



COUNTRY SPECIALISATION REPORT

Country: Lithuania

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

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Index

COUNTRY SPECIALISATION REPORT - LITHUANIA.....	1
Main findings.....	1
Main R&D figures – Total R&D expenditure.....	2
Public R&D statistics.....	3
GBAORD by socioeconomic objective	3
HERD by field of science.....	4
Business ENTERPRISE INTRAMURAL EXPENDITURE ON R&D (BERD).....	5
Bibliometrics.....	8
Patents.....	10
Economic specialisation.....	11
Correlation analysis	1
Explanatory notes	1
ISIC v3 codes and sector description	1
How to read specialisation profile figures	2

Index of tables and figures

Table 1. R&D expenditure by sector of performance and source of funds . Lithuania. 1993 and 2002. Million Euros. Current prices.....	2
Table 2. Correlation analysis. Specialisation indexes BERD, Value added, Employment, Exports and patents. Lithuania. Averages 1993-1995 and 2001-2003.	1
Table 3: Specialisation Profile	1
Figure 1. R&D expenditure by performing sector as per cent of GDP (left axis). GDP in million Euros (right axis).Lithuania.1993-2003.	2
Figure 2. GERD by type of research. Lithuania. 1996,1998 and 2002	2
Figure 3. Government Budget Appropriations or Outlays for R&D (GBAORD) by socio-economic objective. Specialisation profile. Lithuania. 1993 and 2003.	3
Figure 4. Expenditure on R&D in the Higher Education Sector (HERD) by field of science. Lithuania. 1993, 1998 and 2002. Per cent of total HERD and in million Euro.....	4
Figure 5. Expenditure on R&D in the Government sector (GOVERD) by field of science. Specialisation profile. Lithuania. 1993, 1998 and 2002.	4
Figure 6. Business enterprise intramural expenditure on R&D by industrial sector. 31 sectors. Specialisation profile. Lithuania. Averages 1993-1995 and 2001-2003.	5
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.....	6
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.....	7
Figure 9. Number of publications by scientific field. 25 Scientific fields. Specialisation profile. Lithuania. Averages 1993-1995 and 2001-2003.....	8
Figure 10. Shares of total publications by scientific field. 25 Scientific fields. Lithuania. 1993 and 2003.	8
Figure 11. Number of citations by scientific field. 25 scientific fields. Specialisation profile. Lithuania. 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	9
Figure 12. Number of patents by industrial sector. 18 sectors in manufacturing. Specialisation profile. Lithuania. Averages 1993-1995 and 2001-2003. Based on correspondence matrix ISI-SPRU-OST.	10
Figure 13. Shares of total patents by industrial sector. 18 sectors in manufacturing. Lithuania. Averages 1993-1997 and 1999-2003. Based on correspondence matrix ISI-SPRU-OST.....	10
Figure 14. Value added by industrial sector. 34 sectors. Specialisation profile. Lithuania. Averages 1993-1995 and 2001-2003. Million Euros. Current prices.	11

Figure 15. Shares of total value added by industrial sector. 34 sectors. Lithuania. 1993 and 2003. Million Euros. Current prices..... 11

Figure 16. Employment by industrial sector. Specialisation profile. Lithuania. 34 sectors. Averages 1993-1995 and 2001-2003. Numbers engaged – hundreds. 12

Figure 17. Shares of total employment by industrial sector. 34 sectors. Lithuania. 1993 and 2003. Numbers engaged – hundreds. 12

Figure 18. Exports by industrial sector. Specialisation profile. Lithuania. 34 sectors. Averages 1993-1995 and 2001-2003. Thousand USD. Current prices. 13

Figure 19. Shares of total exports by industrial sector. 34 sectors. Lithuania. 1993 and 2003. Thousand USD. Current prices..... 13

Figure 20. BERD versus Value added specialisation in the primary and secondary industrial sectors. Lithuania. Based on average values 2001- 2003. 1

Figure 21. BERD versus Value added in services. Specialisation indexes. Lithuania. Based on average values 2001- 2003. 1

Figure 22. BERD versus patents. Specialisation indexes. Lithuania. Based on average values 2001- 2003. 1

Figure 23. BERD versus exports. Specialisation indexes. Lithuania. Based on average values 2001- 2003. 1

COUNTRY SPECIALISATION REPORT - LITHUANIA

MAIN FINDINGS

Lithuania 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 Lithuania, over the 1996-2002 period, it appears that the share of basic research remained high at one of the highest levels within the EU, namely 40.9% of GERD in 2002. During 2002, the share of applied research was 36.3%, down from 41.6% in 1996 and that of experimental research 22.8%.

With regard to scientific specialisation (Figure 9), Lithuania exhibits strong specialisation in all fields of natural sciences such as physics, mathematics, materials, engineering, computer sciences and chemistry while at the same time it is under-specialised in social sciences. Furthermore, during 2001-03 period, Lithuania's technological specialisation (Figure 12) was limited in only two sectors, that of electronic equipment and of office machinery.

The economic specialisation of Lithuania is restricted again in a limited number of sectors. In the tertiary sector the main economic activities in which Lithuania is specialised are transportations and telecommunications activities, financial intermediation and other business activities. Finally, in the primary and secondary sectors, Lithuania appears specialised in agriculture, food, textiles, petroleum, plastics, shipbuilding, transport equipment and furniture.

MAIN R&D FIGURES – TOTAL R&D EXPENDITURE

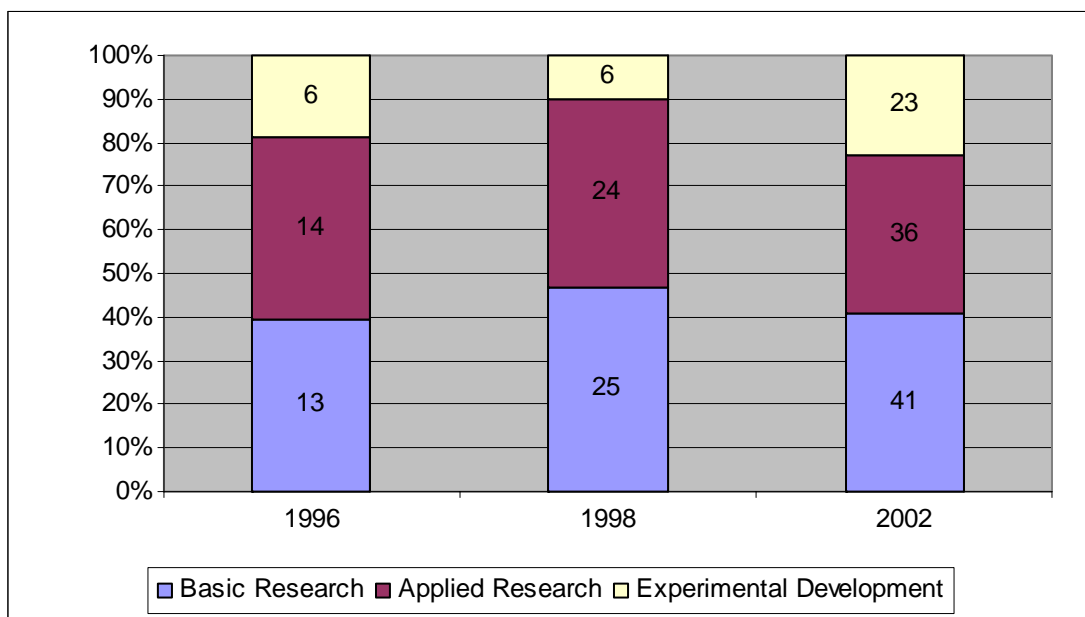
Figure 1. R&D expenditure by performing sector as per cent of GDP (left axis). GDP in million Euros (right axis).Lithuania. 1993-2003.

Not Available

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

Not Available

Figure 2. GERD by type of research. Lithuania. 1996,1998 and 2002



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. Lithuania. 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. Lithuania. 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. Lithuania. 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. 31 sectors. Specialisation profile. Lithuania. Averages 1993-1995 and 2001-2003.

Not Available

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

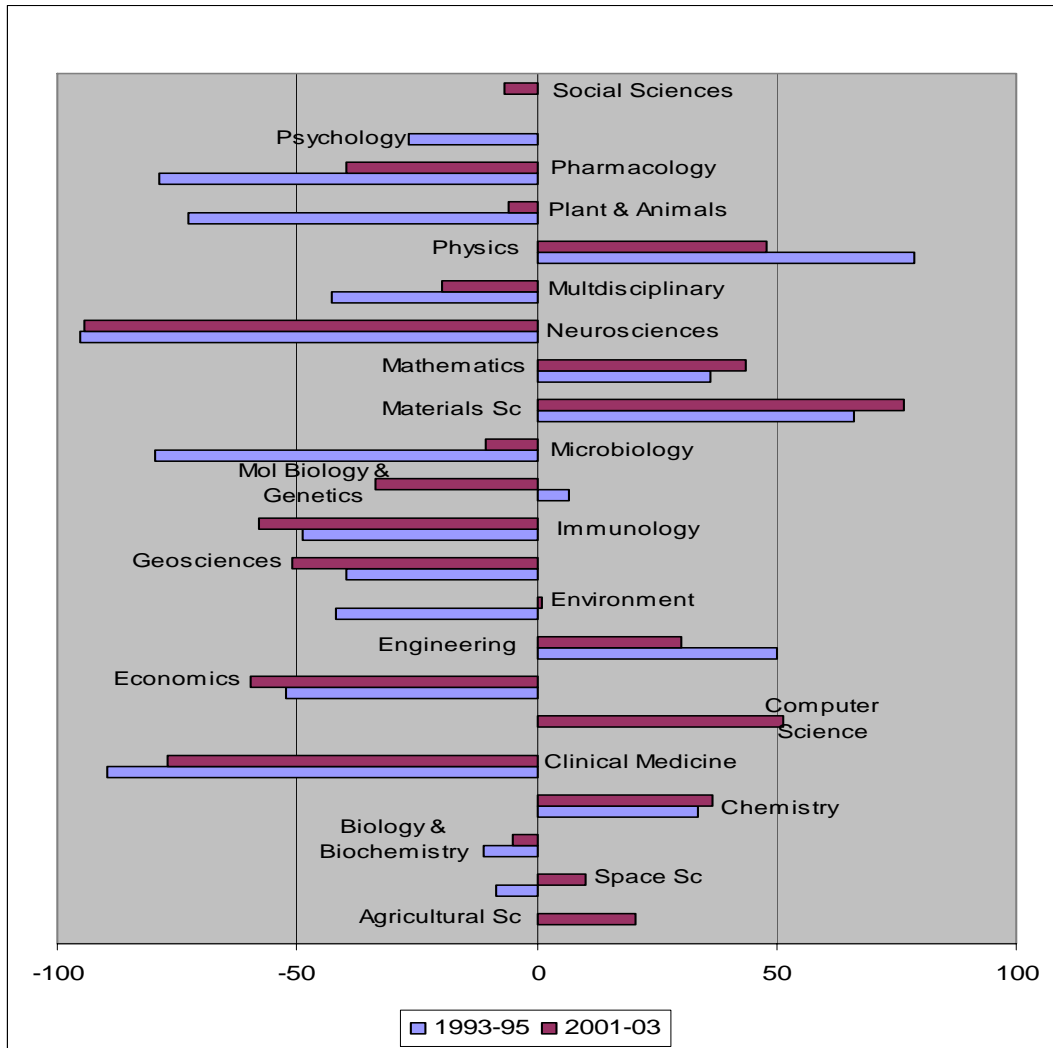
Figure 8. Shares of total government funding of Business enterprise intramural expenditure on R&D (BERD) by industrial sectors. 2002 last available year in OECD statistics.

Not Available

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

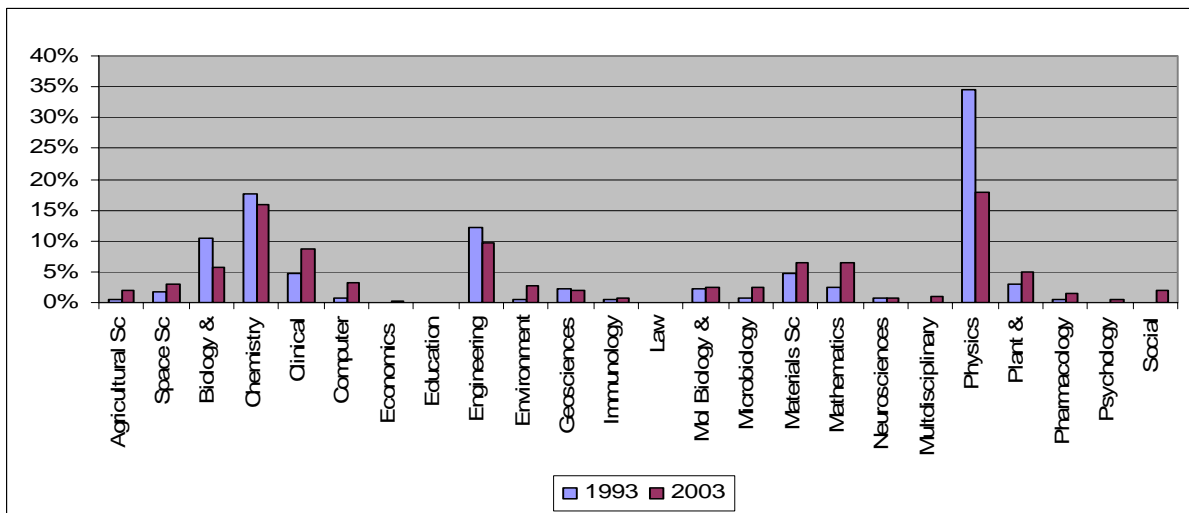
BIBLIOMETRICS

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



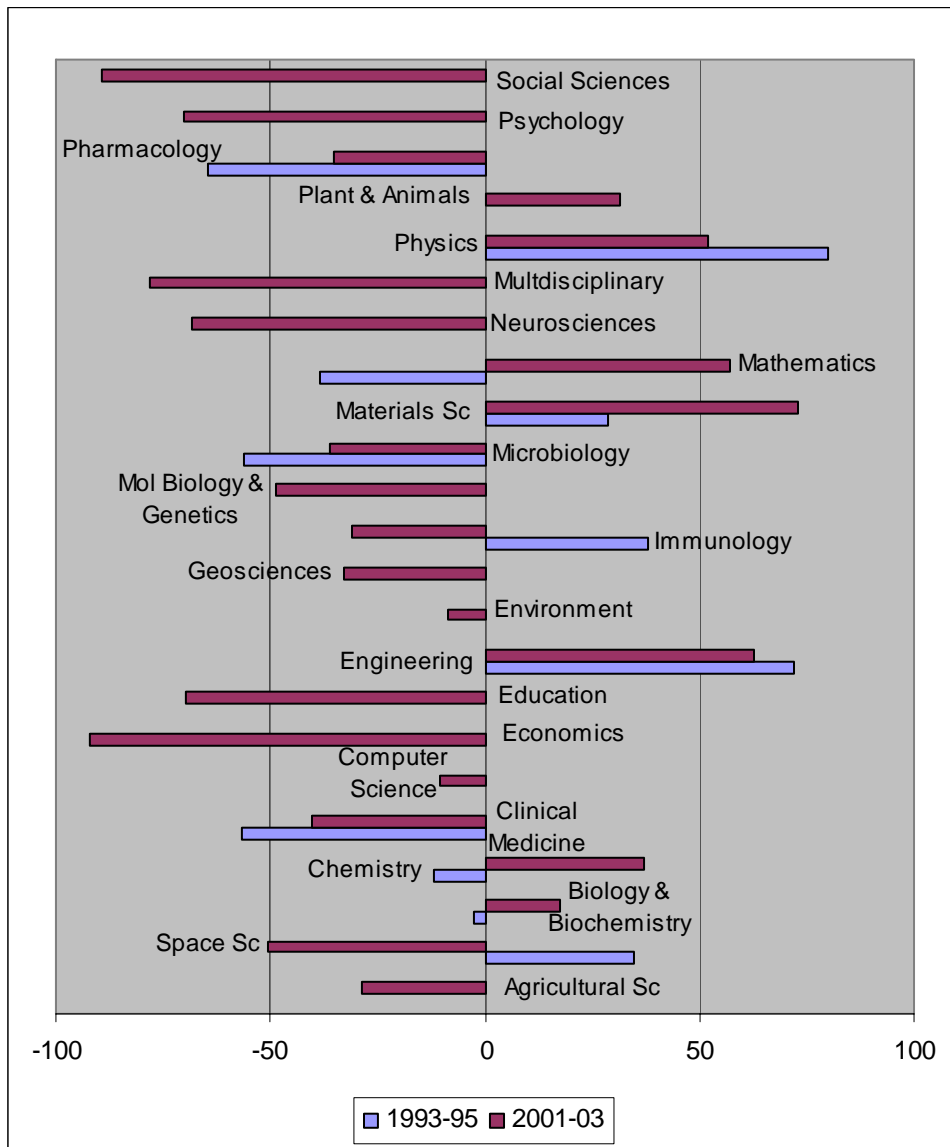
Notes: Specialisation index with EU15 as reference. Max specialisation: + 100. Min. specialisation: -100. Source: Thomson ISI, NSIODE 2005, own calculations.

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



Source: Thomson ISI, NSIODE 2005.

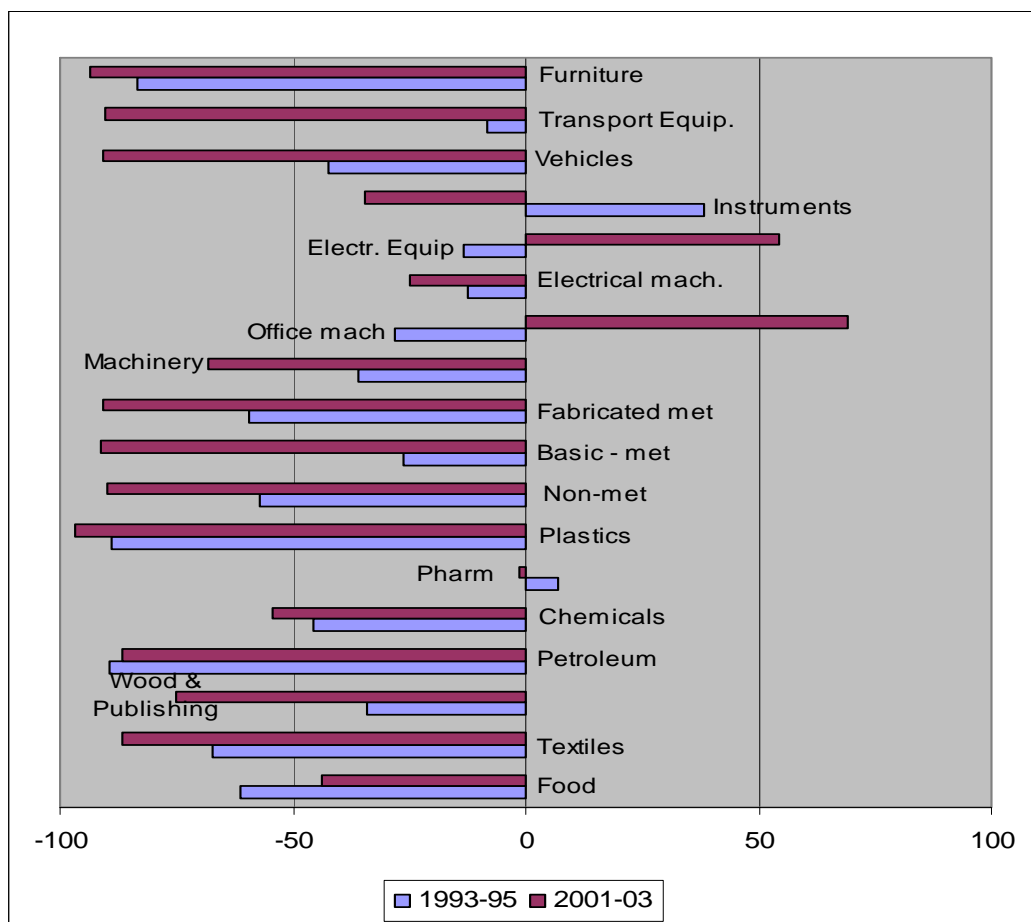
Figure 11. Number of citations by scientific field. 25 scientific fields. Specialisation profile. Lithuania. Averages 1993-1995 and 2001-2003. Five years citation window. (i.e. citations to papers published in the period 1989-1991 and in the period 1997-1999).



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

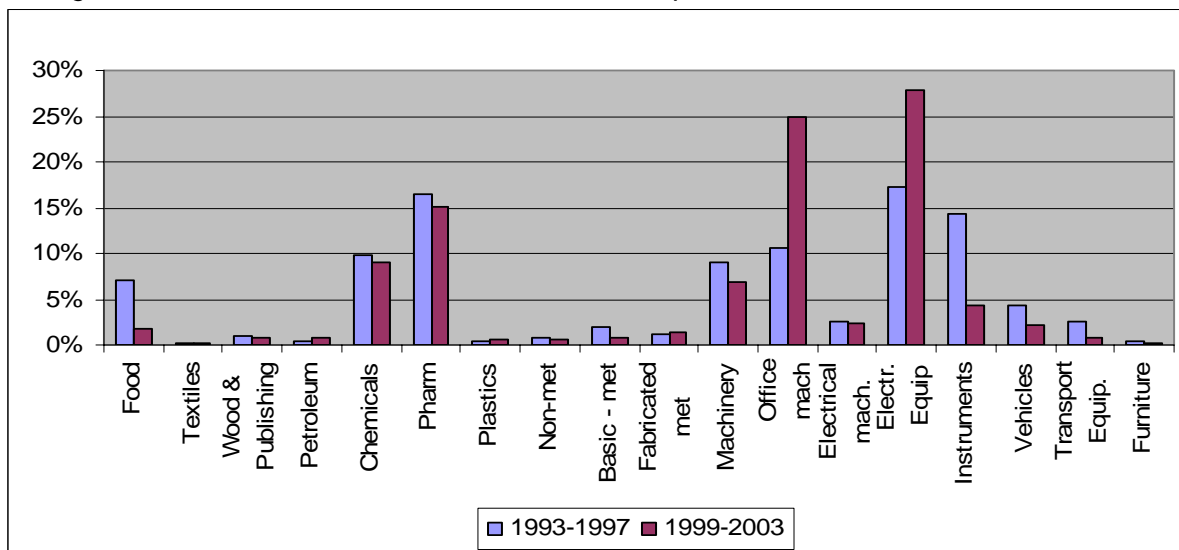
PATENTS

Figure 12. Number of patents by industrial sector. 18 sectors in manufacturing. Specialisation profile. Lithuania. Averages 1993-1995 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.

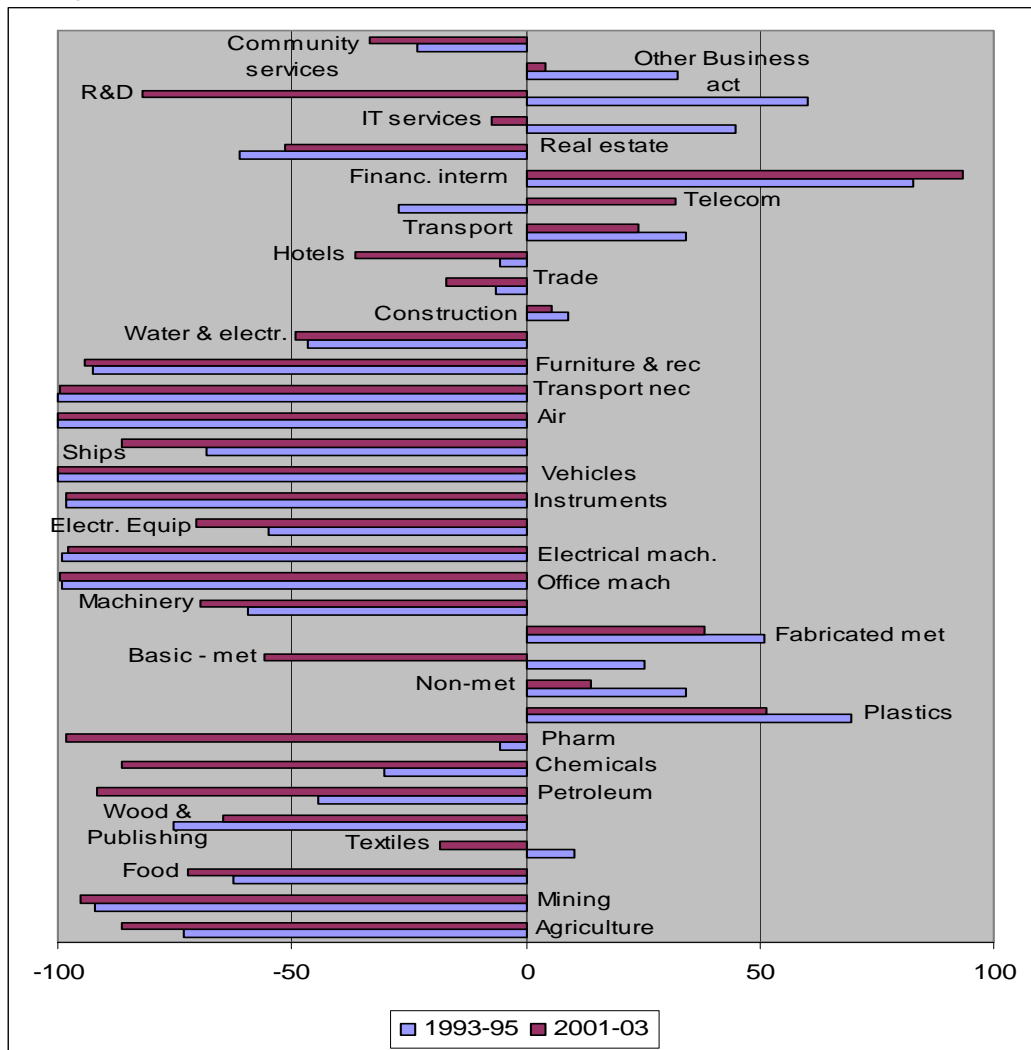
Figure 13. Shares of total patents by industrial sector. 18 sectors in manufacturing. Lithuania. Averages 1993-1997 and 1999-2003. Based on correspondence matrix ISI-SPRU-OST.



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

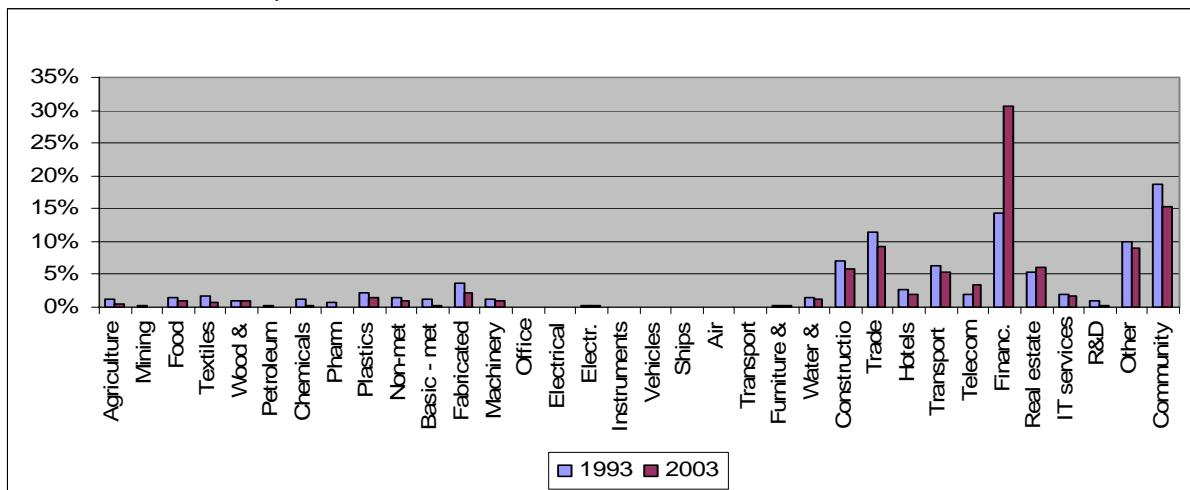
ECONOMIC SPECIALISATION

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



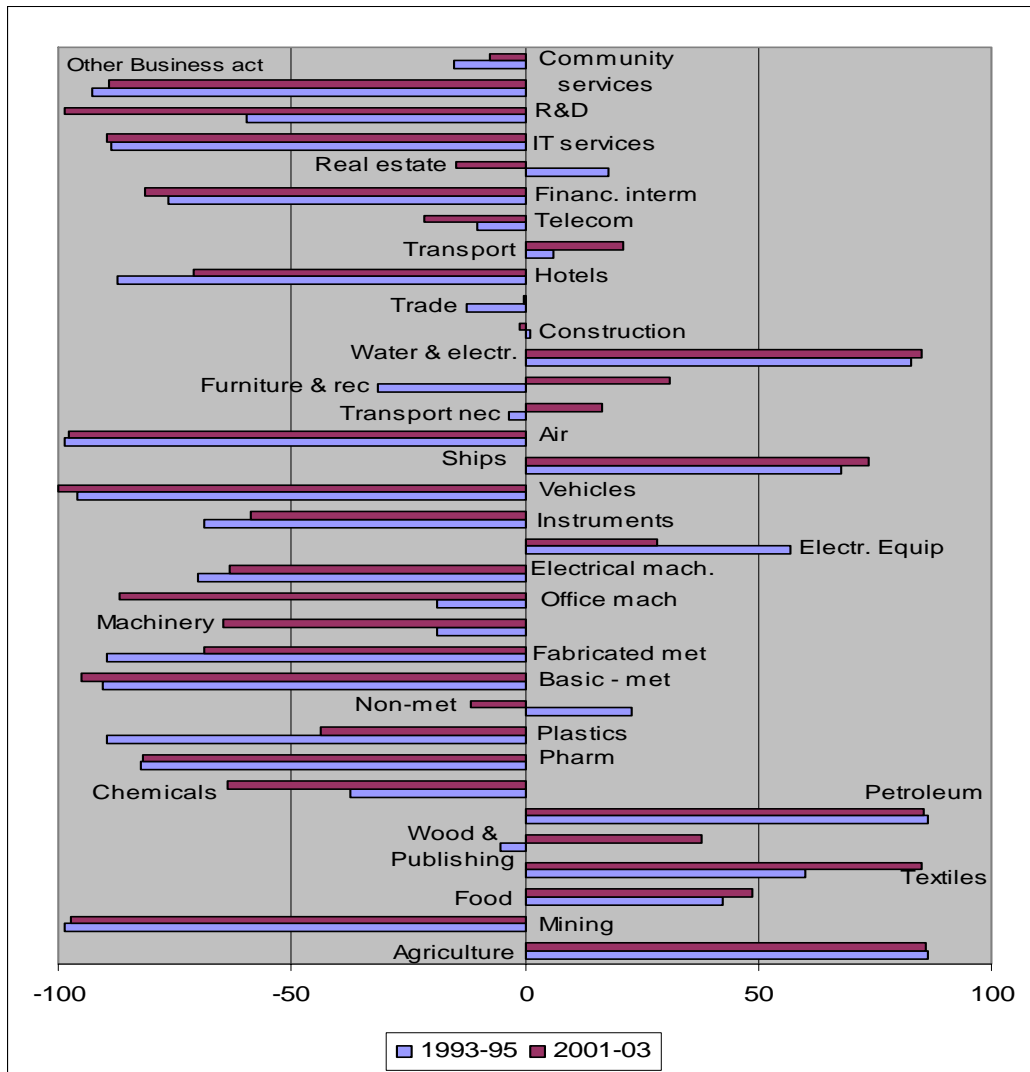
Notes: Specialisation index with EU15 as reference. Max specialisation: + 100. Min. specialisation: -100. Source: OECD, STAN 2005, own calculations.

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



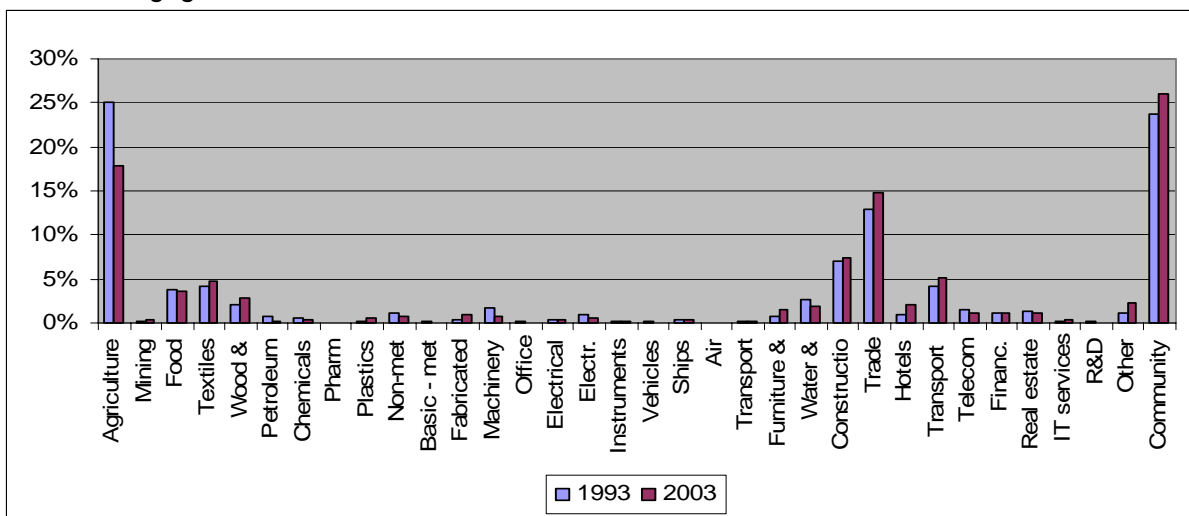
Source: OECD, STAN, 2005.

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



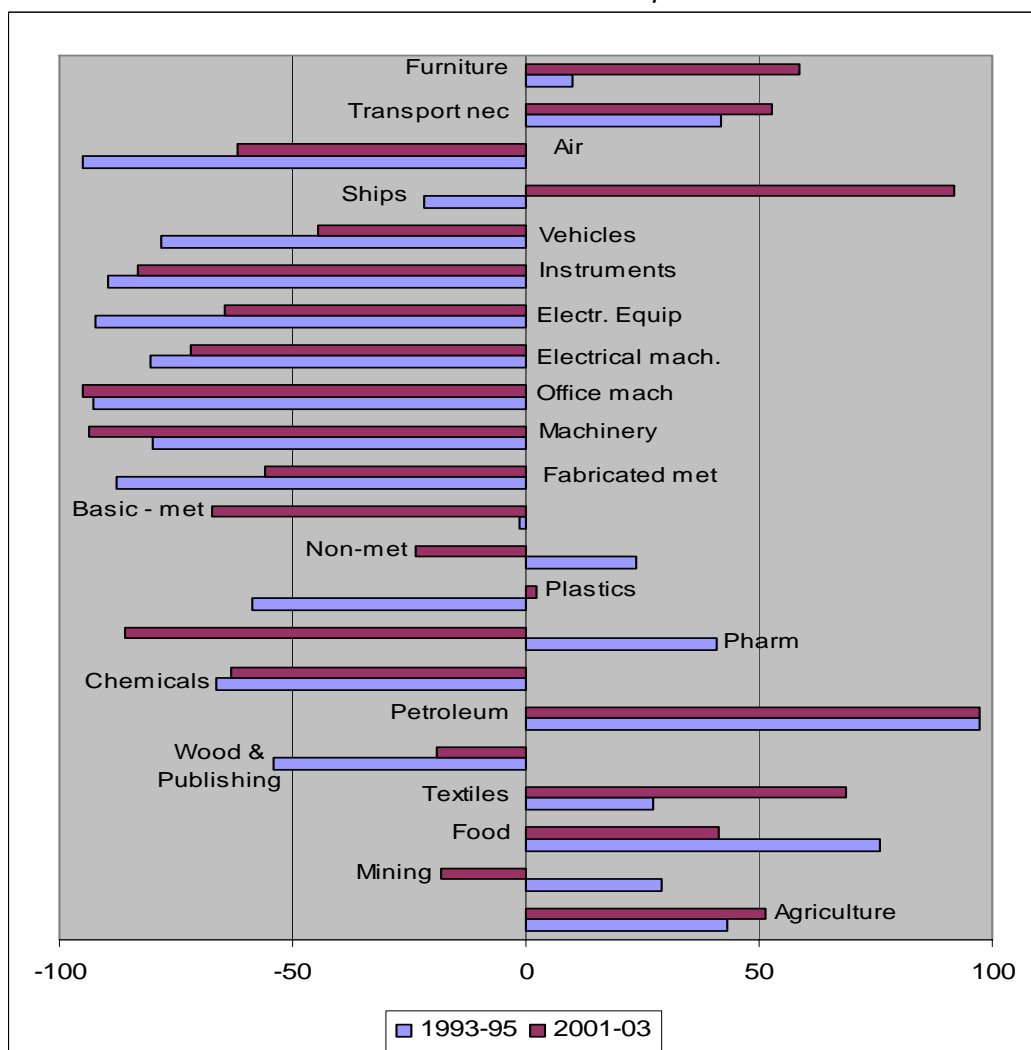
Notes: Specialisation index with EU15 as reference. Max specialisation: + 100. Min. specialisation: -100. Source: OECD, STAN, 2005, own calculations.

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



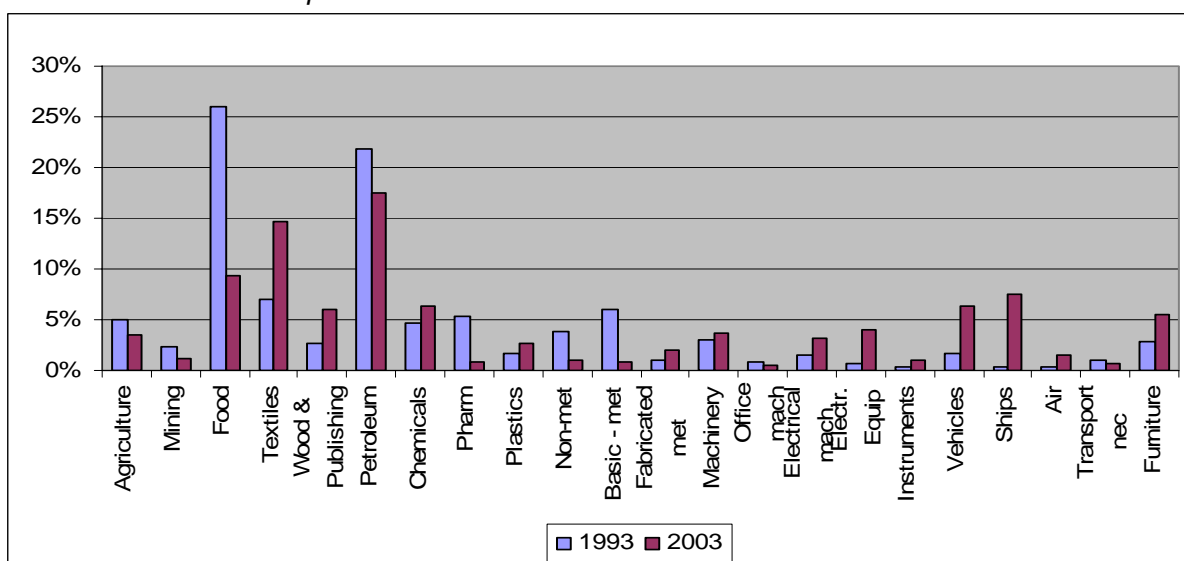
Source: OECD, STAN, 2005.

Figure 18. Exports by industrial sector. Specialisation profile. Lithuania. 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. Lithuania. 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. Lithuania. Averages 1993-1995 and 2001-2003.

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. Lithuania. Based on average values 2001- 2003.

Not Available

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

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

Not Available

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

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

Not Available

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

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

Not Available

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

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;	30;		33;			
Specialisation Value Added	65-67;	45;	60-63; 72; 73; 74	64;		25; 26; 27; 28;			17-19
Specialisation Employment	352+359; 50-52; 60-63;	23;	45;	15-16; 20-22; 351; 36-37;	01-05; 40-41;	26; 32; 70-71	17-19		
Specialisation Exports	352+359;	23;	2423;	01-05; 25; 351; 36		10-14; 15-16; 26;	17-19;		

Red numbers: Decrease specialisation from specialised to non specialised

Blue numbers: Increase specialisation from non specialised to specialised

Note: no specialization BERD data available

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

