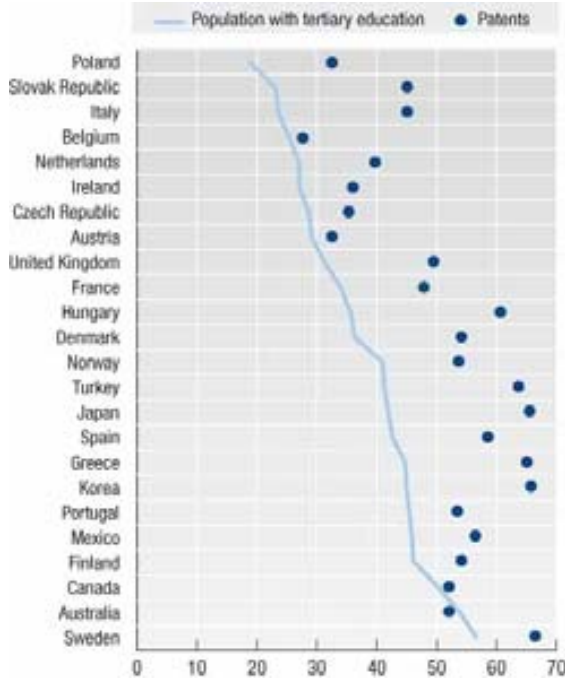
7.3. **Predominantly urban regions provide the most fertile ground for innovative activity**

Spearman correlation between patent applications and population share by regional type, 1998-2003 (TL2)



7.4. **Patents are more concentrated than the highly skilled population**

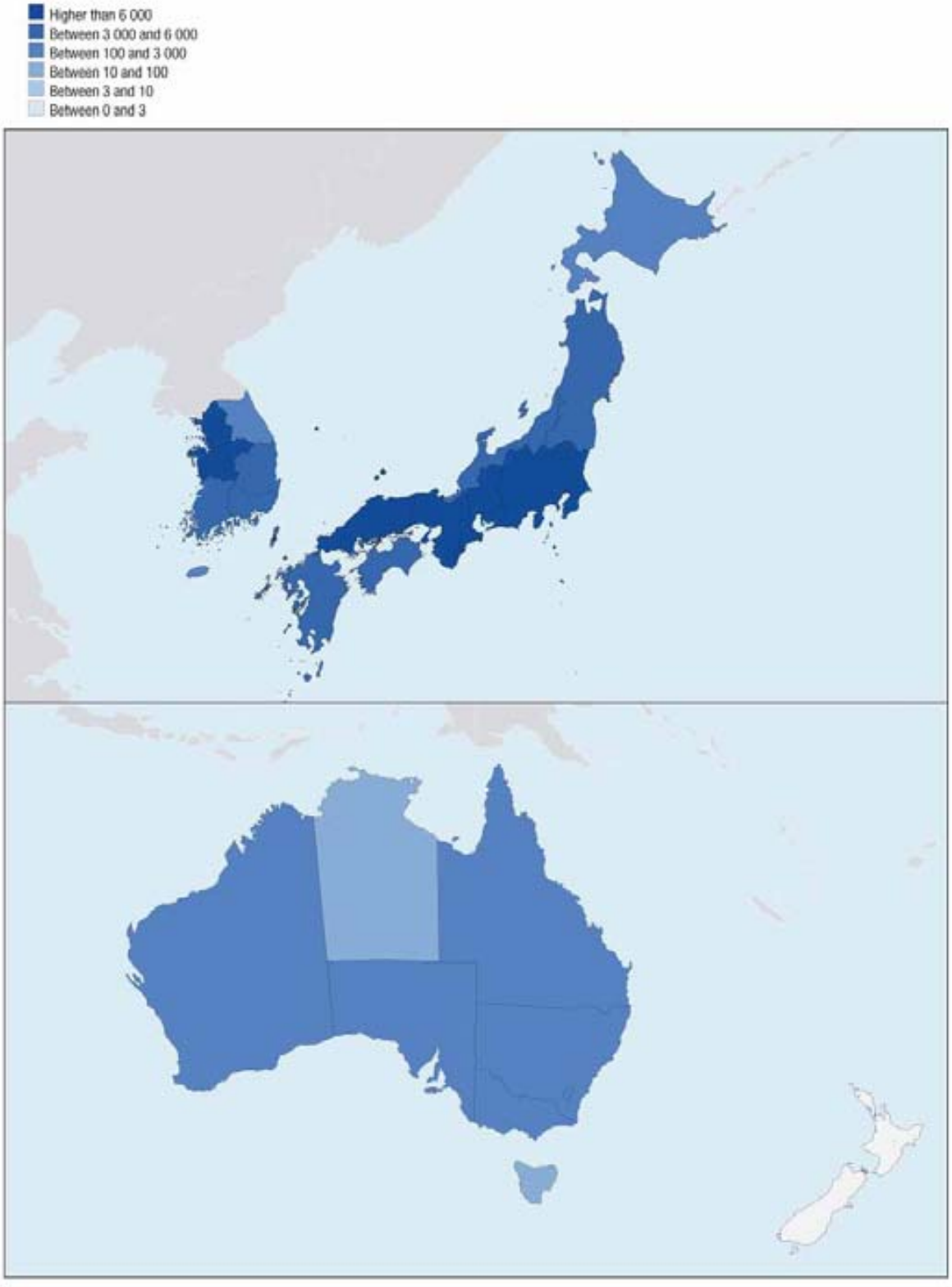
Concentration index, 2003 (TL2)



StatLink http://dx.doi.org/10.1787/632442377332

7.5. **Patent applications by region: Asia and Oceania**

2003

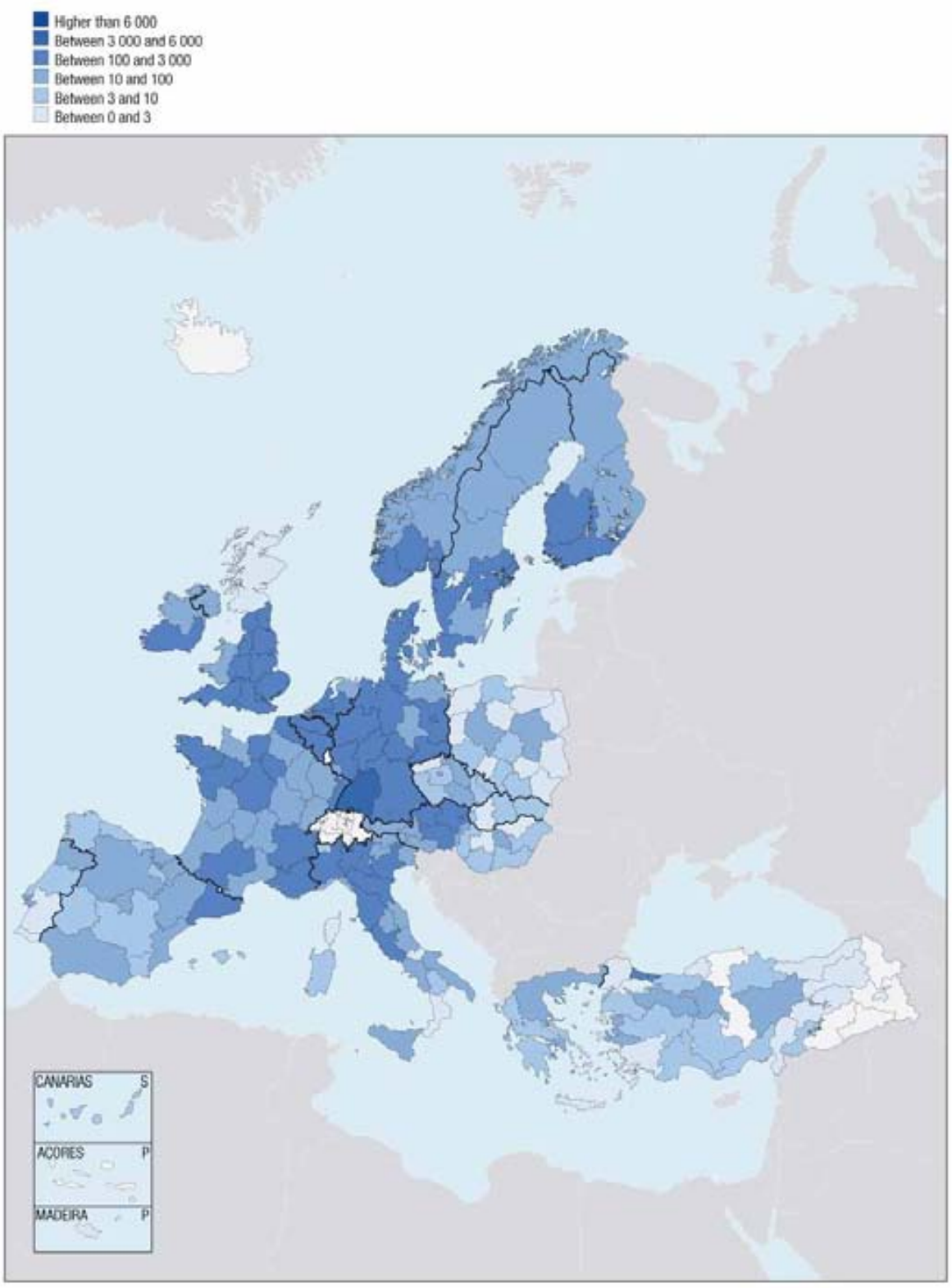


StatLink http://dx.doi.org/10.1787/356300221452

OECD REGIONS AT A GLANCE 2007 – ISBN 978-92-64-00987-5 – © OECD 2007

7.6. **Patent applications by region: Europe**

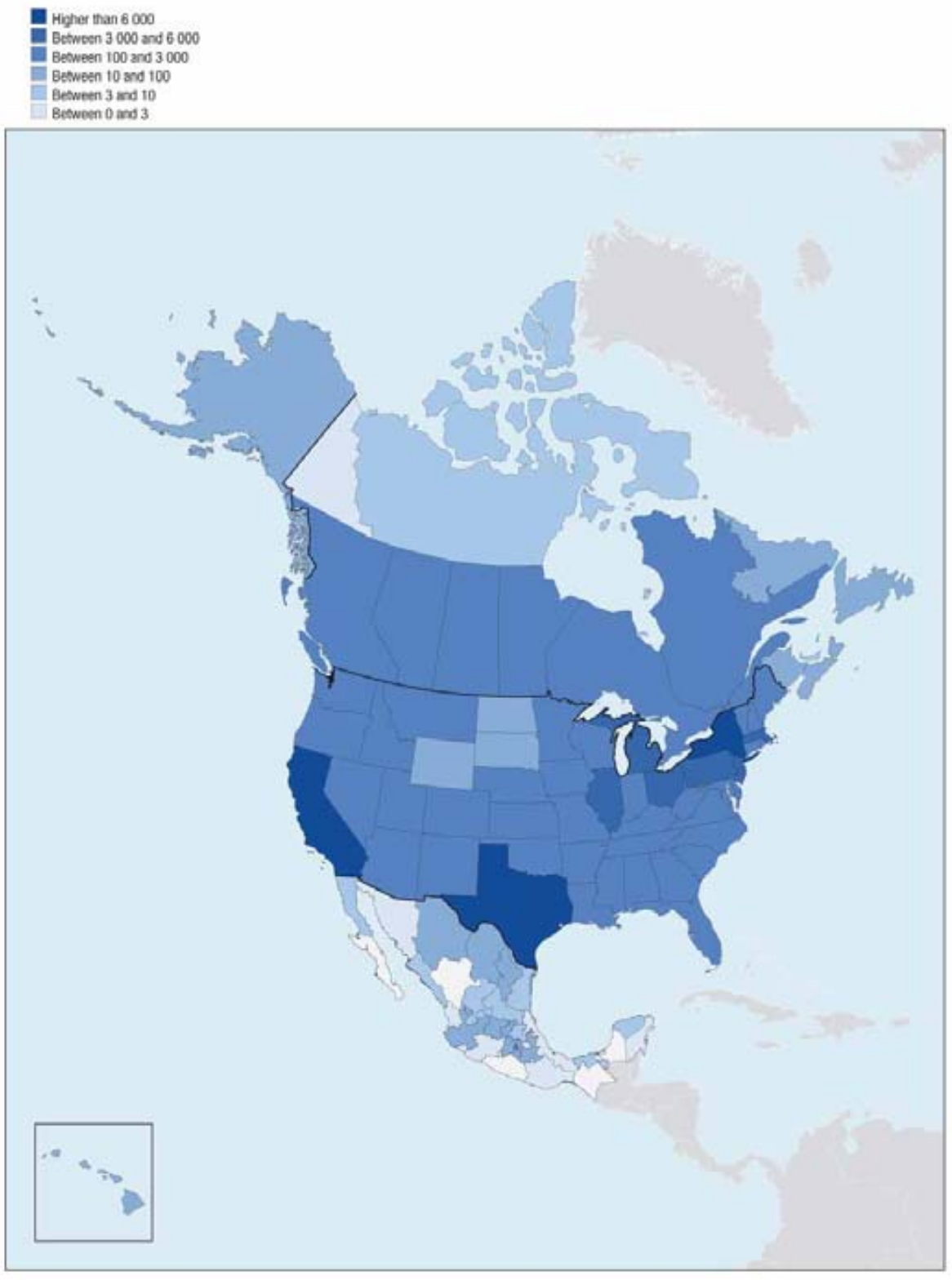
2003



StatLink http://dx.doi.org/10.1787/356300221452

7.7. **Patent applications by region: North America**

2003



StatLink http://dx.doi.org/10.1787/356300221452

OECD REGIONS AT A GLANCE 2007 – ISBN 978-92-64-00987-5 – © OECD 2007

Is higher labour productivity associated with more patents?

Innovation is expected to increase the productivity of firms. In fact the correlation between patent applications and labour productivity within regions during 1998-2003 is positive in 19 out of 22 OECD countries (Figure 7.8). Only in Belgium and Greece is the correlation negative and statistically significant.

The positive correlation was particularly pronounced in Japan (0.82), Norway (0.79) and Finland (0.64), followed by France (0.59), the United Kingdom (0.56), the Slovak Republic (0.54), the United States (0.49), Germany, Turkey and Poland (0.47), and Sweden (0.45). In all these countries it was statistically significant.

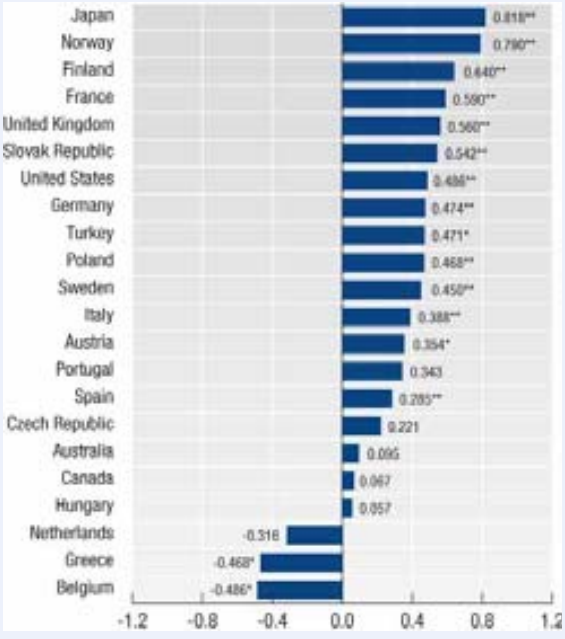
The ability to innovate may affect the competitiveness of different types of regions.

The correlation between patent applications and population was positive in rural regions in 14 OECD countries (Figure 7.9). In contrast, the correlation between patent applications and population was positive in urban and intermediate regions in seven and nine OECD countries, respectively.

This indicates that during 1998-2003 patent activity in rural regions was catching up relative to urban and intermediate regions. Nonetheless in Austria, Italy, Japan, the Netherlands, Portugal, the Slovak Republic and Turkey, predominantly urban regions provided the most fertile ground for innovative activity over the period.

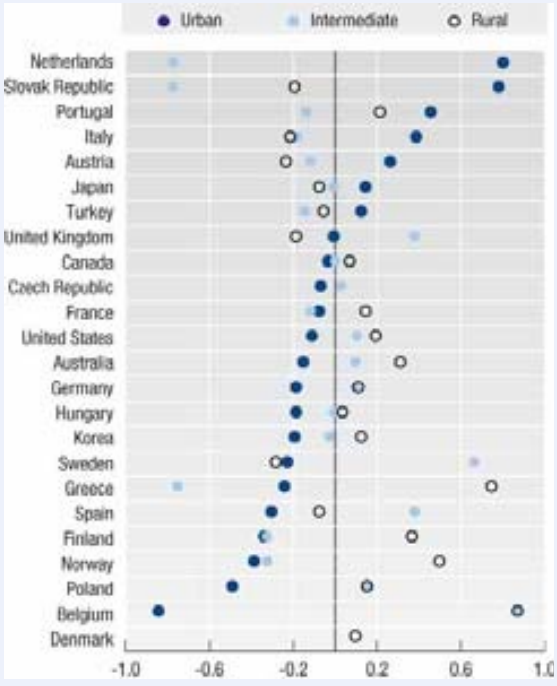
7.8. **In 19 out of 22 OECD countries the correlation between labour productivity and patent applications is positive**

Spearman rank correlation of regional labour productivity and regional patent applications, 1998-2003 (TL2)



7.9. **During 1998-2003 the share of patents filed in urban regions increased the most in the Netherlands and the Slovak Republic**

Spearman correlation between patent growth and population share by regional type, 1998-2003 (TL2)



* Indicates significant at 95%.
** Indicates significant at 99%.

StatLink http://dx.doi.org/10.1787/632442377332

II. MAKING THE BEST OF LOCAL ASSETS

8. REGIONAL DISPARITIES IN GDP PER CAPITA
9. REGIONAL DISPARITIES IN LABOUR PRODUCTIVITY
10. REGIONAL DISPARITIES IN SPECIALISATION
11. REGIONAL DISPARITIES IN TERTIARY EDUCATION ATTAINMENT
12. REGIONAL DISPARITIES IN UNEMPLOYMENT RATES
13. REGIONAL DISPARITIES IN PARTICIPATION RATES

THE KEY DRIVERS OF REGIONAL GROWTH

14. THE FACTORS BEHIND REGIONAL PERFORMANCE
15. REGIONAL GROWTH IN THE OECD
16. NATIONAL FACTORS AND REGIONAL PERFORMANCES
17. REGIONAL FACTORS: GDP PER CAPITA AND POPULATION
18. REGIONAL FACTORS: PRODUCTIVITY AND SPECIALISATION
19. REGIONAL FACTORS: EMPLOYMENT, PARTICIPATION AND AGEING

Symbols and Abbreviations

OECD (25) average	Unweighted average of 25 OECD countries.
OECD (25) total	Sum over all regions of 25 OECD countries.
OECD (25)	Range of variation over all regions of 25 OECD countries.
TL2	Territorial Level 2.
TL3	Territorial Level 3
NOG	Non Official Grid
*	Differences in the definition of data or regions. Please check the "Sources and Methodology" section.
PU	Predominantly Urban
IN	Intermediate
PR	Predominantly Rural
PPP	Purchasing Power Parity
USD	United States Dollar

I. REGIONS AS ACTORS OF NATIONAL GROWTH

1. GEOGRAPHIC CONCENTRATION OF POPULATION
2. GEOGRAPHIC CONCENTRATION OF THE ELDERLY POPULATION
3. GEOGRAPHIC CONCENTRATION OF GDP
4. REGIONAL CONTRIBUTIONS TO GROWTH IN NATIONAL GDP
5. GEOGRAPHIC CONCENTRATION OF INDUSTRIES
6. REGIONAL CONTRIBUTIONS TO CHANGES IN EMPLOYMENT
7. GEOGRAPHIC CONCENTRATION OF PATENTS

Table of Contents

IV. Regional Focus on Health

Source and Methodology

OECD REGIONS AT A GLANCE 2007 – ISBN 978-92-64-00987-5 – © OECD 2007