Employment Growth in the Luxembourg Cross-Border Metropolitan Area (1994-2008)

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I. Introduction
   City-regions and the knowledge economy

II. Study area and data description
   What makes Luxembourg interesting?

III. Employment growth in the metropolitan area
   A tendency towards specialization
   A strong geographical concentration

IV. Conclusion
Spatial evolution of employment in the Luxembourg metropolitan area

1. Did the employment growth led to a sectoral specialization, and if yes, which are the sectors that benefited most from this phenomenon?

2. Is Luxembourg concerned by a de-concentration of employment, and if yes, what are the infra-regional spaces that benefited from the strongest growth?

3. Can Luxembourg be compared with other European city-regions?

Focus
High-tech manufacturing activities and knowledge-intensive services
City-regions and the knowledge economy

• City-regions are considered as the “motors” of economic development and the prime nodes of integration in the global economy (Taylor 2004)

• An increasing concentration of services activities and high-tech industries in city-regions (quality of infrastructure, research institutions, leading global firms, specific knowledge) (Lüthi, Thierstein, Goebel 2008)

• Knowledge-intensive economy: “Industrial activity branches with a high share of research and development activities for the generation of new technological knowledge as well as (…) activities for which the generation and economic use of specific knowledge is a main focus” (Krätke 2007)

  - Advanced Producer Services: services “that are ordinarily consumed by firms and organizations in the course of their operations” (Coffey 2000) such as accounting, insurance, banking, finance, management, law, IT…

  - High-Tech firms (pharmaceutical, chemical, botanical products, computers, medical instruments, aircrafts etc.)
II. Study area and data description

A major financial center

• A city with “relatively strong evidence of world-city formation” (Taylor et al. 2002).

• One of the favored locations for global firms and for many European institutions (Rozenblat & Cicille 2003)

• 2nd largest investment fund center in the world, 1st captive reinsurance market in the EU and 1st private banking center in the Eurozone

Urban hierarchy in Europe according to their level of internationalisation and economic structures

Source: ESPON 2007. Project 1.4.3. ULB-IGEAT
A large metropolitan area

- A strong average annual growth of internal employment (+3.8% between 1994 and 2005)
- 1.6 jobs per inhabitant in the City in 2005 (Manhattan 1.70, Frankfurt 0.92)
- 140,000 daily cross-border commuters coming from France, Germany and Belgium
- A small urban area (125,000) but a large functional metropolitan area (900,000)

Luxembourg metropolitan area
Municipalities where the proportion of commuters working in the Urban Area was above 16% of the working population in 2002/2004. Source: Sohn, Reitel and Walther 2009
Sectoral approach

→ Advanced Producer Services (Sassen 2001)

Sectoral and product approach
Classification of manufacturing industries according to technological intensity (R&D expend./value added) and R&D intensity by groups of products (R&D expend./total sales). Knowledge and less knowledge-intensive services are defined according to a similar logic.

### II. Study area and data description

**High-technology manufacturing and knowledge-intensive services sectors**

OECD-Eurostat

<table>
<thead>
<tr>
<th>Economic sectors</th>
<th>NACE 1.1. Classification (similar to ISIC Rev. 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Manufacturing industry</strong></td>
<td></td>
</tr>
<tr>
<td>High-technology</td>
<td>24.4, 30, 32, 33, 35.3</td>
</tr>
<tr>
<td></td>
<td>24 (-24.4), 29, 31, 34,</td>
</tr>
<tr>
<td>Medium-high-technology</td>
<td>35 (-35.1, -35.3)</td>
</tr>
<tr>
<td>Medium-low-technology</td>
<td>23, 25-28, 35.1</td>
</tr>
<tr>
<td>Low-technology</td>
<td>15-22, 36, 37</td>
</tr>
<tr>
<td><strong>Services</strong></td>
<td></td>
</tr>
<tr>
<td>High-technology Knowledge Intensive Services (KIS)</td>
<td>64, 72, 73</td>
</tr>
<tr>
<td>Market Knowledge Intensive Services (KIS)</td>
<td>61, 62, 70, 71, 74</td>
</tr>
<tr>
<td>Financial Knowledge Intensive Services (KIS)</td>
<td>65-67</td>
</tr>
<tr>
<td>Other Knowledge Intensive Services (KIS)</td>
<td>80, 85, 92</td>
</tr>
<tr>
<td>Market Less Knowledge-Intensive Services (LKIS)</td>
<td>75, 90, 91, 93, 95, 99</td>
</tr>
<tr>
<td>Other Less Knowledge-Intensive Services (LKIS)</td>
<td>50-52, 55, 60, 63</td>
</tr>
</tbody>
</table>

**Luxembourg General Inspection of Social Security**


→ National residents and cross-border commuters
The richest country in the world went through a strong growth in the knowledge-intensive economy

+110% between 1994 et 2008
(+54% for other jobs)

36 % of total employment in 2008
III. Employment growth in the metropolitan area

Employment by sectors, 1994-2005
Source: Sohn and Walther 2008

Financial and market knowledge-intensive services: a similar evolution

In 2006, Luxembourg accounted for more jobs directly linked to finance (37,000) than Geneva (34,500) and more banks (156 against 140)
Workplace and place of residence

High-tech and KIS workers are very unevenly distributed throughout the national territory

→ Concentration in the City and the Urban Area (resp. 68% and 75% of the total High-Tech and KIS employment)

→ High proportion in the City (up to 50% of the total workforce)
### Sectoral specialisation

- Diversification has increased over time
- Specialization only limited to the City

<table>
<thead>
<tr>
<th>Geographical units</th>
<th>Herfindahl 1994</th>
<th>Herfindahl 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Luxembourg-City</td>
<td>0.14</td>
<td>0.16</td>
</tr>
<tr>
<td>Luxembourg Urban Area</td>
<td>0.21</td>
<td>0.15</td>
</tr>
<tr>
<td>Suburban Area</td>
<td>0.17</td>
<td>0.14</td>
</tr>
<tr>
<td>South</td>
<td>0.19</td>
<td>0.16</td>
</tr>
<tr>
<td>Commuter Area</td>
<td>0.22</td>
<td>0.15</td>
</tr>
<tr>
<td><strong>All units</strong></td>
<td><strong>0.14</strong></td>
<td><strong>0.12</strong></td>
</tr>
</tbody>
</table>

The Herfindahl index is a measure of how specialized a spatial unit is: perfectly diversified if HI = 0 and perfectly specialized if HI = 1.
Geographical concentration

- Financial and market KIS are highly concentrated
- Redistribution of KIS in the Urban Area

<table>
<thead>
<tr>
<th>Economic sectors</th>
<th>Gini 1994</th>
<th>Gini 2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>High- and medium-high-tech industries</td>
<td>0.36</td>
<td>0.35</td>
</tr>
<tr>
<td>High-tech KIS</td>
<td>0.48</td>
<td>0.41</td>
</tr>
<tr>
<td>Market KIS</td>
<td><strong>0.62</strong></td>
<td><strong>0.53</strong></td>
</tr>
<tr>
<td>Financial KIS</td>
<td><strong>0.81</strong></td>
<td><strong>0.79</strong></td>
</tr>
<tr>
<td>Other KIS (culture, health, media)</td>
<td>0.57</td>
<td>0.47</td>
</tr>
</tbody>
</table>

The Gini index is a measure of how concentrated an industry is: perfectly concentrated among spatial units if Gini = 1 and perfectly dispersed if Gini = 0
### Employment relocations by sectors, 1994 -2005

<table>
<thead>
<tr>
<th>Economic sectors</th>
<th>City In</th>
<th>City Out</th>
<th>Urban Area In</th>
<th>Urban Area Out</th>
<th>Suburban Area In</th>
<th>Suburban Area Out</th>
<th>South In</th>
<th>South Out</th>
<th>Commuter Area In</th>
<th>Commuter Area Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>High- and medium-high-tech industries</td>
<td>0</td>
<td>58</td>
<td>161</td>
<td>0</td>
<td>19</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>122</td>
</tr>
<tr>
<td>High-tech KIS</td>
<td>428</td>
<td>747</td>
<td>748</td>
<td>362</td>
<td>200</td>
<td>250</td>
<td>81</td>
<td>43</td>
<td>52</td>
<td>107</td>
</tr>
<tr>
<td>Market KIS</td>
<td>3772</td>
<td>2127</td>
<td>2639</td>
<td>2427</td>
<td>1294</td>
<td>2060</td>
<td>869</td>
<td>722</td>
<td>254</td>
<td>1492</td>
</tr>
<tr>
<td>Financial KIS</td>
<td>518</td>
<td>1051</td>
<td>935</td>
<td>501</td>
<td>90</td>
<td>23</td>
<td>20</td>
<td>6</td>
<td>35</td>
<td>17</td>
</tr>
<tr>
<td>Other KIS (culture, health, media)</td>
<td>86</td>
<td>134</td>
<td>69</td>
<td>51</td>
<td>90</td>
<td>51</td>
<td>22</td>
<td>18</td>
<td>23</td>
<td>36</td>
</tr>
</tbody>
</table>

- **Important centripetal movements**
  High-tech industries and services moved from the periphery to the urban area
  Market KIS moved from the periphery to the City

- **Limited centrifugal relocations**
  Financial KIS moved from the City to the urban area

→ **Concentration of High-Tech and KIS in the urban agglomeration**
High-Tech and KIS workers are spread on the whole cross-border area

- The density is particularly high around the City and the South Area in Luxembourg
- Cross-border High-Tech and KIS workers live in small and medium size cities
- Border effects (in green)
IV. Conclusion

1. The city center benefited from a sectoral specialization in high-tech, market and other business-intensive services, as in London (Sassen 2001, Taylor et al. 2003), Paris (Halbert 2004) or Montreal (Coffey, Shearmur 2002)

2. Luxembourg is concerned by a process of employment deconcentration but the City remains by far the main employment pole in the country

3. Luxembourg can be considered as a city-region in which knowledge-intensive services are determining the development path (cf. Frankfurt, Copenhagen, Milan) (Krätke 2007)

Building a cross-border institutional framework…

→ Unlike other European metropolitan centers (Geneva, Basel, Lille), there is still no cross-border metropolitan governance in Luxembourg
Acknowledgements

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More information are available here: http://metrolux.ceps.lu/

