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The Regional Lisbon Index

By Lewis Dijkstra

In both 2007 and 2000, only one EU region reached the eight Lisbon targets included in the Lisbon Index. In 2007, it was the Finnish region Länsi-Suomi, while in 2000 it was the Swedish region Östra Mellansverige. Although both years saw only one region reaching all eight targets, EU regions did move closer to these.

The Lisbon Index measures how far regions are from eight Lisbon targets for 2010 (see Map 1). A region scores 100 if it has reached all eight targets (see Table 1), while the region farthest away from all eight targets scores 0.

On average, EU regions improved their score by 10 index points between 2000 and 2007. Over this time, the ten fastest movers were: Corse in France (from a very low base), Comunidad Foral de Navarra, País Vasco, Cantabria, Extremadura, Galicia, La Rioja and Comunidad de Madrid in Spain, Kärnten in Austria and Liguria in Italy. All these improved their index by 25 points or more (see Map 2).

In 2007, the top ten Lisbon regions contain three Finnish, four Swedish and three UK regions, scoring between 94 and 100. The bottom ten contains four Southern Italian regions, the two Portuguese island regions, Malta, Corse in France, Sud-Est in Romania and Észak-Magyarország in Hungary all scoring less than 20[1]. Nine out of these ten regions have not reached a single target. Only Madeira reaches one: the employment target for people aged 55-64.

The Lisbon Index in Convergence regions is almost half the level of the Regional Competitiveness and Employment (RCE) regions. Transition regions score better, but still well below the EU average.

The EU average is moving only slowly. In 2000, the EU scored 57. It increased to only 69 by 2007. At this rate, the EU will reach only 75 in 2010, which is not even halfway to the goal of 100.

Capital regions tend to score higher than the other regions in a country. This is clearly the case in France, Italy, the Czech Republic, Slovakia, Hungary, Romania and Bulgaria. In Belgium and the UK, the score of the regions surrounding the capital region is higher than that of the capital region itself. This is partially due to commuting, as the three employment rates and participation in lifelong learning are measured at the place of residence and not the place of work.

Table 1 – The Lisbon Index and its components by type of region

	EU-27 in 2000	Lisbon Target	2007			
			EU-27	Conver-gence	Tran-sition	RCE
Employment rate for men aged 15-54	75.5	85	76.2	70.0	76.6	79.5
Employment rate for women aged 15-54	59.0	64	63.2	55.7	58.6	67.7
Employment rate for people aged 55-64	37.1	50	44.7	38.7	43.6	47.7
Early school leavers aged 18-24	17.6	10	15.2	16.3	20.7	14.5
Secondary education attainment for people aged 20-24	75.3	85	77.6	79.4	71.9	77.1
Lifelong learning participation of people aged 25-64	6.9	12.5	9.2	5.0	8.1	11.1
Business expenditure in R&D as % of GDP	1.20	2	0.7	0.3	0.4	1.4
Government, higher education and non-profit expenditure in R&D as % of GDP	0.7	1	1.2	0.5	0.6	0.7
Lisbon Index	**57.3**	**100**	**68.7**	**41.8**	**49.7**	**75.2**

This indicator includes neither GDP per head nor GDP per person employed. Nevertheless, it is still correlated to GDP per head in PPS, which explains 45% of the variation in the Lisbon Index[2].

Several of the indicators can be theoretically and/or empirically linked to GDP per head. Higher employment rates, all other things being equal, will lead to higher levels of GDP per head. Participation in lifelong learning tends to be high in the more developed regions. For example, the participation rate is twice as high in RCE as it is in Convergence regions. The share of GDP spent on R&D also tends to increase with overall levels of development. The logic behind this trend is that more developed regions operate at or close to the innovation frontier and need to invest more to move this frontier with global innovations, whereas less developed regions can learn and come closer to

[1] *Ceuta and Melilla also score in the bottom ten, but due to sample size their scores may not be sufficiently reliable.*
[2] *After removing three outliers (Inner London, Luxembourg and Brussels) with GDP per head levels which are too high due to the well-known problem of commuting.*

the innovation frontier by copying and adapting good practice from more developed regions.

Business expenditure on R&D is heavily concentrated in the manufacturing sector. As a result, this indicator tends to act to the disadvantage of regions with a low share of manufacturing, although services can be just as innovative, if not more so. Several articles and reports have argued that the R&D target for business expenditure may not be relevant at the regional level as the clustering of R&D in a few regions may be more efficient.

The change in GDP per head, however, does not explain any of the change in the regional Lisbon Index. This shows that growth in GDP per head does not automatically lead to a higher score on the Lisbon Index. This may be due to jobless growth or growth that does not lead to increased shares of GDP dedicated to R&D.

Methodology

This Lisbon Index had the aim of improving the methodology used in other Lisbon indicators, such as those published by ESPON[3], the Lisbon Monitoring Platform[4], the Lisbon Council and in the 4th Cohesion Report. One of the problems with some of the other Lisbon indicators is that certain indicators overlap, notably the three employment rates (total, female and people aged 55-64), which meant that an employed female aged 60 was counted three times.

The methodology developed for this indicator had four goals:

(1) To take into account the Lisbon targets in a manner that would be easy to understand;

(2) To ensure that the same value receives the same score each year;

(3) To avoid double or even triple counting;

(4) To combine the individual indicators in such a way that the same change receives the same weight across related indicators.

The first goal was reached by using the distance from the Lisbon target for the eight indicators instead of the absolute values of the indicators (also known as a ratio transformation). These distances are then transformed into a score between 0 and 1. The region farthest removed from the target receives 0, and regions which have reached the target or exceeded it receive 1. All these scores are combined and transformed from an indicator between 0 and 100. The region farthest removed from the Lisbon targets receives 0 and any which have reached all targets receive 100.

The second goal was reached by fixing the maximum distance from the target. This meant that, for example, an employment rate of 65% always receives the same score, be it in 2000 or in 2007. In addition, outliers were not taken into account, to avoid distorting the distribution of an indicator; this is also known as cutting 'noses and tails'.

The third goal was reached by calculating Lisbon targets for mutually exclusive indicators based on the official targets. This had to be done for both the employment targets and the R&D targets.

The fourth goal had consequences for the employment rates and the R&D targets. For the employment rates, the minimum values were adjusted in such a way that an increase of 1 percentage point always leads to the same increase in the Lisbon Index. For the R&D targets, the weightings used to combine the indicators were adjusted to ensure that an increase of 1 percentage point would lead to the same increase in the Lisbon Index.

Derived targets for mutually exclusive indicators

Two groups of Lisbon targets are not mutually exclusive: the three employment rates and the two R&D rates. Here is how they have been transformed into mutually exclusive targets.

The Lisbon Agenda has three employment rate targets: 70%, 60% and 50% for total, female and people aged 55-64 respectively. These were transformed into the following targets: 85%, 64% and 50% for men aged 15-54, women aged 15-54 and people aged 55-64 respectively, taking into account the ratio between men and women in the different age groups and the share of women and men working aged 55-64.

These targets had one remaining issue: a region could reach the original targets, but not the derived targets. For example, if a region had the following employment rates: 70% total, 72% for men and 68% for women, it would reach the original targets for total and women, but not the derived target for men. To avoid this problem, a correction mechanism was introduced to take into account employment rates in excess of these targets for women aged 15-54 and people aged 55-64. For example, if a region reaches an employment rate of 70% for women aged 15-54, the target for men aged 15-54 is reduced by 6 percentage points (the target for women is 64%, and 70% - 64% = 6%, thus the new target for men in that region is 79% = 85% - 6%).

Following the same approach, business expenditure on R&D above the target of 2% of GDP is used to reduce the other R&D target.

[3] *http://www.espon.eu/main/Menu_Projects/Menu_ESPON2006Projects/Menu_CoordinatingCrossThematicProjects/lisbonstrategy.html*
[4] *http://lisbon.cor.europa.eu*

Calculation of the Lisbon Index

Each of the eight indicators is transformed into a score that varies between 0 and 1.

Score = 1- (Lisbon target - regional rate) / (Lisbon target - minimum regional rate)

To ensure that all jobs are weighted equally, the three employment rates are calculated as follows: Score = 1- (Lisbon target - regional level) / 35%. In all three cases, the Lisbon target minus the regional minimum is less than 35 percentage points. So the distance from the target used in this ratio transformation is kept constant for all three rates.

For early school leavers the calculation was inverted: Score = 1- (Regional rate - Lisbon target) / (regional maximum (60%) - Lisbon target).

The minimum regional rate for secondary education attainment for people aged 20-25 was 47%. The minimum regional rate for the last three indicators is 0.

The eight scores were averaged. All indicators were averaged unweighted, with the exception of the R&D indicators, because the EBRD target is 2% and the government, higher education and non-profit expenditure in R&D is only 1%. The first is weighted by 4/3 and the second by 2/3.

This average of the eight indicators is transformed into a score from 0 to 100 with an average score of 1 equalling 100 and the lowest regional average score equalling 0.

To keep this methodology stable over time, these minima (for both individual indicators and the average indicator) will be used in future updates of this indicator.

The date for the employment rates and lifelong learning is 2007. For the R&D indicators it is 2006 or the most recent year available. For early school leavers it is the average of 2006 and 2007. For secondary education attainment it is an average of 2005, 2006 and 2007.

A critical assessment of this composite indicator by Michaela Saisami has shown that it:

- is internally consistent, from a conceptual and statistical point of view
- is not double-counting indicators due to correlation among them
- has a relatively balanced structure (not dominated by a single indicator).

However, the analysis revealed that business expenditure on R&D determines a disproportionate share of the variation of the Lisbon Index. This is less than optimal for a composite indicator, in particular when from an economic point of view reaching an equally high share of business expenditure on R&D in all regions would be inefficient and thus undesirable.

This detailed assessment will be published in a forthcoming article/Regional Working Paper by Lewis Dijkstra and Michaela Saisami.

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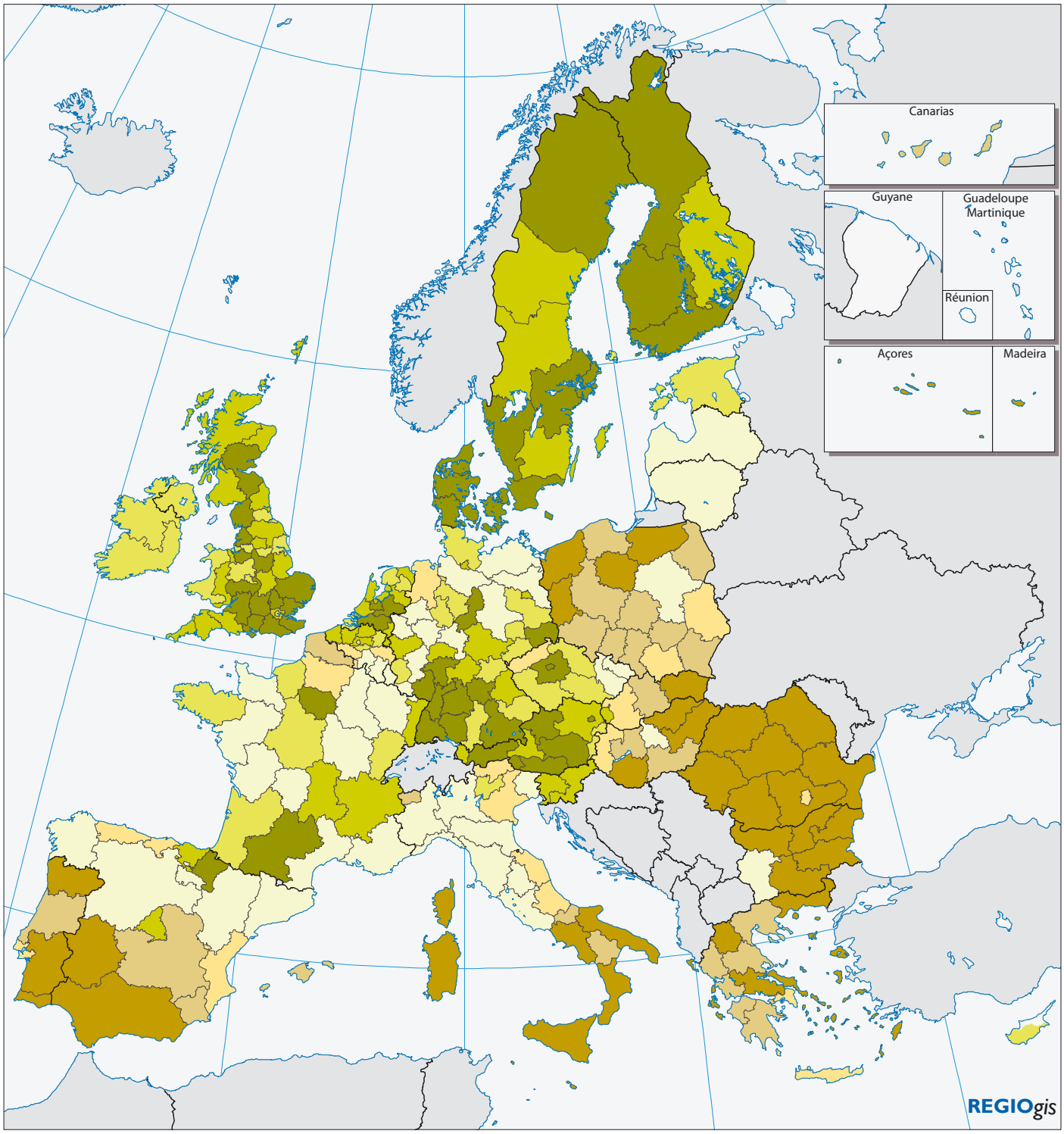
[5] *2009 European Growth and Jobs Monitor by The Lisbon Council and Allianz SE*
http://www.lisboncouncil.org/publication/publication/37-the-2009-european-growth-and-jobs-monitor.html

Map 1



The Lisbon Index, 2007

- < 30
- 30 - 40
- 40 - 50
- 50 - 60
- 60 - 70
- 70 - 80
- 80 - 100

The Lisbon Index shows how close an EU region is to eight derived Lisbon 2010 targets:

- 85% for employment rate among men aged 15-54
- 64% for employment rate among women aged 15-54
- 50% employment rate for people aged 55-64
- 10% of early school leavers aged 18-24
- 85% of secondary education attainment for people aged 20-24
- 12.5% of lifelong learning participation of people aged 25-64
- 2% for business expenditure in R&D as % of GDP
- 1% for government, higher education and non-profit expenditure in R&D as % of GDP

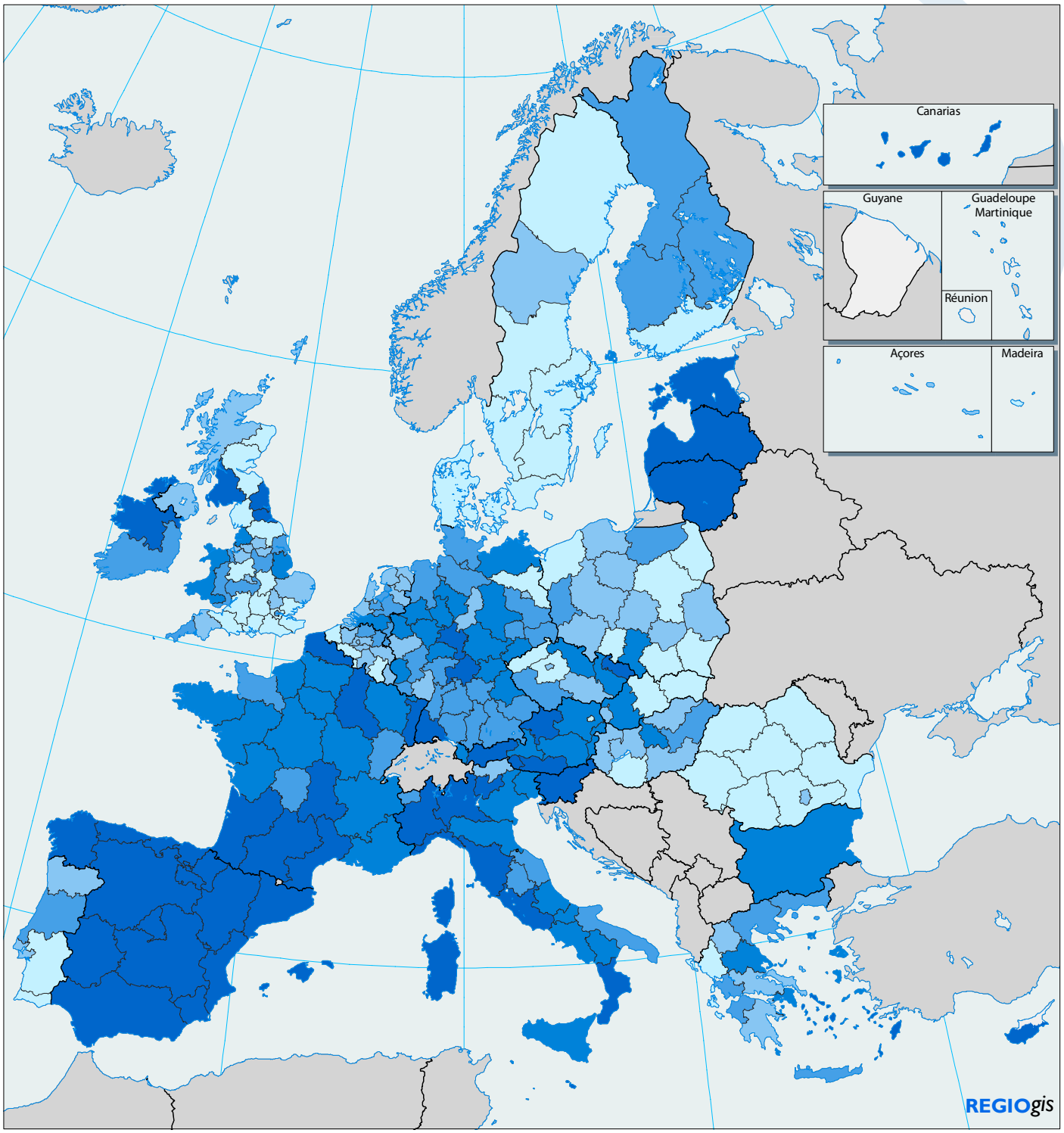
A score of 100 means that a region has reached all eight targets. The region farthest removed from the target scores 0.

Source: Eurostat, DG REGIO

0 500 Km

https://circabc.europa.eu/d/d/workspace/SpacesStore/e50a0475-d46e-4fb9-87c5-f24384484c1f/Lisbon_index.zip

Map 2



Change in Lisbon Index 2000 - 2007

Percentage point change

- < 2.7
- 2.7 - 7.67
- 7.67 - 10.7
- 10.7 - 15.79
- >= 15.79

Source: Eurostat, DG REGIO

0 500 Km

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