



COUNTRY SPECIALISATION REPORT

Country: Latvia

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COUNTRY SPECIALISATION REPORT - LATVIA

MAIN FINDINGS

Latvia is one of the countries with little information available regarding technological and scientific specialisation, but with enough information regarding economic specialisation expressed by value added, employment and exports. This restriction on the availability of data creates difficulties in presenting a coherent profile of the country thus the analysis will be based on the available data.

By examining GERD by type of research (Figure 2) in Latvia over the 2000-2003 period it appears that the share of basic research remained stable while there was a redistribution of shares between applied and experimental research. During 2003, the share of applied research reached 45.1%, while experimental research declined to 22.8%.

Moreover during 2001, two services sectors accounted for over three quarters of BERD. These sectors were the research and development sectors (54.1%) and the other business activities (22.9%). In addition, chemicals (6.8%) and pharmaceuticals (5.8%) were the only two manufacturing sectors with relative high shares in BERD.

In terms of scientific specialisation (Figure 9), Latvia appears highly specialised in a limited number of scientific fields in the natural sciences, i.e. physics, materials, engineering and chemistry, while it is under-specialised in all scientific fields of social sciences. A similar specialisation pattern can be observed in the patenting activities (Figure 12), where again Latvia is specialised in a small number of sectors, basic metals, pharmaceuticals, chemicals and food.

Latvia's economic profile is again that of strengths in a limited number of sectors which are specialised at the same time, particularly for manufacturing, in value added, employment and exports. These sectors are furniture and transport equipment, shipbuilding, wood and publishing, textiles, wood and agriculture. In the services sector, Latvia is specialised in telecommunications and transportation services.

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).Latvia. 1993-2003.

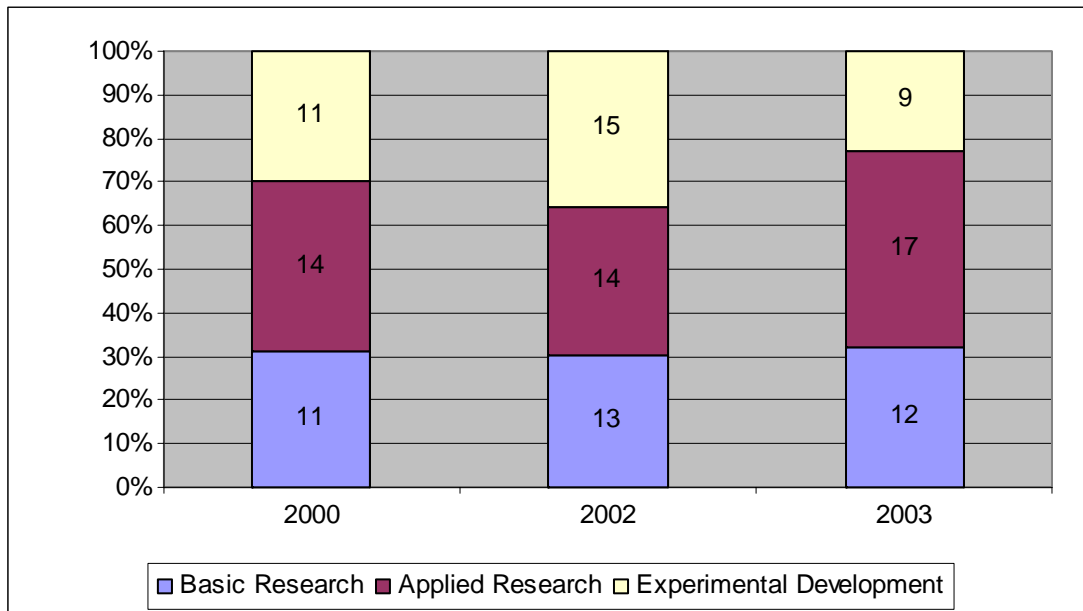
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Table 1. R&D expenditure by sector of performance and source of funds . Latvia. 1993 and 2002. Million Euros. Current prices.

Not Available

Source: OECD OFFBERD 2005

Figure 2. GERD by type of research. Latvia. 2000, 2002,2003



Source: Eurostat Database, S & T Data, 2005

PUBLIC R&D STATISTICS

GBAORD by socioeconomic objective

Figure 3. Government Budget Appropriations or Outlays for R&D (GBAORD) by socio-economic objective. Specialisation profile. Latvia. 1993 and 2003.

Not Available

*Notes: Specialisation index with EU15 as reference. Max specialisation: + 100. Min. specialisation: -100.
Source: OECD Basic Science and Technology Statistics 2005, own calculations.*

HERD by field of science

Figure 4. Expenditure on R&D in the Higher Education Sector (HERD) by field of science. Latvia. 1993, 1998 and 2002. Per cent of total HERD and in million Euro.

Not Available

Source: OECD Basic Science and Technology Statistics 2005.

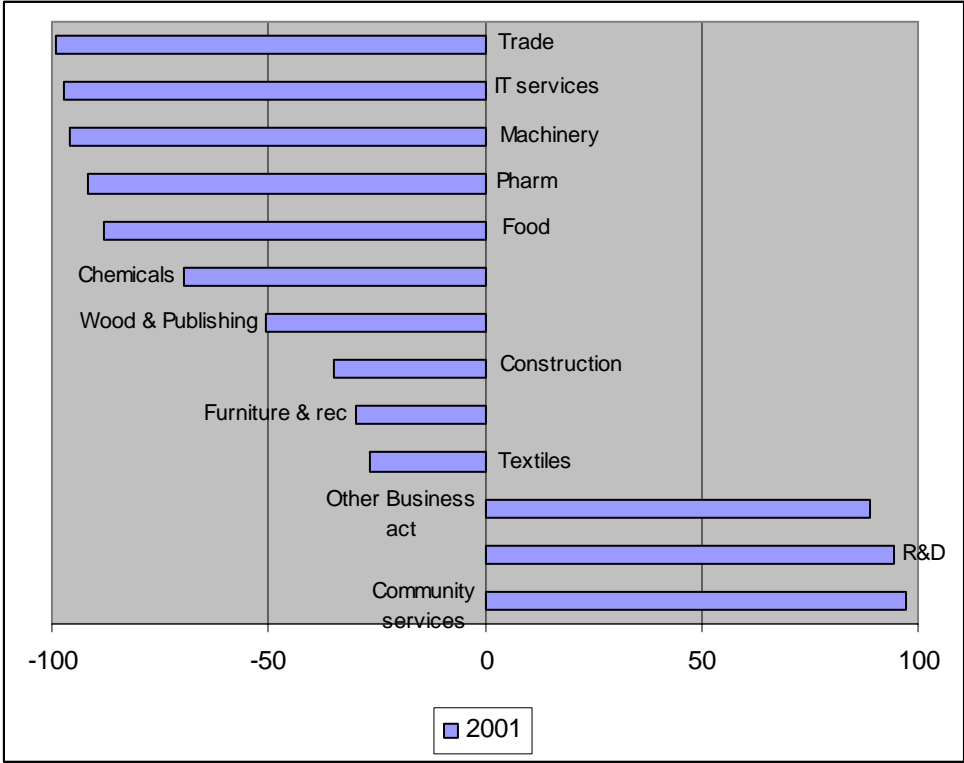
Figure 5. Expenditure on R&D in the Government sector (GOVERD) by field of science. Specialisation profile. Latvia. 1993, 1998 and 2002.

Not Available

Source: OECD Basic Science and Technology Statistics 2005

BUSINESS ENTERPRISE INTRAMURAL EXPENDITURE ON R&D (BERD)

Figure 6. Business enterprise intramural expenditure on R&D by industrial sector. Specialisation profile. Latvia. Available year 2001.



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

Figure 7. Shares of Business enterprise intramural expenditure on R&D (BERD) in the sectors funded by government. 2002 last available year in OECD statistics.

Not Available

Source:OECD Basic Science and Technology Statistics 2005, own calculations

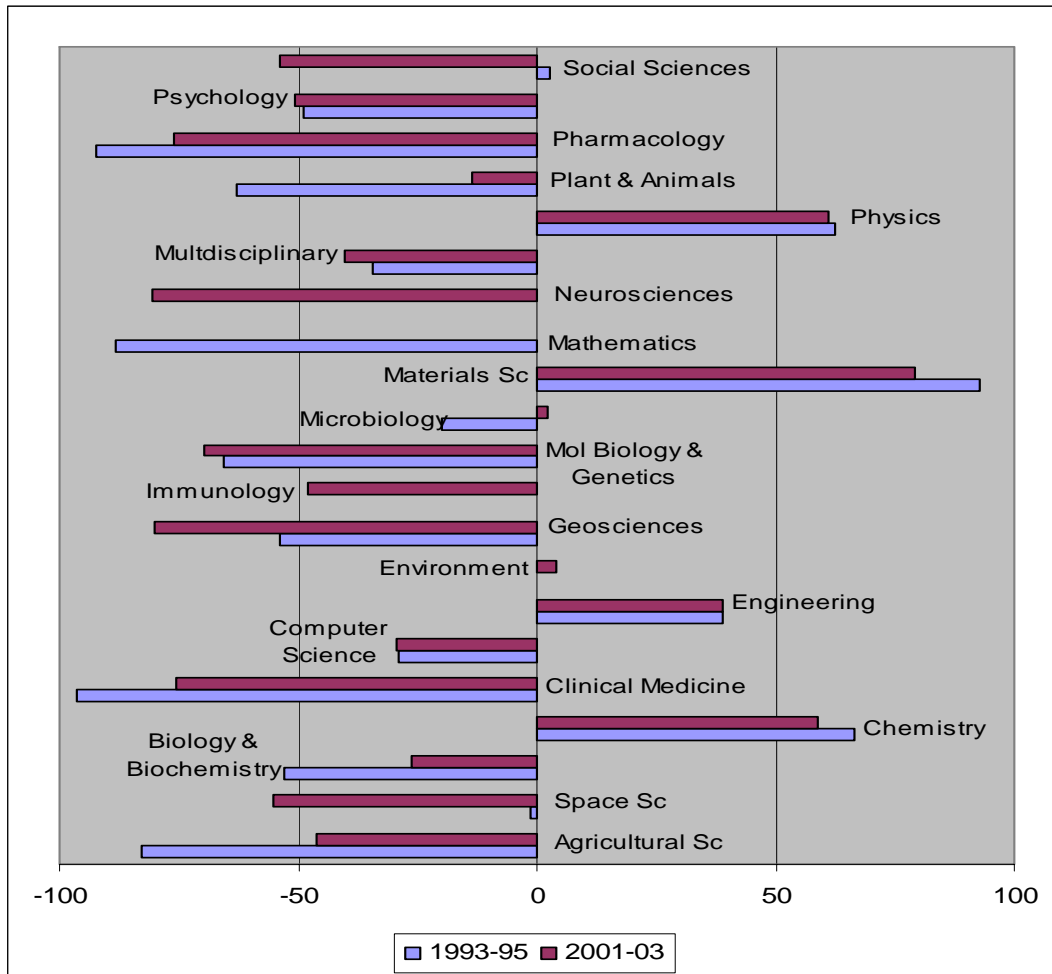
Figure 8. Shares of total government funding of Business enterprise intramural expenditure on R&D (BERD) by industrial sectors. 2002 last available year in OECD statistics.

Not Available

Source: OECD Basic Science and Technology Statistics 2005, own calculations

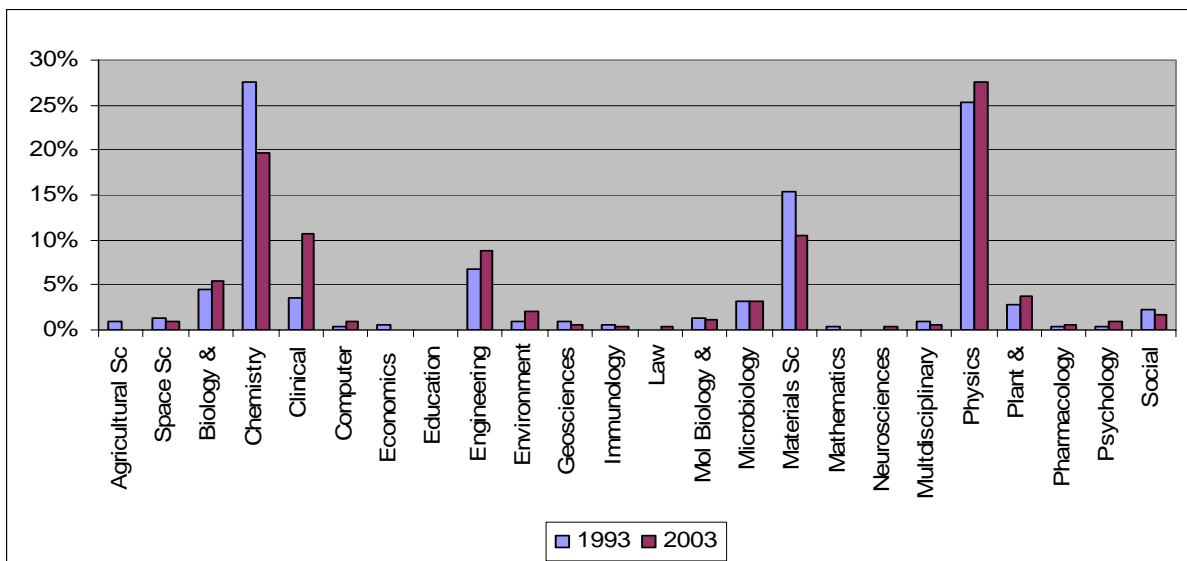
BIBLIOMETRICS

Figure 9. Number of publications by scientific field. 25 Scientific fields. Specialisation profile. Latvia. Averages 1993-1995 and 2001-2003.



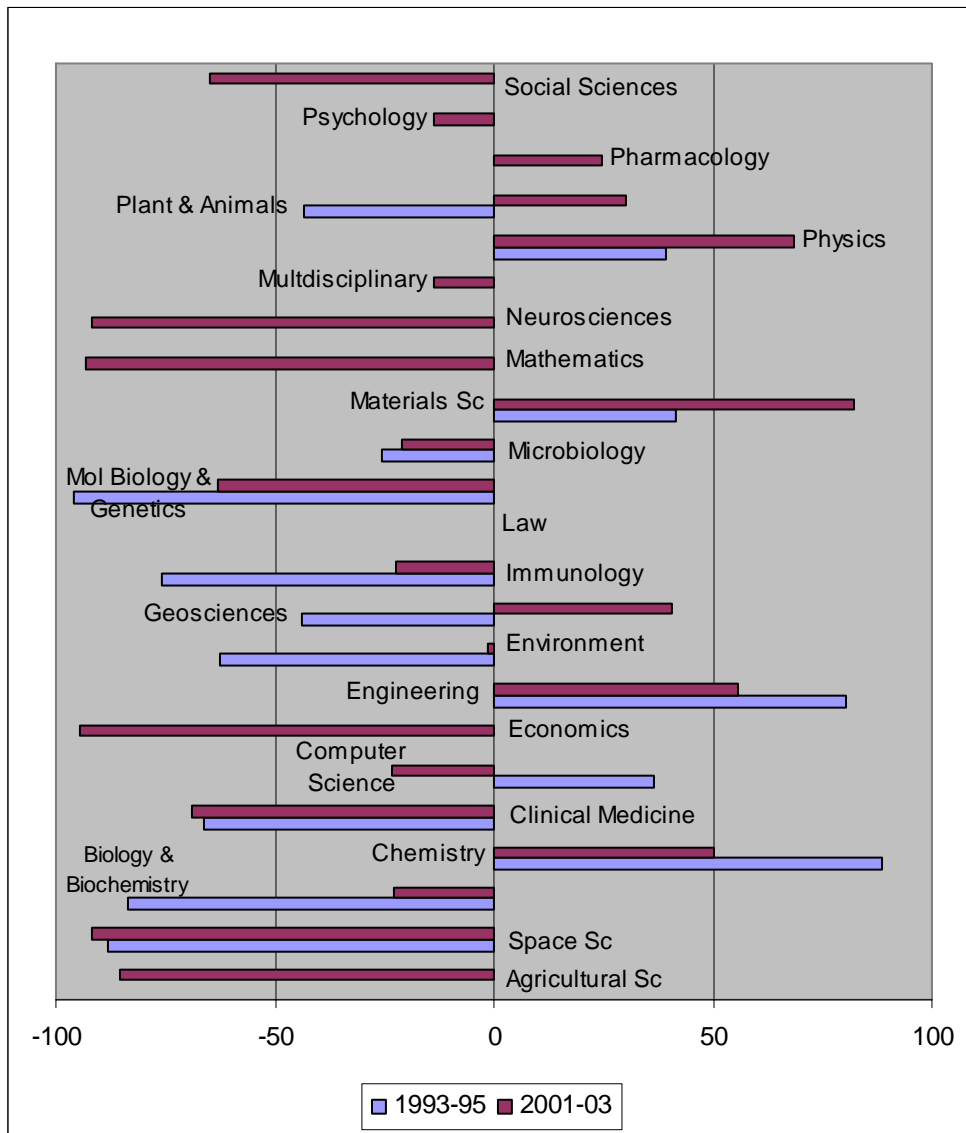
Notes: Specialisation index with EU15 as reference. Max specialisation: + 100. Min. specialisation: -100. Source: Thomson ISI, NSIODE 2005, own calculations.

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



Source: Thomson ISI, NSIODE 2005.

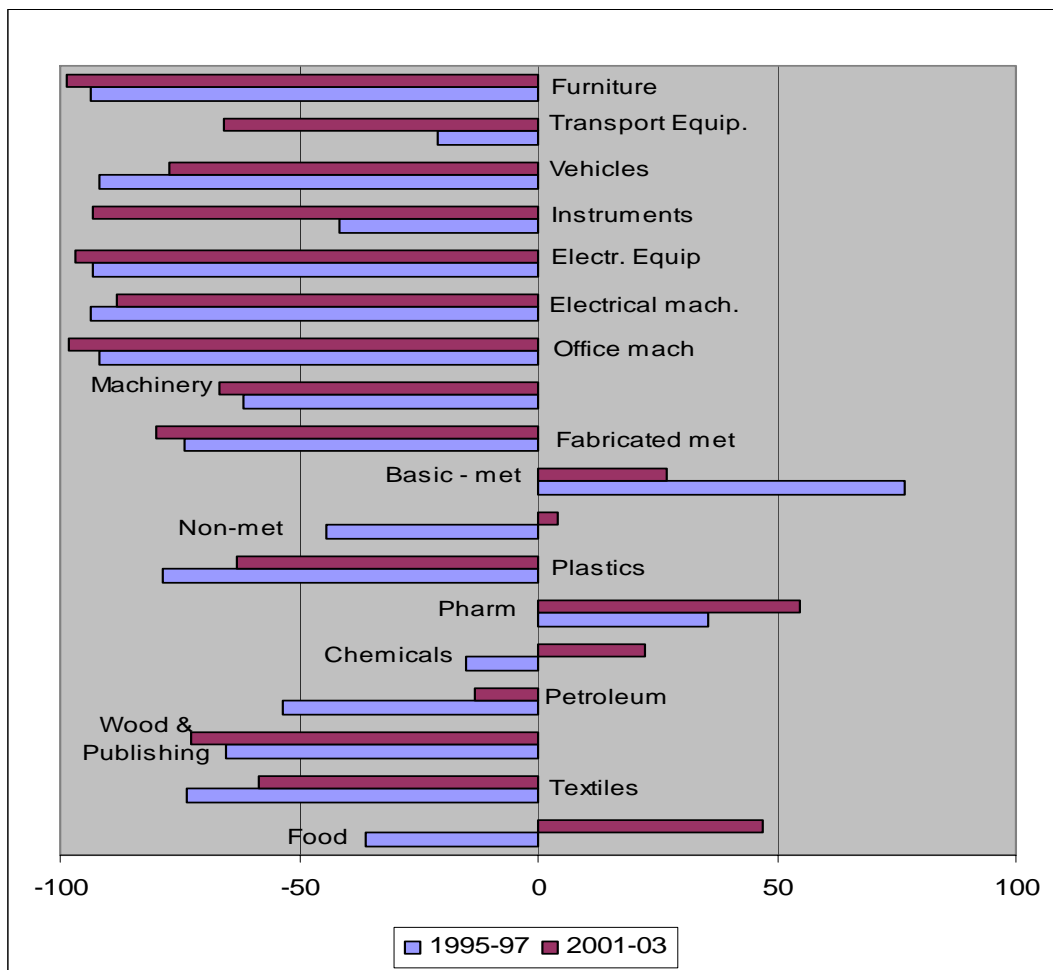
Figure 11. Number of citations by scientific field. 25 scientific fields. Specialisation profile. Latvia. Averages 1993-1995 and 2001-2003. Five years citation window. (i.e. citations to papers published in the period 1989-1991 and in the period 1997-1999).



Notes: Specialisation index with EU15 as reference. Max specialisation: + 100. Min. specialisation: -100.
 Source: Thomson ISI, NSIODE 2005, own calculations.

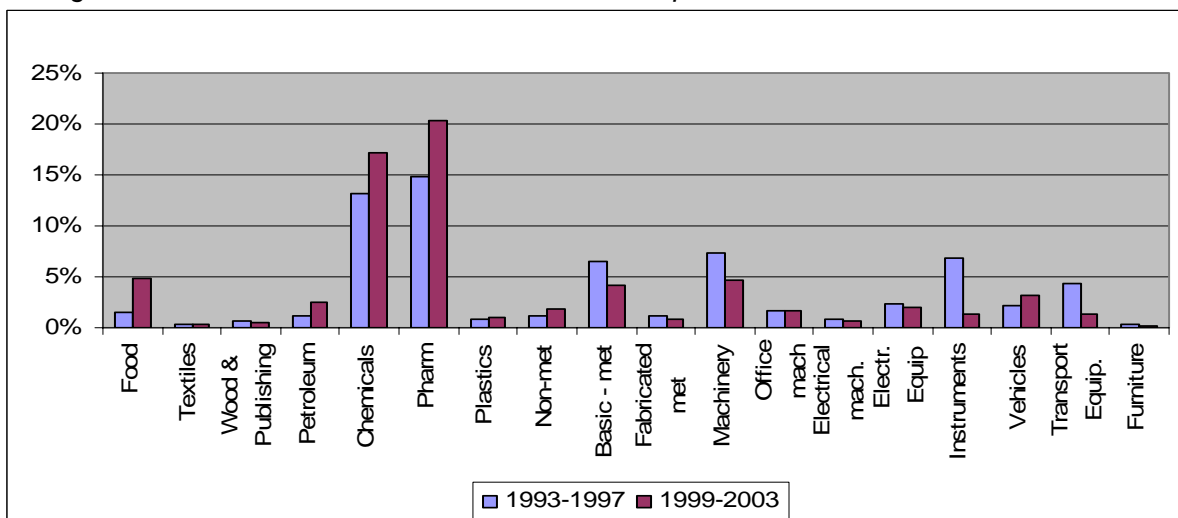
PATENTS

Figure 12. Number of patents by industrial sector. 18 sectors in manufacturing. Specialisation profile. Latvia. Averages 1995-1997 and 2001-2003. Based on correspondence matrix ISI-SPRU-OST.



Notes: Specialisation index with EU15 as reference. Max specialisation: + 100. Min. specialisation: -100. Source: European Patent Office 2005, own calculations.

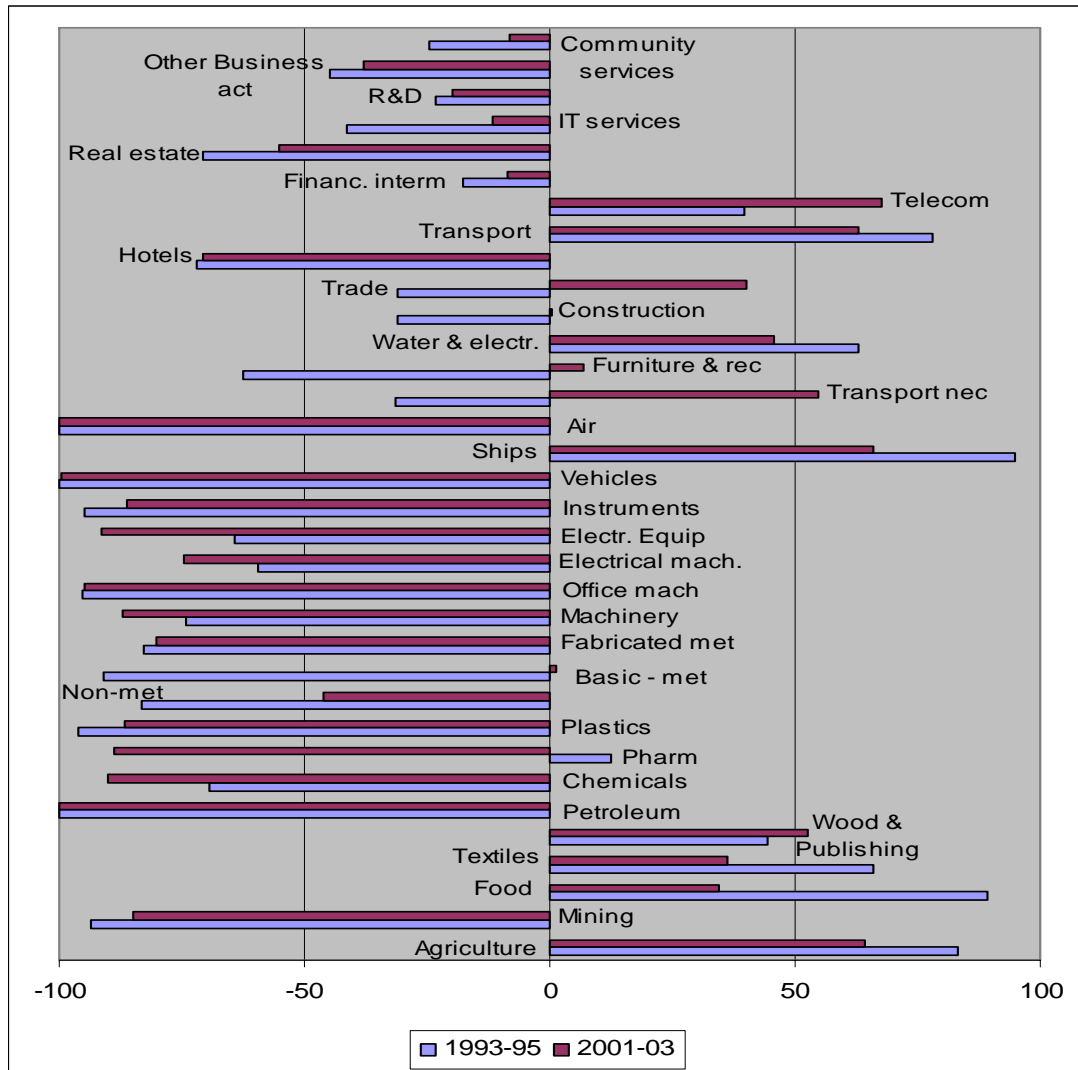
Figure 13. Shares of total patents by industrial sector. 18 sectors in manufacturing. Latvia. Averages 1993-1997 and 1999-2003. Based on correspondence matrix ISI-SPRU-OST.



Notes: Specialisation index with EU15 as reference. Max specialisation: + 100. Min. specialisation: -100. Source: European Patent Office 2005, own calculations.

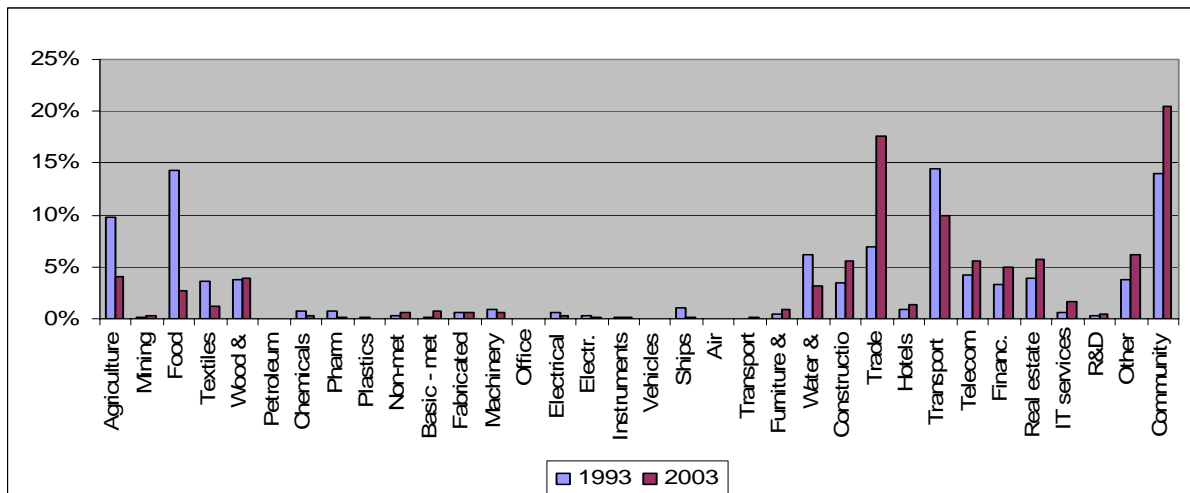
ECONOMIC SPECIALISATION

Figure 14. Value added by industrial sector. 34 sectors. Specialisation profile. Latvia. Averages 1993-1995 and 2001-2003. Million Euros. Current prices.



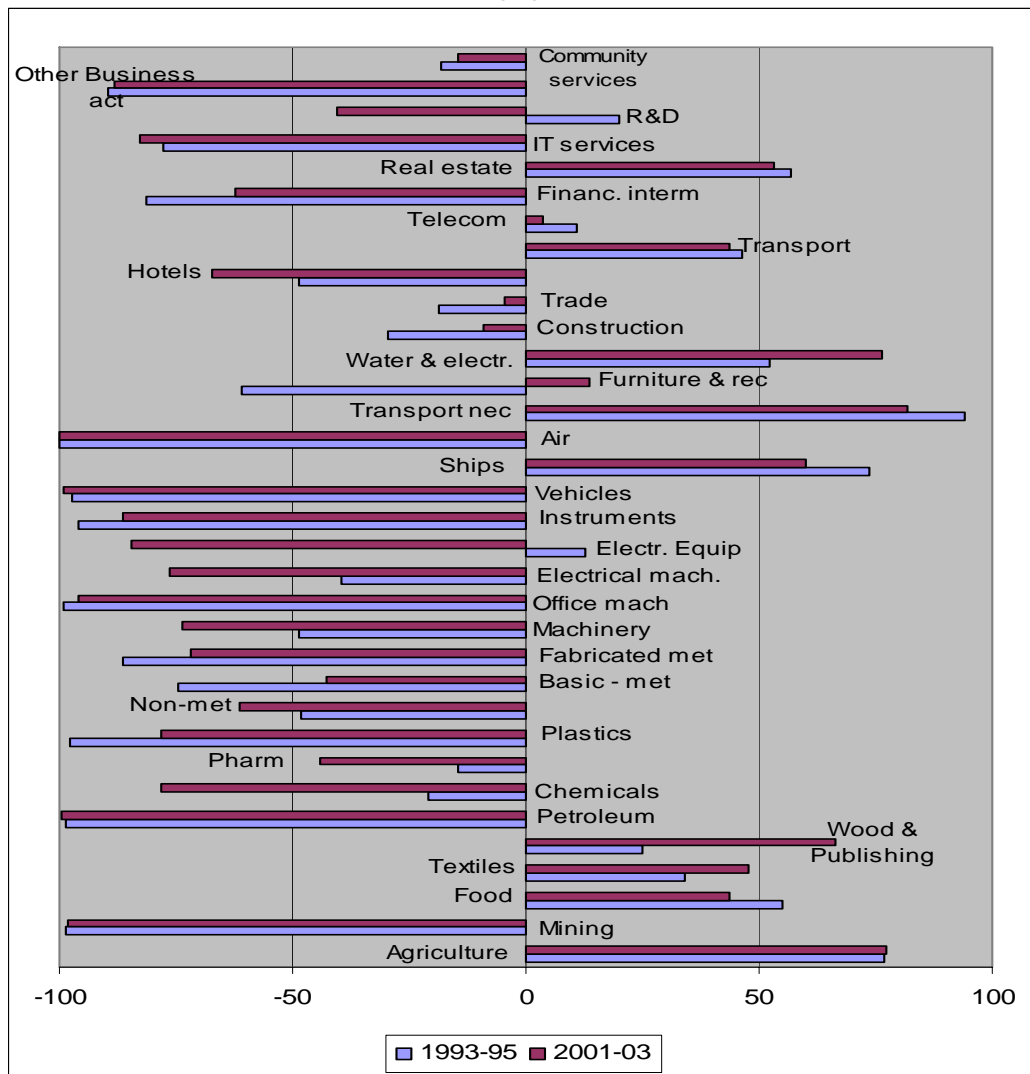
Notes: Specialisation index with EU15 as reference. Max specialisation: + 100. Min. specialisation: -100. Source: OECD, STAN 2005, own calculations.

Figure 15. Shares of total value added by industrial sector. 34 sectors. Latvia. 1993 and 2003. Million Euros. Current prices.



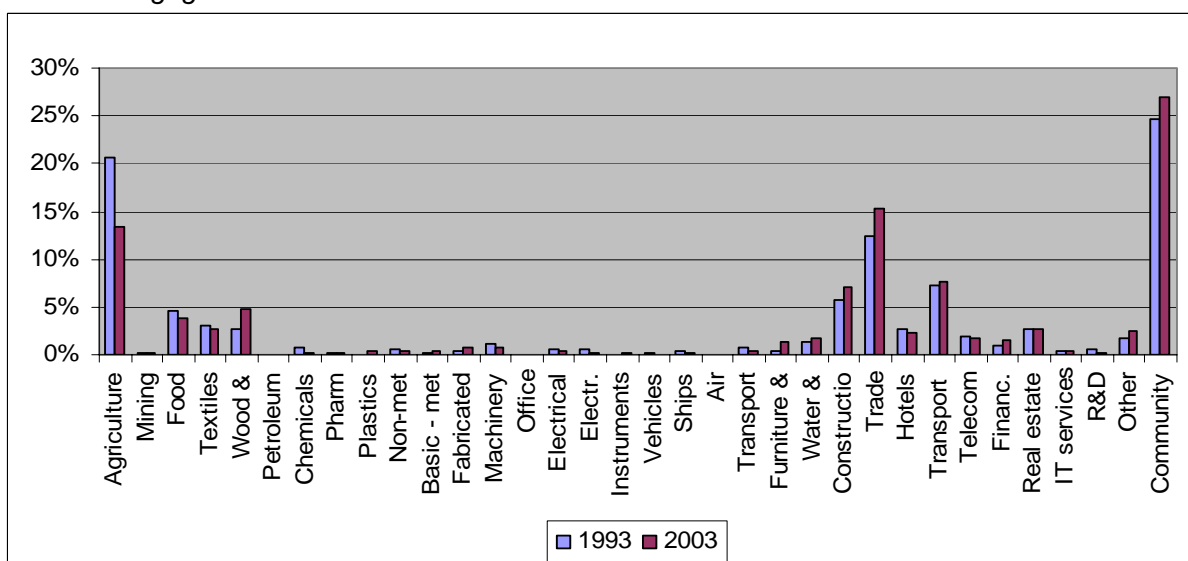
Source: OECD, STAN, 2005.

Figure 16. Employment by industrial sector. Specialisation profile. Latvia. 34 sectors. Averages 1993-1995 and 2001-2003. Numbers engaged – hundreds.



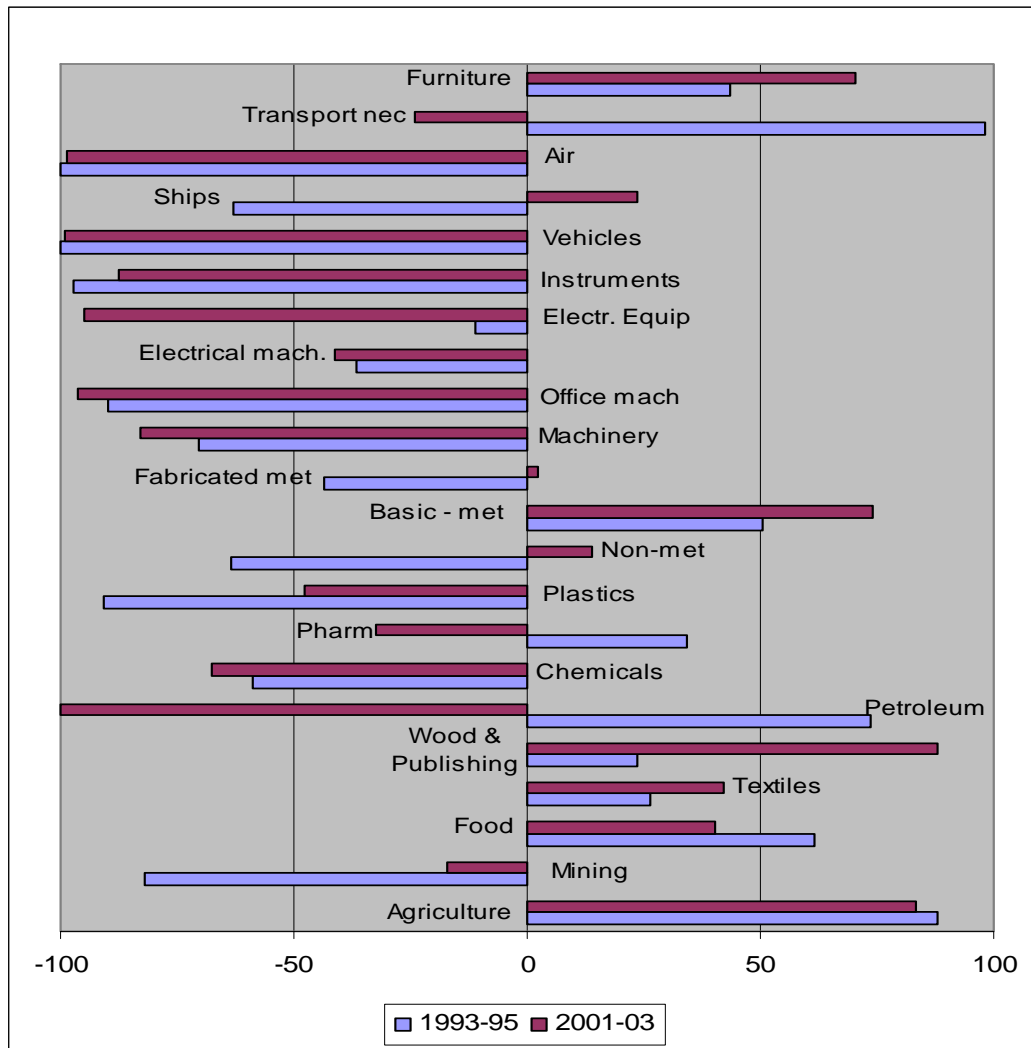
Notes: Specialisation index with EU15 as reference. Max specialisation: + 100. Min. specialisation: -100. Source: OECD, STAN, 2005, own calculations.

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



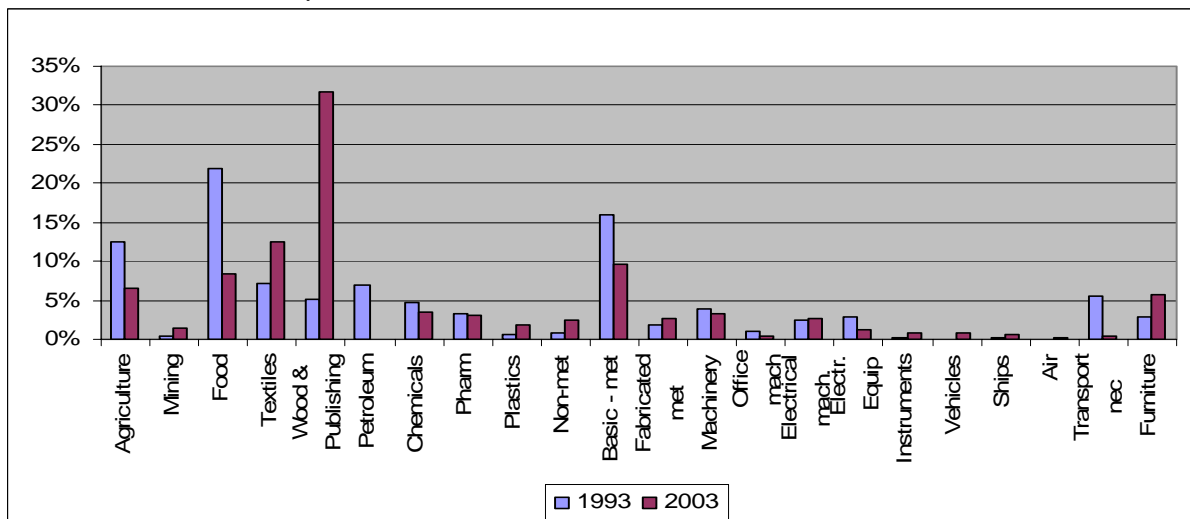
Source: OECD, STAN, 2005.

Figure 18. Exports by industrial sector. Specialisation profile. Latvia. 34 sectors. Averages 1993-1995 and 2001-2003. Thousand USD. Current prices.



Notes: Specialisation index with EU15 as reference. Max specialisation: + 100. Min. specialisation: -100.
Source: UNIDO, INDSTAT4 2005, ISIC Rev3 and COMTRADE 2005, own calculations.

Figure 19. Shares of total exports by industrial sector. 34 sectors. Latvia. 1993 and 2003. Thousand USD. Current prices.



Source: UNIDO, INDSTAT4 2005, ISIC Rev3 and COMTRADE 2005, own calculations.

CORRELATION ANALYSIS

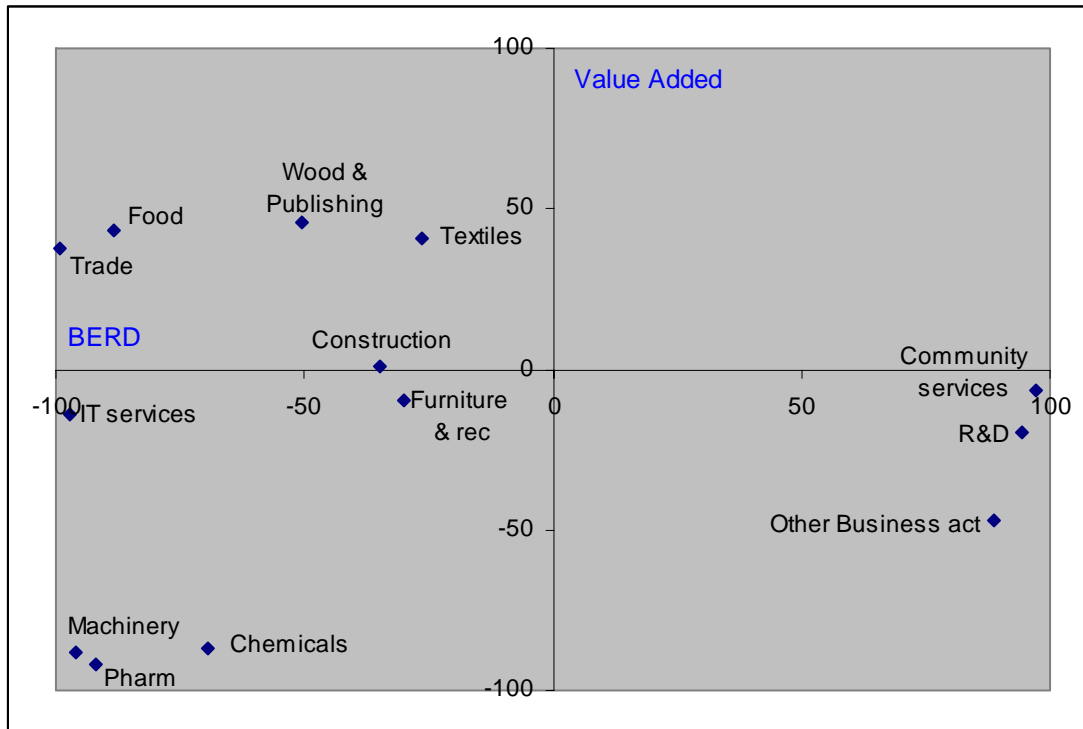
Table 2. Correlation analysis. Specialisaion indexes BERD, Value added, Employment, Exports and patents. Latvia. Averages 1993-1995 and 2001-2003.

		LV_BERD01	LV_PAT9597	LV_PAT0103	LV_VA9395	LV_VA0103	LV_EMP9395	LV_EMP0103	LV_EXP9395	LV_EXP0103
LV_BERD01	Pearson Correlation Sig. (2-tailed)	1 .								
LV_PAT9597	Pearson Correlation Sig. (2-tailed)	-,547 ,262	1 .							
LV_PAT0103	Pearson Correlation Sig. (2-tailed)	-,525 ,285	,790(**) ,000	1 .						
LV_VA9395	Pearson Correlation Sig. (2-tailed)	-,115 ,707	,092 ,735	,326 ,218	1 .					
LV_VA0103	Pearson Correlation Sig. (2-tailed)	,035 ,910	,213 ,429	,255 ,341	,817(**) ,000	1 .				
LV_EMP9395	Pearson Correlation Sig. (2-tailed)	-,068 ,826	,057 ,835	,297 ,265	,834(**) ,000	,753(**) ,000	1 .			
LV_EMP0103	Pearson Correlation Sig. (2-tailed)	-,099 ,748	,145 ,591	,263 ,326	,846(**) ,000	,905(**) ,000	,874(**) ,000	1 .		
LV_EXP9395	Pearson Correlation Sig. (2-tailed)	,209 ,690	,457 ,075	,560(*) ,024	,528(*) ,014	,612(**) ,003	,627(**) ,002	,650(**) ,001	1 .	
LV_EXP0103	Pearson Correlation Sig. (2-tailed)	,598 ,210	,393 ,132	,366 ,164	,681(**) ,001	,826(**) ,000	,557(**) ,009	,758(**) ,000	,531(*) ,013	1 .

** Correlation is significant at the 0.01 level (2-tailed).

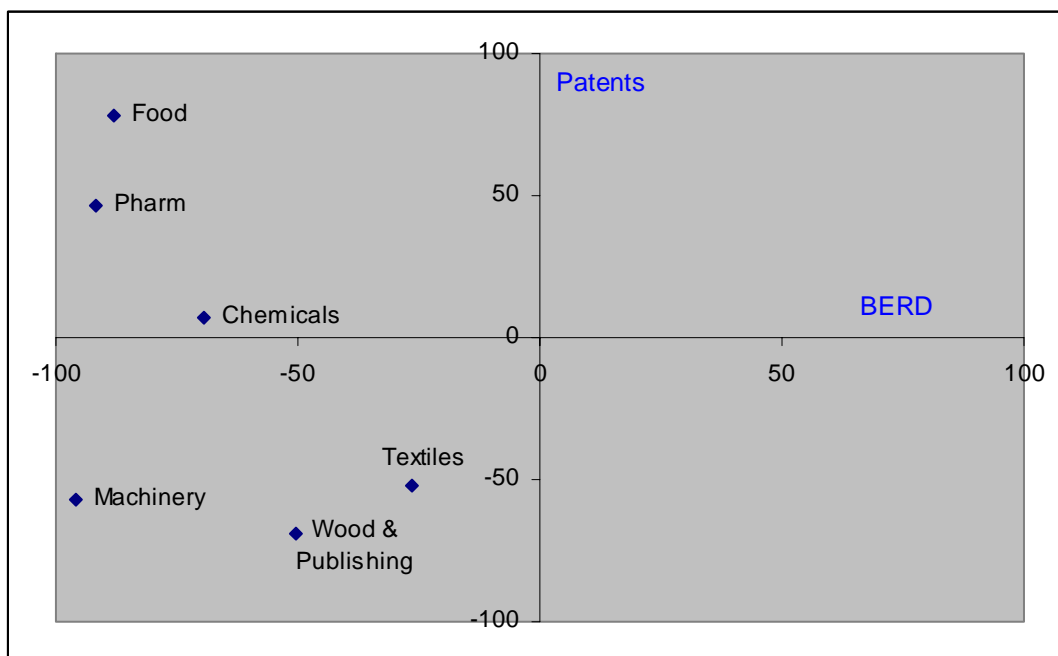
* Correlation is significant at the 0.05 level (2-tailed).

Figure 20. BERD versus Value added specialisation in all sectors. Latvia. Based on values of 2001.



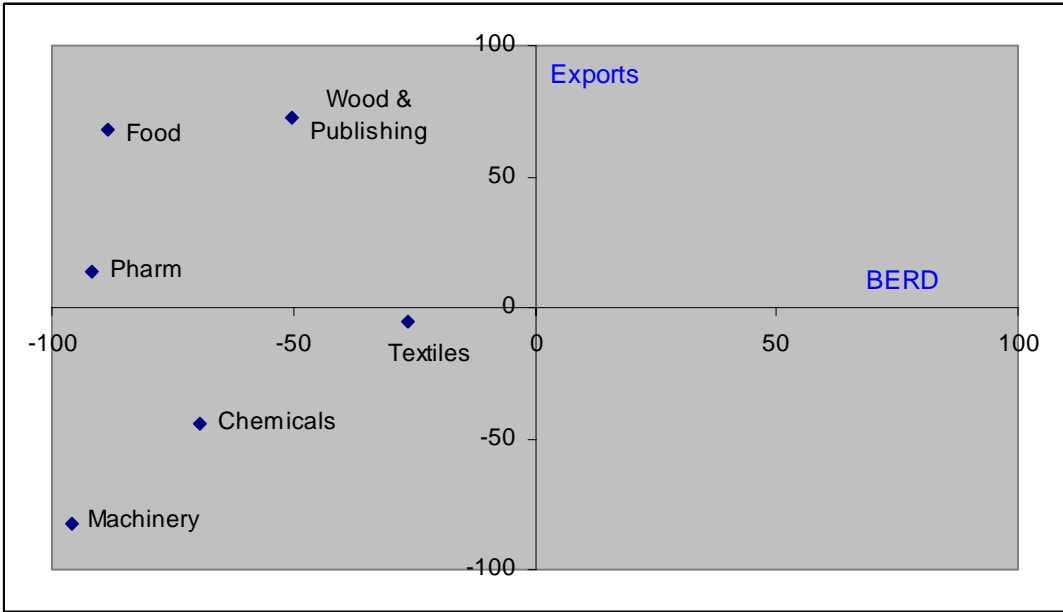
Notes: Specialisation index with EU15 as reference. Max specialisation: + 100. Min. specialisation: -100.
Source: Own calculations

Figure 21. BERD versus patents. Specialisation indexes. Latvia. Based on values of 2001.



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

Figure 22. BERD versus exports. Specialisation indexes. Latvia. Based on values of 2001.



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

Table 3: Specialisation Profile

Areas of specialisation	Fast growing sectors >4.9%			Medium-Low growth sectors = <4.9%			Declining sectors <0		
	Increase Specialisation	Stable Specialisation	Losing Specialisation	Increase Specialisation	Stable Specialisation	Losing Specialisation	Increase Specialisation	Stable Specialisation	Losing Specialisation
Specialisation BERD									
Specialisation Patents	2423;			15-16;24ex2423; 26;		27;			
Specialisation Value Added	352+359; 45; 50-52;		2423; 60-63;	20-22; 27; 36-37; 64;		01-05; 15-16;351; 40-41;			17-19
Specialisation Employment		60-63;	352+359; 73;	20-22; 36-37; 40-41;	01-05; 70-71;	15-16; 32; 351; 64;	17-19;		
Specialisation Exports			23; 2423; 352+359;	20-22; 26; 27; 28; 351; 36	01-05;	15-16;	17-19;		

Red numbers: Decrease specialisation from specialised to non specialised

Blue numbers: Increase specialisation from non specialised to specialised

Note: Specialization BERD is not presented due to unavailability of time series data.

EXPLANATORY NOTES

ISIC v3 codes and sector description

Agriculture	01-05
Mining	10-14
Food	15-16
Textiles	17-19
Wood & Publishing	20-22
Petroleum	23
Chemicals excluding pharmaceuticals	24ex2423
Pharmaceuticals	2423
Plastics	25
Non-metal minerals	26
Basic metals	27
Fabricated metals	28
Machinery nec	29
Office machinery	30
Electrical mach.	31
Electronic equip.	32
Instruments	33
Motor vehicles	34
Ships	351
Air	353
Transport nec	352+359
Furniture & recycling	36-37
Water & electr.	40-41
Construction	45
Trade	50-52
Hotels	55
Transport	60-63
Telecoms	64
Financial intermediation	65-67
IT services	72
R & D	73
Other Business activities	74
Community services	75-99

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.

BERD and Value Added specialisation – an example

