COUNTRY SPECIALISATION REPORT

Country: Croatia
Date: June 2006

ERAWATCH Network asbl: Project team: NIFU STEP, University of Sussex (SPRU), Joanneum Research, Logotech, FhG-ISI

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COUNTRY SPECIALISATION REPORT - CROATIA

MAIN FINDINGS

Croatia is one of the countries with little information available regarding technological and scientific specialisation and also marginal information regarding economic specialisation expressed by value added, employment and exports. This restriction on the availability of data creates leads to a presentation of a very fragmented picture for the country.

During 2003, basic research accounted for the largest share of BERD, with 36.4% share which is one of the largest in the EU. Despite that there is no long range data for GERD by type of research (Figure 2), the fact that basic research accounts for the largest share of GERD is perhaps unique in the EU.

In addition, the research and development sector in Croatia accounted for almost three quarters (73.5%) of business enterprise intramural expenditure on R&D during 2003 (Figure 6), while the IT services accounted also for a large share (14.3%).

Government funding of business enterprise intramural expenditure in Croatia is concentrated in only four sectors, with research and development and other business activities receiving the bulk (92.5%) of the funding. In terms of scientific specialisation (Figure 9), Croatia exhibits strong specialisation in social sciences and it is also specialised in agriculture, chemistry, physics, microbiology and pharmacology. However, if we also observe the citation profile (Figure 11) of Croatia, a clearer picture emerges with strong specialisation in natural sciences including mathematics.

Finally, in terms of exports (Figure 18), Croatia exhibits a specialisation profile in several low R&D intensity sectors such as furniture, shipbuilding, textiles and electrical machinery. This profile does not change over the 1993-2003 period since Croatia became specialised during this time in sectors such as agriculture, mining and non metallic mineral products that are also of low R&D intensity.
MAIN R&D FIGURES – TOTAL R&D EXPENDITURE

Figure 1. R&D expenditure by performing sector as per cent of GDP (left axis). GDP in million Euros (right axis). Croatia. 1993-2003.

Not Available


Not Available

Figure 2. GERD by type of research. Croatia. 2002 and 2003

Source: Eurostat Database, S & T Data, 2005
PUBLIC R&D STATISTICS

GBAORD by socioeconomic objective


Not Available

HERD by field of science

Figure 4. Expenditure on R&D in the Higher Education Sector (HERD) by field of science. Croatia. 2000 and 2001. Per cent of total HERD and in million Euro.

Not Available


Not Available
BUSINESS ENTERPRISE INTRAMURAL EXPENDITURE ON R&D (BERD)

Figure 6. Business enterprise intramural expenditure on R&D by industrial sector. 31 sectors. Shares. Croatia. 2003
Figure 7. Shares of Business enterprise intramural expenditure on R&D (BERD) in the sectors funded by government.

Not Available

Figure 8. Shares of total government funding of Business enterprise intramural expenditure on R&D (BERD) by industrial sectors. 2003

Source: Eurostat Database, S & T Data, 2005, own calculations
BIBLIOMETRICS


*Figure 10. Shares of total publications by scientific field. 25 Scientific fields. Croatia. 1993 and 2003.*


PATENTS


Not available


Not available

ECONOMIC SPECIALISATION


Not available


Not available

Source: OECD, STAN, 2005.


Not available


Figure 17. Shares of total employment by industrial sector. 34 sectors. Croatia. 1993 and 2003. Numbers engaged – hundreds.

Not available

Source: OECD, STAN, 2005.


CORRELATION ANALYSIS


Not available

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).
Figure 20. BERD versus Value added specialisation in the primary and secondary industrial sectors. Croatia. Based on average values 2001-2003.

Not Available

Notes: Specialisation index with EU15 as reference. Max specialisation: +100. Min. specialisation: -100.
Source: Own calculations

Figure 21. BERD versus Value added in services. Specialisation indexes. Croatia. Based on average values 2001-2003.

Not Available

Notes: Specialisation index with EU15 as reference. Max specialisation: +100. Min. specialisation: -100.
Source: Own calculations

Figure 22. BERD versus patents. Specialisation indexes. Croatia. Based on average values 2001-2003.

Not Available

Notes: Specialisation index with EU15 as reference. Max specialisation: +100. Min. specialisation: -100.
Source: Own calculations

Figure 23. BERD versus exports. Specialisation indexes. Croatia. Based on average values 2001-2003.

Not Available

Notes: Specialisation index with EU15 as reference. Max specialisation: +100. Min. specialisation: -100.
Source: Own calculations
### Table 3: Specialisation Profile

<table>
<thead>
<tr>
<th>Areas of specialisation</th>
<th>Fast growing sectors &gt;4.9%</th>
<th>Medium-Low growth sectors =&lt;4.9%</th>
<th>Declining sectors &lt;0</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Increase Specialisation</td>
<td>Stable Specialisation</td>
<td>Losing Specialisation</td>
</tr>
<tr>
<td>Specialisation BERD</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Specialisation Patents</td>
<td></td>
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<tr>
<td>Specialisation Value Added</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialisation Employment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialisation Exports</td>
<td>23;</td>
<td>2423;</td>
<td>01-05; 10-14; 15-16; 26; 351; 36</td>
</tr>
</tbody>
</table>

Red numbers: Decrease specialisation from specialised to non specialised
Blue numbers: Increase specialisation from non specialised to specialised
**EXPLANATORY NOTES**

**ISIC v3 codes and sector description**

<table>
<thead>
<tr>
<th>Sector</th>
<th>ISIC Code(s)</th>
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<tbody>
<tr>
<td>Agriculture</td>
<td>01-05</td>
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<tr>
<td>Mining</td>
<td>10-14</td>
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<tr>
<td>Food</td>
<td>15-16</td>
</tr>
<tr>
<td>Textiles</td>
<td>17-19</td>
</tr>
<tr>
<td>Food &amp; Publishing</td>
<td>20-22</td>
</tr>
<tr>
<td>Petroleum</td>
<td>23</td>
</tr>
<tr>
<td>Chemicals excluding pharmaceuticals</td>
<td>24ex2423</td>
</tr>
<tr>
<td>Pharmaceuticals</td>
<td>2423</td>
</tr>
<tr>
<td>Plastics</td>
<td>25</td>
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<tr>
<td>Non-metallic minerals</td>
<td>26</td>
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<tr>
<td>Basic metals</td>
<td>27</td>
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<tr>
<td>Fabricated metals</td>
<td>28</td>
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<tr>
<td>Machinery nec</td>
<td>29</td>
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<tr>
<td>Office machinery</td>
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<tr>
<td>Electrical mach.</td>
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<td>Instruments</td>
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<td>Motor vehicles</td>
<td>34</td>
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<td>Ships</td>
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<tr>
<td>Aerospace</td>
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<td>Transport nec</td>
<td>352+359</td>
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<td>Furniture &amp; recycling</td>
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<tr>
<td>Construction</td>
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<td>Trade</td>
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<td>Hotels</td>
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<td>Transport</td>
<td>60-63</td>
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<td>Financial intermediation</td>
<td>65-67</td>
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<tr>
<td>IT services</td>
<td>72</td>
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<tr>
<td>R &amp; D</td>
<td>73</td>
</tr>
<tr>
<td>Other Business activities</td>
<td>74</td>
</tr>
<tr>
<td>Community services</td>
<td>75-99</td>
</tr>
</tbody>
</table>
How to read specialisation profile figures

Plotting specialisation indexes against each other is a method for visualising differences in specialisation patterns. The most interesting analytical dimension in this report is comparing business enterprise intramural R&D expenditure specialisation patterns with specialisation patterns in value added, employment, exports and technological specialisation (patents). The result of the plots is four distinct specialisation quadrants showing:

1. Sectors with **neither specialisation in BERD nor in the other analytical dimension** (lower left quadrant)
2. Sectors with **a specialisation in BERD and in the other analytical dimension** (upper right quadrant)
3. Sectors with **a specialisation in BERD but none in the other analytical dimension** (lower right quadrant)
4. Sectors that display a **specialisation in the other analytical dimension but not in BERD** (upper left quadrant)

If there is a good match between BERD and, say, value added specialisation patterns we expect to find all sectors either in the lower left or in the upper right quadrant. Sectors in the upper left or in the lower right of the graphs indicate anomalies, that is, specialisation in one dimension and non-specialisation in the other. If there are many sectors in these quadrants the graph indicates lack of correlation between BERD and, say, economic specialisation.

*Figure 24: BERD and Value Added specialisation – an example*